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A Few of the Leading Articles in Volume Nine

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ITALY	THIRTY-ONE SPECIAL ARTICLES See Department of Italian History and Development
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KEY TO PRONUNCIATION.

ä	far, father
ā	fate, hate
a or ă	at, fat
ã	air, care
ạ	ado, sofa
â	all, fall
ch	choose, church
ē	eel, we
e or ĕ	bed, end
ė	her, over: also Fr. *e*, as in *de; eu*, as in *neuf;* and *oeu*, as in *boeuf, coeur;* Ger. *ö* (or *oe*), as in *ökonomie*.
ẹ	befall, elope
ë	agent, trident
ff	off, trough
g	gas, get
gw	anguish, guava
h	hat, hot
h or ʜ	Ger. *ch*, as in *nicht, wacht*
hw	what
ī	file, ice
i or ĭ	him, it
î	between e and i, mostly in Oriental final syllables, as, Ferid-ud-din
j	gem, genius
kw	quaint, quite
ṅ	Fr. nasal *m* or *n*, as in *embonpoint, Jean, temps*

ñ	Span. *ñ*, as in *cañon* (căn′yŏn), *piñon* (pēn′yŏn)
ng	mingle, singing
nk	bank, ink
ō	no, open
o or ŏ	not, on
ô	corn, nor
ȯ	atom, symbol
ọ	book, look
oi	oil, soil; also Ger. *eu*, as in *beutel*
ö or oo	fool, rule
ou or ow	allow, bowsprit
s	satisfy, sauce
sh	show, sure
th	thick, thin
t̕h	father, thither
ū	mute, use
u or ŭ	but, us
u̇	pull, put
ü	between u and e, as in Fr. *sur*, Ger. *Müller*
v	of, very
y	(consonantal) yes, young
z	pleasant, rose
zh	azure, pleasure

′ (prime), ″ (secondary) accents, to indicate syllabic stress

CONTENTS

DEPARTMENT OF

ITALIAN HISTORY AND DEVELOPMENT

1. Physical Geography.... Guiseppe Dalla Vedova
   Professor of Geography in the Royal University of Rome; Academician of the "Lincei" and other scientific societies; etc.
2. Italian Archæology.... Giovanni Patroni
   Professor of Archæology, Royal University of Pavia
3. History of the Middle Ages.... Giovanni Monticolo
   Professor of Modern History, Royal University of Rome
4. The Renaissance.... Pio Carlo Falletti
   Professor of Modern History, Royal University of Bologna
5. Modern History (1492–1815).... Pietro Orsi
   Professor of Modern History, Royal Lyceum of Venice
6. History from 1815 to 1907.... Beniamino Manzone
   Director of the Historical Review of Italian Risorgimento
7. Political Administration.... Victor Emanuele Orlando
   Minister of Justice of the Kingdom; Professor of Common Law, Royal University of Rome; Member of Parliament; Ex-Minister of Public Instruction
8. Crown and Parliament.... Giorgio Arcoleo
   Professor in Ordinary of Constitutional Law, of Comparative Public Law, Royal University of Naples; Grand Official of the Italian Crown; Ex-Deputy in Parliament for six legislatures; now Senator for life of the Kingdom
9. Communal and Provincial Administration.... Federico Cammeo
   Professor of Jurisprudence, Royal University of Padua; author of 'Administrative Law'; 'Communal Law'; 'Municipal Monopolies'; etc.
10. Department of Justice.... Ettore Sacchi
    Member of Parliament; formerly Minister of Justice of the Kingdom; author of Works on Functions and Limitations of Tribunals and Courts of Appeal
11. The Papacy and the Government.... Domenico Zanichelli
    Professor of Constitutional Law, Royal University of Pisa; Honorary Professor of the University of Siena
12. Political Parties.... Gaetano Mosca
    Professor of Constitutional Law, Royal University of Turin
13. Italian Socialism.... Joseph Spencer Kennard
    Author of 'Italian Romance Writers'; etc.
14. The Italian Army.... General Fortunato Marazzi
    Member of Parliament; formerly Secretary of State for War
15. The Naval Marine.... Count Candiani
    Admiral of the Royal Italian Navy
16. Religion.... Alessandro Chiappelli
    Professor of Philosophy, Royal University of Naples; Commendatore della Corona d'Italia; author of 'The Philosophy of Religion'; etc.
17. Education.... Saverio de Dominicis
    Professor of Pedagogy, Royal University of Pavia; author of Works on Teaching, Schools and Universities
18. Schools and Universities.... Vittorio Puntoni
    Rector of the Royal University of Bologna
19. The Education and Social Status of Women.... Countess Fanny Zampini Salazer
    Authoress; Professor of English, Royal Institute of Higher Learning for Women in Rome
20. Language.... Ernesto G. Parodi
    Professor of the Comparative History of the Classic and Neo-Latin Languages, Royal Institute of the Higher Studies, Florence; author of 'Tuscan Dialects'; etc.
21. Literature.... Joseph Spencer Kennard
    Author of 'Italian Romance Writers'; etc.
22. Art, Ancient.... Lucio Mariani
    Professor of Archæology, Royal University of Pisa
23. Art, Italian.... Adolfo Venturi
    Professor of the History of Art, Royal University of Rome
24. The Natural and Physical Sciences.... B. Dessau
    Professor of Physics, University of Perugia
25. Italian Music.... Maestro Carlo Cordara
    Musical Critic of 'Marzocco'; Composer of Operas, Symphonies and Oratorios
26. Economic Conditions.... Augusto Graziani
    Professor of Political Economy, Royal University of Naples; Honorary Professor, University of Siena; Member of the Academy "Lincei" of Rome and of the Academy "Pontaniana" of Naples
27. Agriculture.... Paolo Casciani
    Member of Parliament; Commendatore della Corona d'Italia; Professor of Agrimony, Royal University of Rome
28. Commerce.... Arturo Jehan de Johannis
    Director of the Royal Institute of Social Science, Cesare Alfieri, Florence
29. Finance.... Hon. Giulio Alessio
    Member of Parliament; formerly Secretary of State for the Treasury; Professor of Finance, Royal University of Padua
30. Emigration.... Riccardo Dalla Volta
    Professor of Political Economy and Finance in the Royal Institute of Social Science, Cesare Alfieri, Florence; Honorary Professor, University of Padua; author of Works on Social Economics
31. Italians in America.... Amy A. Bernardy
    Professor of Italian and Romance Languages and Literature, Smith College

ITALY:

HISTORY AND MODERN DEVELOPMENT.

1. Italy—Physical Geography. *Geographical Position.*—Italy lies in the South of Europe, and occupies the middle place of the three peninsulas—Spain and Portugal, Italy, and the Greek Illyrian peninsula, forming the extreme European extensions toward Africa and Asia. Italy is almost in the middle of the Temperate Zone.

The distance of its various portions from the Equator (latitude) is about the same as the distance from the Equator of the New England States of America, of New York, Pennsylvania, New Jersey, Maryland, Virginia, and of the Western States lying in the same zone.

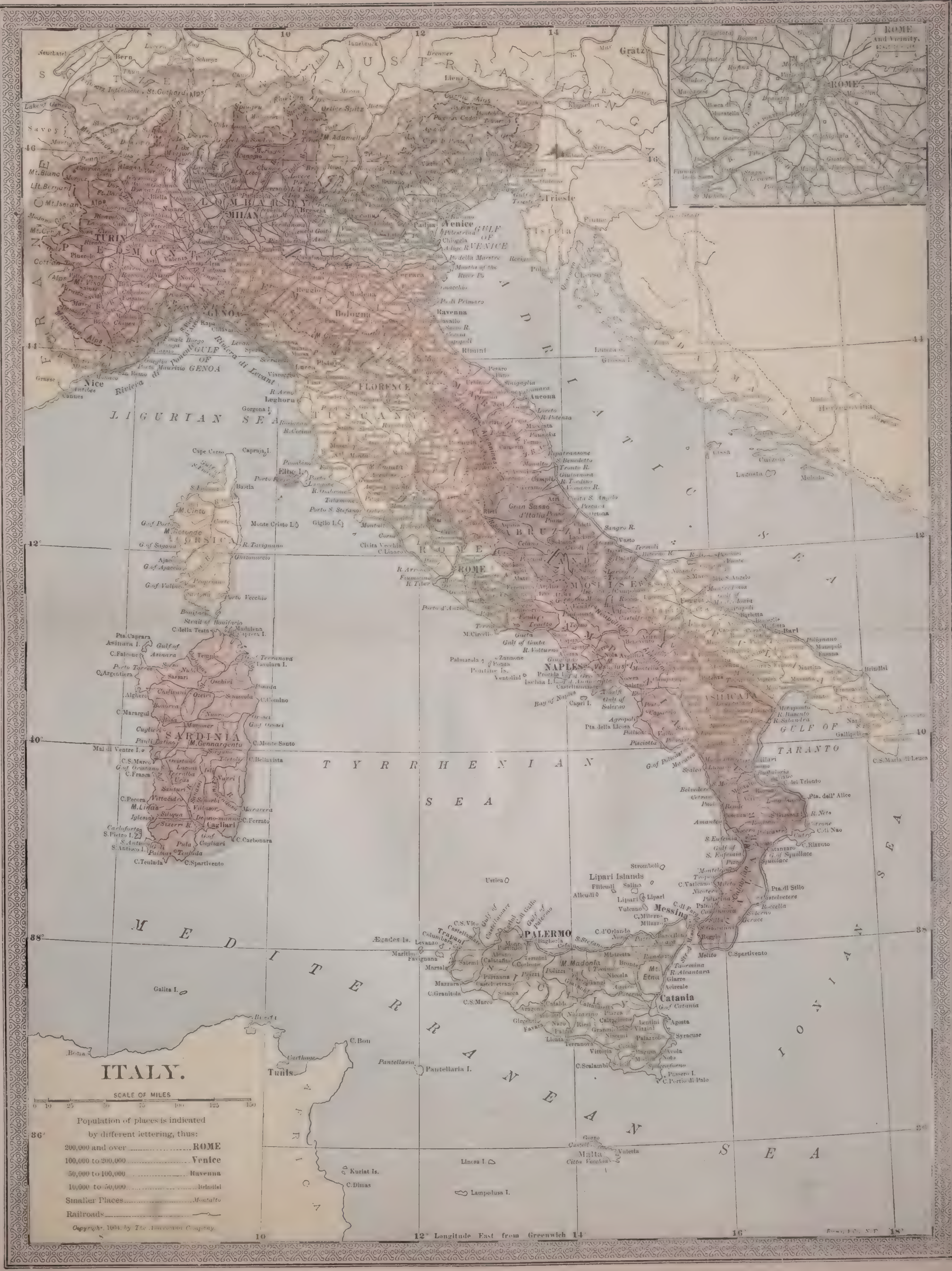
As to its distance from the United States from West to East (longitude) it can best be understood by the difference in time between the two countries. In Italy this distance can be estimated from the capital, Rome, which is almost in the centre of Italy from East to West. Between the meridian of Rome and that of New York there is a difference of about 5¾ hours, so that when it is mid-day at Rome it is a quarter past six in the morning of the same day at New York.

Perimetric Configuration.—Italy, which by reason of its characteristic form in the atlas has been compared to a boot, is divided geographically into three parts: (1) Continental Italy, partially bounded and traversed by a portion of the Alps and the Northern Apennines, and bounded on the east by the Gulf of Venice, which is wider from east to west than from north to south; (2) Peninsular Italy, a little more extensive than the Continental portion, situated from N. W. to S. E. bounded on three sides by the Mediterranean Sea, which takes the distinctive name of Tyrrhenian Sea, of Tuscany towards the S. W.; of the Ionian Sea towards the S. E. and of Adriatic towards the N. E.; (3) Insular Italy, which comprises, besides numerous smaller islands, the large islands of Sicily, Sardinia, and Corsica, which enclose the Tyrrhenian Sea on the South and West.

Historical Position.—On account of its situation in the midst of the Mediterranean, into which it extends from the continent of Europe like a natural mole, 1,000 kilometers long from N. W. to S. E., and being flanked at an inconsiderable distance by two other peninsulas, it was specially favorably situated to play a prominent part in the history of human progress, and particularly until the discovery of America, *i. e.* during the many centuries in which, before the conquest of the Atlantic Ocean, there were concentrated in the Mediterranean the most successful efforts, and the most glorious annals of human history. No country of Europe can compete with Italy in worthy historical memories, both in the ages of antiquity and in the Middle Ages; and from the middle of the 10th century to the present time, after the cutting of the Isthmus of Suez, the importance of the Mediterranean has again greatly increased, and as the federation of almost all the Italian states into one kingdom occurred about this time, there began for Italy a new historical period in which are already evidences of new progressive growth in the country.

Boundaries.—The boundaries of Peninsular Italy are the three seas already mentioned; but on the continental and insular portions there are different opinions. There is no question regarding the political boundaries, since Italy is politically bounded by the confines of the kingdom, which were recognized in the last treaties, and liable to be changed by subsequent treaties. The difficulty arises in regard to what are called natural boundaries; and for the reason that various authors start from different standpoints—some taking purely geographical lines; others ethnographical, or linguistic; others military, or historic boundaries, etc. And on this point it is not that the Italian writers differ only with foreign authorities on the subject, but they also differ among themselves. And this is not unnatural. Along the boundary line between Italy and the European Continent there have been through the ages so many historical happenings and so many different races, that the distinguishing traits of nationality and language are no longer clearly defined, but are misled and blended in promiscuous belts, which must account for the varied opinions of the writers. But it must be remembered that the ethnographical, linguistic, military and historical data referring to the past, present, or future distribution of tongues, and political or social institutions belong properly to anthropological and sociological geography, whilst physical geography, of which alone we are treating at present, deals with nothing but the physical characteristics of a country. Therefore the clearest and simplest way of treating of a peculiarly mountainous region is the orohydrographic point of view by which we begin by tracing on the immense extent and variety of forms of the Alps the dividing line between the water sheds of the opposite regions. This leaves well defined the principal part at least, if not all of the northern boundaries along the Alps, following the line which separates the water sheds of the Rhone, the Rhine and the Danube, which have nothing to do with Italy, from those of the Po, the Adige, and other Alpine rivers which undoubtedly belong to Italy. But even in regard to these physical boundaries there is a difference of opinion as to where should be fixed the extreme limits of the East and West boundaries of the continental portion and the exact limits of the fluviatic basins.

Other uncertainties may arise, and for the



ITALY.

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same reason, although in lesser proportion, even in the insular portions of Italy which gave rise to controversy regarding the assignation to Italy of certain islands in the Dalmatian Archipelago and in the Sicilian Sea. As for the remaining islands, both large and small, geographers as well as geologists assign them to geographic Italy, on account of their proximity to the mainland, as well as to their geological formation, to the shallowness of the water between them and the mainland, etc.

Extent.—The natural, or geographical extent of Italy computed according to this standard gives the following figures:

	Sq. Km.
Continental and Peninsular Portion	236,464.7
Insular Portion—Sicily	25,461.2
Sardinia	23,833.3
Other islands in the Tuscan Archipelago: Elba, Giglio, Capraja, Pianosa, Pontine Islands, Campanian Islands, Ischia, Capri, Procida. Sardinian Islands: S. Antioco, S. Pietro, Asinara, Maddalena, Capera, Tavolara. Æolian Islands: Lipari, Salina, Vulcano, Stromboli, Filicudi, Ustica. Aegadi Islands: Favignana, Maritimo, Pantelleria, Tremiti Isles, and other smaller ones with an entire inclusive area of 921.8 sq. kilometers	50,217.3
Total area of Kingdom	286,682.0

There is included in these figures the area of certain lands (420 km.) belonging to the kingdom, but not part of it according to the accepted geographical definition. Subtracting this we have:

	Sq. Km.
Geographical area of Italy	286,262
Area geographically not belonging to the kingdom; Republic of S. Marino, 89 Km; French region of the Maritime Alps and Corsica, 9.196 Km; Swiss region, 3,872 Km; Austria region, 21,848 Km; Malta and adjacent isles, 303 Km	35,308
Total geographical area of Italy	321,570

Of this extent of area 40 per cent. belongs to Continental Italy; 42 per cent. to Peninsular portion, and 18 per cent. to the islands. The kingdom of Italy comprises 89 per cent. of this.

Taken altogether Italy belongs to the regions of small dimensions. In Europe her area is exceeded by that of Russia, Austria-Hungary, Germany, France, Spain, and Sweden. The kingdom of Italy, therefore, amounts in area to only the 25th part of that of the United States of America, and exceeds slightly the area of the New England States and New York combined.

Sea Coast.—By reason of its special shape and position, of its extending into the midst of the sea and of the many islands which belong to it, geographical Italy has a very extended coast line, of which only 51 per cent. belongs to the mainland and the rest to the islands. On that account, when we compare the extent of its coast line with its area we find that each territory of 36.5 sq. km. has a right to one kilometre of coast line. That is to say, that the length of the coast line is sufficient to enclose a circular area more than four times as large as the area of Italy. And that is why owing to this superabundance of coast, which is one of the fundamental conditions for the development of maritime activity, Italy has no naval superior in Europe, except in Great Britain.

However, the historical or sociological value of these coasts is very diverse. In the first place they are not sufficiently indented, as for instance, are the coasts of Great Britain. Moreover, there are long stretches of coast without natural landing facilities or harborage for vessels of considerable tonnage.

The northerly portion must be excepted as it carries on an extensive internal and foreign commerce, which by its exports and imports greatly stimulates maritime activity.

The uniform coasts of the Adriatic are especially poor in good harbors, as are the steeper and more varied coasts of the Ionian Sea, of Tyrrhenian Calabria, and of the more westerly isles.

With all this there are more favored tracts of coast, especially along the Tyrrhenian Sea, where the coast is often precipitous and forms an uninterrupted series of gulfs with high promontories beneath which the beach curves in large semi-circles. But the most favored of all are the small but attractive Gulf of Spezzia, best adapted by nature to the military requirements of the country; the splendid Bay of Naples, the richest in natural attractions, the centre of the greatest agricultural and fishing industries, towards which are attracted the commercial interests of almost the whole of Southern Italy; and the spacious Gulf of Genoa, with its magnificent Riviera of Levante and of Ponente, almost without any lowland, particularly the Levant Riviera, which is cultivated like a garden. From this Gulf of Genoa extend the principal thoroughfares to the chief industrial provinces of Italy, and towards the richest European countries outside of Italy. On the Adriatic Sea the opening of the Suez Canal restored the old-time international value of the Brindisi coast, and that of the less ancient, but much larger, Venetian coast. And the fisheries of the same gulf and its lagoons give a still greater value to certain small inlets and indentations in the coast, which suffice for the moderate needs of fishing boats.

Oro-Hydrographic Conformation.—The surface of Italy is chiefly mountainous. The largest Italian plain, slightly above sea level, extends through the continental portion, *i. e.* in Northern Italy. This plain has an area of about 46,000 sq. km., hence, the same as the combined area of New Hampshire and Vermont.

Peninsular Italy, and especially the islands, is covered for the most part with mountains and hills, between which are numerous valleys diverse in appearance and extent; some quite large, particularly along the lower course of large rivers, and in the vicinity of the sea coast. In the regions traversed by the largest chains of the Apennines there are some vast and high valleys entirely enclosed by opposite chains of mountains, such as the tableland of Aquila (Aterno), of Rieti (Velino), and of Perugia (Alto Tevère.) But all the plains of Italy, taken together, represent but a third part of the entire area distributed in various regions, in varying proportion, so that the mountainous area is equal to about 56 per cent. of Northern Italy; and 67 per cent. of Central Italy; 60 per cent. of the islands of the kingdom. The mountainous area is even greater in those portions of the Italian regions outside the kingdom.

The Plains.—The great Southern plain is formed by the level portion of the river basins of Po in Venetia and Romagna. In Middle Italy the larger plains extend along the Tyrrhenian Coast in varying width between the Magra and Terracina, and flank the middle and lower banks of the Tiber, the Arno, and the Ombrone. In the South these plains are in the classic Campania felice, on the sides of the Garigliano and Volturno, and towards the Adriatic form the tableland of Apulia. In the islands the largest plain is that of Campidano in Sardinia.

These plains are formed chiefly by alluvial deposits caused by the agency of atmospheric forces and by erosion of the base and flanks of the surrounding mountains, and distributed by currents of water in areas, which primarily, at least in certain localities, were seas. We find this in the greatest proportion in the valleys of the Po and Venetia, which geologists assure us were in former days a portion of the present Gulf of Venice, which extended like a deep indentation as far as Piedmont.

Mountains.—The mountains of Continental and Peninsular Italy are divided into two systems: that of the Apennines, and that of the Alps. The island mountains are considered, particularly by geologists, as continuations, to a greater or less extent, of the mainland chains. The system of the Apennines belongs entirely to Italy. This is not the case with the Alps, which extend for the most part into other countries, as France, Switzerland, and Austria-Hungary. They form, as has been said, the land boundaries of Italy, not in the sense that Italy terminates at their Southern base, although we consider as geographically Italian—as previously mentioned—all the Alpine regions whose streams empty into the River Po, and into the Venetian rivers.

To this belong partly or entirely many of the great Alpine colossi, such as Mt. Viso (3,843 metres), in the Cotian Alps the Gran Paradiso (4,061 metres), in the Gratian Alps, Mt. Blanc (4,810 metres), and Monte Rosa (4,638 metres) in the Pennine Alps, or Valletian Alps, the Adula (Rheinwaldhorn, 3,398 metres) in the Lepontine Alps, the Bernina (4,052 metres), the Orteles (3,905 metres), the Adamello (3,557 metres), the Wildspitze (3,770 metres) in the Rhetian Alps, the Vedretta Marmolata (3,370 metres) in the Dolomitic, or Cadorine Alps, and many others. And the most important thing to observe is, that in this part of Italy there arise from the great plains of the Po and Venetia numerous valleys, many of which are situated in an almost normal direction to the geographical axis of the whole system, and pursue a relatively short course from the Italian lowlands to the heart of the whole mountain region, reaching almost to those long longitudinal, or oblique valleys of the Upper Rhone, the Upper Rhine, the Inn, the Drave, etc., which are characteristic of the non-Italian Alpine watersheds, and which lead to the flourishing European countries situated on the slopes of the whole mountain system.

Through this singular conformation, the passes, the cols, the saddles, which are found along this boundary were necessarily destined to become the doors of communication between the inhabitants of either water-shed, with the double difference—serious on account of its advantages, as on account of its perils—that, in the first place, in the North one can reach these passageways by long valleys of easy ascent, whilst to the South one has to climb a more precipitous ascent. As T. Fischer says, these gateways are adapted rather to enter Italy than to leave it; and, again, these passes radiate and diverge in three directions from Italy as a centre—to the West, North, and East—towards the three principal centres of European population, and these three nations all have on the side of the Mediterranean only one neighbor, whilst Italy, on the North, has to deal with three.

The Apennines.—As for the Apennines, they form geographically, and not geologically, the continuation of the Maritime Alps across the Gulf of Genoa, enclosing on the South, Continental Italy. They then turn their axis in an oblique direction from N. W. to S. E., traversing the whole of Peninsular Italy. They form a great curve with the concave portion towards the Tyrrhenian Sea, and in Central Italy they extend their principal masses rather towards the Adriatic, approaching then the Tyrrhenian Sea in Southern Italy, *i. e.* the Campania, the Basilicata, and Calabria. Geographers now make the dividing point between the Alps and the Apennines the Col di Cadibona, or Altar Pass (426 metres high), in the W. N. W. of Savona. The Apennines form neither a single, nor a continuous chain; but from the principal branch they separate into several spurs and ramifications, or the main chain spreads out in clusters or groups of mountains with terraces, and noted tablelands, such as those of Aquila, Rieti, and Perugia, or divide into a number of chains more or less parallel to each other. Geologists do not attribute to the proper Apennines many of the mountains in the Western part of the peninsula—which includes a great part of Tuscany, of Latium, of the Campania, and some portions of Calabria—the mountains and tablelands of Apulia, the volcanoes and part of the peloritani, in Sicily, all those of Sardinia, of Corsica, of the Tuscan Archipelago, and many others. The groups and chains, denied by geologists to the Apennines, are assigned by them to other formations, belonging to an earlier geological period, which makes the geography of Italy assume a very different aspect.

Certainly the geological variations found in the study of these lands have great value, not alone in the line of science, but also in regard to the present orographic surfaces, to their permanency, and to their mineral and vegetable products, with all the consequences that ensue in the various regions owing to the habitation of man. Geography shows us primarily that the mountains of the peninsula, as compared with the Alps, are not of any great extent or elevation, none of them attaining a height of 3,000 metres—except Mt. Ætna, which is out of the peninsula and is a volcano; that the greater number of them are scarcely 2,000 metres high. The highest peaks are found in the most mountainous part, within the limits of the Marches of Abruzzo, which contains the greatest mountain masses of the Apennines and the highest tablelands in the peninsula. In this region is Mt. Vettore (2,475 metres) in the Sibilline Mountains between Nera (Tiber) and Tronto; the Peak of Sevo (2,477 metres), to the right of the source of the Tronto; Terminillo (2,212 metres) to the right of Upper Velino (Nera

Tiber); the Gran Sasso d'Italia (The Great Rock of Italy) to the right of Upper Vomano, with many points higher than 2,000 metres, and Monte Corno (2,921 metres), which is the highest peak in the peninsula. Majella has also similar altitudes, among which the highest is Monte Amaro (2,795 metres) to the left of the source of Aventino (Sangro); then Mt. Velino (2,487 metres); Sirente (2,349 metres); Mt. Petroso (2,247 metres); Mt. Meta (2,241 metres); Viglio (2,150 metres), and about ten others. There are few considerable altitudes in the rest of the peninsula, one or two in the S. W. of the Basilicata, none in the islands except Ætna, and a few summits in Corsica, among which the highest is Monte Cinto (2,710 metres).

Compared with other and less mountainous countries useful minerals are relatively scarce in Italy. A young country, from a geological point of view, it does not possess in its Apennines such mineral products as are furnished by more ancient formations and which are an element of power to other European nations. Iron ore is mined specially in the not extensive island of Elba; other metals, but not in large quantities, are found in Sardinia, and the Alps of Lombardy and Venetia. Fossil carbon, of the best quality, is not found everywhere; on the other hand, much sulphur is found, especially in Sicily. Statuary marble is found in Tuscany, in the Apuan Alps, and always in places where the mountains are not of the formation assigned by geologists to the Apennines. But the fact remains that the mineral products do not constitute a factor in the wealth of Italy.

If we finally consider the Apennines in their general external aspects, the observing traveler who has crossed the Alps will find that the mountains of the peninsula differ from them not alone in height, but also in other special characteristics. There is wanting in the Apennines in almost all their extent, the fearful and wild grandeur of much Alpine scenery; there are wanting the glaciers and the perpetual snow; there is wanting the Alpine vegetation, so rich in varied tints and extending in some parts to the most unusual altitude. The Apennines, on the contrary, are less ponderous, less dentated, less varied, less severe and precipitous, the valleys less narrow and hemmed in, but also with scantier and less varied vegetation, and with many barren tracts, showing the bare sides of rock.

But as a compensation there are numerous large and pleasant valleys in almost every direction, where the regular sections of land, with a variety of cultivation, with verdant hills and mounts covered with villages, with a sky that is very often bright, makes a pleasing contrast to the barrenness of the distant mountains.

Rivers.—The outline and character of the Italian mountains is pretty clearly found in the physical hydrography, in the climate, in vegetation, and finally, in the great lines of Italian history.

Beginning with the waters we find in the North, as well as the largest plain, the largest river of Italy, the Po, which crosses the entire valley in its greatest extent from west to east, and which, in proportion to the modesty of its length (only 420 km. in a straight line), it may be considered to have the greatest volume of water of any river in the world. The hydrographic basin of the Po and its tributaries is estimated as at least 70,000 km., a great area for a river of that length; for to every kilometre of its course there is more than 104 km. of tributary area.

The amount of water that the Po carries to the sea (greater in the seasons of the heavy rains and the melting of the snows), is always quite large, for the reason that when the contribution of the Alpine tributaries, the Adda, Ticinus, etc., is less abundant, *i. e.* in winter, that of the Apennines' tributaries, the Panaro, Taro, etc., is more so. The volume of water is greater in October and May, and it often does great damage to the surrounding regions. However, notwithstanding all this abundance of water, the Po, as a medium of navigation, does not present the facilities that might be expected, for it works potently and unceasingly to change, not only its banks, but also the position and extent of its many sand and mud banks; and its various outlets into the sea are neither ample, nor deep, nor permanent. Its waters carry and deposit around and about its mouth in the Adriatic great quantities of mud, which gradually form an extension of its mouths into a belt of land estimated to increase about 75 metres a year. These deposits would be larger still, if the waters contributed by its most important Alpine affluents, the Adda, Ticinus, Oglio, and Mincio, were not purged of all detritus, which they get rid of in crossing the Lombard lakes.

Among the Alpine rivers which flow into the Adriatic must be mentioned the Adige, which, as compared with the Po, is inferior in the length of its course by only about a third, but is also four-fifths smaller in the amplitude of its hydrographic basin, and still less in its volume of water.

In the peninsular portion and in the islands of Italy, the not extensive area and the special distribution of the mountains do not permit the formation of large rivers; those on the Adriatic coast of the peninsula, where are found the principal groups of the Apennines, are the smallest. Here, on account of their short and precipitous course, the rivers are more like torrents, except the Reno, which traverses the Romagna plain for a long stretch, and some that rise behind the crest of the coast chain in its ponds and recesses, as the Sangro, the Pescara, etc. Also in the Ionian Sea similar causes, and besides the prolonged drought in summer, withdraws every value also from the larger rivers, such as the Busento, the Bradano, etc. But to the west of the Adriatic chain of the Apennines there is more diversity and less uniformity in their knots and sinuosities, for being more numerous they can form valleys in directions more or less oblique to the coast line, uniting longitudinal tracts of valley to transverse tracts, and hence they can develop into larger rivers, with more extensive basins, as the Tiber, the Arno, the Volturno, the Liri-Garigliano, etc.

The Tiber, the river of universal historic fame, is the largest river of peninsular Italy. Its length is almost equal to that of the Adige, but its hydrographic basin is more than one-fourth larger. Its sources (Monte Fumajolo) are about 240 km. distant from those of its most Southern affluents, the Annene and the Teverone (Monte Viglio) in a direct line from N. N. W. to S. S. E. It receives the waters of almost the entire Tyrrhenian water-shed from the greater Apennine groups. For that reason, especially from autumn to spring, it is liable to frequent floods, according as the downfall of rain, and the melting of the snows occur in one or other, or all parts of its vast basin. The country, and chiefly the city of Rome, suffered greatly from these floods until the recent works of systemization in the city, which formerly saw how every year, and even several times a year, the river invaded and overflowed the lower wards to a depth of three to four metres. The Tiber also continues by means of deposits to extend its estuary. From the time of Christ up to our day it has added a stretch of beach more than four kilometres wide.

The Arno, the Tuscan river, so celebrated in the history of civilization and so dear to votaries of the arts, has a course only three-fifths as long as that of the Tiber, and hardly half the extent of its basin. Its principal valleys may be distinguished by natural diversities very marked in four regions, *i. e.* in the Casentina, or Casentine Val d'Arno, wider and less impetuous up to its junction with the Tuscan Chiana; the Upper Val d'Arno, shut in between the opposite chains of the Pratomagno and the Chianti; and the lower Val d'Arno, from its confluence with the Sieve until it reaches the sea, the most flourishing portion of Tuscany. But even in this last region it recalls the type of torrent, as much by the coarse deposits from the bed of the river as by the tremendous force and agitation of its waters. At Florence it may rise from a minimum flow of three cubic-metres to a maximum flow of 1,000 c.m., and in exceptional cases to 2,000 c.m. of water a second. And at Pisa, on the level plain, it may fall from 2,000 c.m. at flood to a low level of 15 c.m. a second. Its flood tides are most often in December, and in the preceding and subsequent months. Its lowest tide is in summer. The matter deposited at its mouth from the time of the Romans up to the present day forms a stretch of beach more than eight kilometres wide.

Lakes.—Among the Italian lakes worthy of special mention are the beautiful Lombardy lakes, Lago di Garda, or Benaco, 370 sq. km. in extent; Lago Maggiore, or Verbano, 212 sq. km.; Lago di Como, or Latrio, 146 sq. km.; Lago di Lugano, or Ceresio, d'Iseo, or Sebino, di Varese, etc., which are long valleys enclosed between spurs of the Alps, shut in and protected towards the North by the mountain, more open towards the South, and girdled by abandoned moraine hills, by ancient glaciers, with less imposing scenery, in general, than that of the Alpine lakes of Switzerland, but yet more pleasant on account of the smiling Southern landscape and vegetation; great basins of deposits, where the abundant waters of the rivers are purified before irrigating the luxuriant Lombard country. In other parts of Italy are scattered smaller lakes, historically famous, as the Trasimeno, or Lake of Perugia, 130 sq. km.; the Lago di Bolsena, 115 sq. km.; the Sabatino or Bracciano Lake, of Vico, of Albano, of Nemi, not far from Rome, situated in the craters of spent volcanoes; and many coast lagoons, such as the Venetian lagoon, the ample Val di Comacchio, situated North of Ravenna, the Lakes of Lesina, of Salpi to the North and South of the spurs of Gargano, and several others.

Climate.—There is a great diversity of climatic conditions in the different regions of Italy, caused not alone by the difference in latitude, but also the multiplicity of the ramifications of its principal mountain systems.

Italy is very long from North to South compared with other countries. The German Empire, for instance, with an area of over 540,000 sq. km., covers less than 8° of latitude; the kingdom of Italy, which is a little over half as large as Germany, covers more than 10°. Hence it follows that in the most northerly regions the sun does not set in certain places in summer until almost 1½ hours later and in winter almost 1½ hours earlier than in more southerly points. At the same time, however, the angle of incidence of the sun's rays on the horizontal plane in various places becomes greater at all places in the South and attains to 10° more than in the North; and it exercises therefore a much stronger calorific influence. Therefore the longer continuance of heat of the long summer day in the North is made up for in the South by the greater intensity of the sun's rays and the continued clearness of the sky, and the difference in the summer temperature between the North and the South of Italy would tend to diminish, while in winter the greater length of the day as well as the greater intensity of the sun's rays combined produce a condition advantageous to the Southern portion, and the climatic differences in winter between the two portions of the country also caused by the sun in diverse latitudes will be more marked.

But to increase this meteorological diversity there comes in the special oro-hydographic configuration of the country. The sea which surrounds Italy, and which, except in the Northern portion, is distant a maximum of almost 100 km. from any inland point, tends to lessen these extreme differences, but in very diverse ways according to the direction of the prevailing winds, and the mountain ranges.

Thus the great Northern plain enclosed on three sides by mountains, as if it were a great amphitheatre, sloping down and open towards the little *Mar di Venezia,* does not profit as much by the tempering action of the sea, as the rest of that portion, whilst it is exposed almost without protection to the atmospheric influences from the interior of the Eastern European continent; its climate becomes necessarily «Continental,» *i. e.* extreme, with intense cold in winter, and great heat in summer, no more than one might expect from its greater distance from the equator. In fact, the temperature in Palermo in midsummer is 23.9° Centigrade; in Naples 23.2; at Venice 23.1°; at Milan 23°; whereas in winter it is 11.2° at Palermo; 8.8° at Naples; 3.7° at Venice; and 2.2° at Milan. To this must be added the other great climatological factor of rainfall. The magnificent bulwark of the Alps which encircles Italy at the North acts as a powerful condenser of the moisture of the atmosphere, carried by the prevailing winds from the Tyrrhenian Sea, whence the enormous downfall of rain and snow which the year round feeds the numerous affluents on the left bank of the Po, and the rivers flowing into the Gulf of Venice. The amount of rain reaches a maximum in Northern Lago Maggiore (Cannobio) yearly of 1,332 millimetres, and this is higher on the Carnio Alps (Gemona) yearly 2,248 millimetres, where the currents of moisture from the Mediterranean spend themselves, either surmounting the minor obstacle of the depression in the Ligurian Apennines, or avoiding this obstacle traveling by way of the long channel of the Adriatic. In Peninsular Italy, on the contrary, the special distribution of the Apennines and of the prevailing aërial currents produce a diversity of favorable conditions in the various regions. The Apennines and the other mountains sloping towards the Tyrrhenian Sea are more frequently exposed to warm and damp currents deviating more or less from a S. W. direction, while on the Adriatic slope there is in winter exactly the opposite, and in summer a great variation of currents. Hence, in all the country situated on the Tyrrhenian Sea from the Ligurian Riviera to the Gulf of Salerno there is a more copious rainfall. The regions at the base of the Northern slope, on the contrary, have a smaller annual rainfall. Still smaller is the rainfall around the Plain of Foggia (Foggia, 422 mm.) and near the Gulf of Tarentum, and in almost all the islands.

To the vegetation, however, is no less important than the annual amount of rain, the manner in which it is distributed in the different seasons. In the Southern portion there are two months during the warm season in which there falls not a drop of rain. In the North rains are frequent even in summer, often in the form of noon-day thunder showers, which are destructive to the ripening fruit in the fields. (Summer average of rainfall: Palermo, 28 mm.; Naples, 55 mm.; Venice, 198 mm.; Milan, 236 mm. Winter average: Palermo, 292 mm.; Naples, 281 mm.; Venice, 123 mm.; Milan, 193 mm.).

From all this we may conclude that it is not very exact to speak of «the climate of Italy,» when there are so many different climates, according to the topography of the various regions.

Local conditions serve again to modify these distinctions, and are determined more especially by the formation, altitude, and position of the mountains and valleys with regard to the prevailing direction of the aërial currents.

But all these variations do not modify the influence of the latitude to such an extent as to prevent Italy, especially on the Tyrrhenian and in the Central and Southern latitudes, from being noted, in comparison with Europe, for an extraordinary mild climate, rendered still more agreeable by a larger number of cloudless days, and often made delightful by an enchanting splendor of the sky.

Animal and Plant Life.—In consequence of these conditions it is enough to refer to the characteristics of the Italian vegetation. The Italian flora is considered by botanists to be exceedingly varied, owing to the temperate climate, as well as to the variety of climates which are suitable to a greater number of botanical species. In addition to this, for a long period, man has voluntarily, and involuntarily, been increasing the species. Together with plants belonging to cold regions, there flourish in certain places plants belonging to warm countries. To mention only the best known species, in the South there are orange groves, hedges of agave and spunzie, and cotton, sugar cane, and date palms ripen there; but many of these and other more or less tropical plants may be found also in many places on all the Tyrrhenian slope as far as the North, where they even brighten the Ligurian landscape. Similarly, there grow, quite extensively in Italy, especially near the sea, evergreen trees and shrubs, which give a characteristic appearance to the winter landscape. But most important of all is the olive, which grows all over Central and Southern Italy as high up as 500-600 metres above sea-level, and in the islands as high up as 800 metres. The olive does not grow in the Venetian and Po plains, on account of the severity of the winters, but it may be found in places protected from the north wind and weather, as on the sunny slopes of the Lombardy and Venetian foothills of the Alps, and of the volcanic Colli Euganci. And together with the olive may be found other Southern vegetation. In the plain of the Po the summer climate makes remunerative the cultivation of not only vines and other fruit-bearing shrubs, and exotic plants, but also the cultivation of rice. In the whole of Italy, therefore, in the plains and on the less precipitous slopes are cultivated the different cereals, including maize in some regions, for instance, Abruzzo, and in some spots 800 metres above sea-level. And while, in Continental Italy, the vigorous winters suspend vegetation, in South Italy the groves of lemons and oranges and the pastures remain green, and many trees and shrubs are covered with leaves and flowers.

As for the animal kingdom, there are none that have characteristics worthy of mention in these brief geographical outlines. Many centuries of history and the great number of inhabitants have reduced to a minimum the species of animals that are not useful to man. Agriculture is carried on in favorable regions; grazing in summer on the mountains, and in winter, on the marine plains. Fishing is carried on extensively on the sea coasts, and cattle, swine, sheep, horses, silk-worms, are raised in more or less abundance. The species of fish found in the Tyrrhenian Sea are sardines and tunny-fish. There is also an industry in coral. The distribution of these various industries depends, of course, on the oro-hydrographic conditions.

Population.—The Italians form one people, and with very few exceptions, speak one national language. But they present an extraordinary number of variations in character and physical type, as well as in dialect, which is a natural consequence of the varied regional and climatic conditions of the country, and of the many thousand years of historical changes, invasions, conquests, intermingling and separation, and the various phases of civilization, out of which Italy of the present day has evolved. Before the Middle Ages, ancient history gives a record of the inhabitants of Italy as Iberi, Sicani, Siculi, Liguri, Veneti, Iapigi, Etruschi and the great family of the Italian people properly so-called: Umbri, Sabelli, Latini, Volsci, Oschi, and in the North the Galli, besides the Greek and Phœnician colonies of the South. Modern glottology finds traces of all these stocks in the division and differences of the present Italian dialects. Then came invasions and immigrations, small and large, of Germans, Arabs, Slavs, Spaniards, etc., at the beginning of the Middle Ages, and during the subsequent centuries; and as a last relic of these, there are found at the present day, within the kingdom, some isolated patches of the Alps, and in the the Venetian foothills of the Alps, and in the high valleys of the Sesia and the Toce; franco-provencals in the Piedmontese Alps; Slav in the Julian Alps; Greek, Albanian, Slav, and others in Southern Italy, and the islands. But taken altogether these colonies do not amount to-day to more than about 200,000 souls in a population of nearly 34,000,000. Then again, this number is gradually decreasing with the multiplication of modern means of communication and with the increasing association between different districts. Further, the so-called «Compartimenti territoriali» (Piedmont, Liguria, Tuscany, Latium, etc.), between which we are accustomed at present to distinguish the Kingdom of Italy, and which are more directly referable to transmitted historical divisions, have their *raison d'etre* in a double order of facts, that is to say, in a combination marked with diversities inherent to the country, and in a condition of oro-hydrographic segregation more or less complete. Considered in their chief lines, it can be shown that they represent almost all not conventional divisions, but «geographical provinces.» And we must here seek one of the most cogent reasons for this political division, on account of which Italy fought for so many centuries. When once the military and political valor of the ancient Romans united Italy it was one of their chief and most laborious and wisest tasks to prevent the segregation of the various races by their network of celebrated roads. And even yet new Italy in its formation into a single State feels the imperious need of uniting and bringing into closer contact the various provinces of the kingdom by means of rapid communication by roads and railroads, and by the expenditure of a relatively large sum of money to do away with the natural inland barriers of the Apennines, by making roads across them at fully 15 points, with 15 different railroads, making furrows here and there through all the mountain system for long distances, also along its whole length, and enclosing the country as with a network of protection, with an immense circle of steel rails. Thus whilst the climatic and other geographical diversities remain unchanged, and give variety and a valuable stimulus to the various industries of Italy, modern civilization improves on nature by modifying the danger arising from segregation due to the natural formation of the geographical provinces, by promoting and cementing national unity.

Bibliography.—For a more profound study of the physical geography of Italy we recommend among others the following works: Marinelli, G., (The Earth); a popular treatise on universal geography (Milan). The fourth volume is entirely dedicated to Italy, part I, pp. 1-509, particularly to the Physical Geography. Fischer, T., 'The Italian Peninsula'; an essay on scientific chirography. First Italian translation revised and enlarged (Turin 1902, 1 vol., with map and illustrations). Both these works refer to others containing researches on special subjects. GUISEPPE DALLA VEDOVA,

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2. **Italy—Italian Archæology.** Italian archæology, from the remotest periods of human existence down to the Roman age, presents a series of successive phases enclosed by a vast horizon. The archæological material, which is uniform or nearly so, during the stone age, at the close of the latter, and at the beginning of the metal age, appears distinctly divided into regional groups, the people who produced it remaining in their own localities expressed their tendencies under varying influences and in different ways, as influenced by their local environment, without, however, losing the fundamental racial characteristics which testify to their common origin. During the following age of metal these differences increase as waves pile up and mix with waves. To the difference in implements is added the divergence of funeral rites. In northern and middle Italy, cremation and the placing of the remains in a mortuary vase, takes the place of sepulchre; in other regions cremation appears at isolated points, while in others it is absent; all this indicating not only intensified commercial currents, but also that there was a real movement of population. Caution is necessary in attributing differences of archæological material and of rites to immigrations of new people; these phenomena do not always coincide, sometimes they conflict with the spread of race and language. And this spread of race and language never coincides, either with each other or with the data of implements and rites. If for a given epoch we should color a map, using four different colors to show the districts in which are found similar material, analogous funeral rites, one race and one language, the four colors would not exactly cover one another. Nevertheless, if there were immigrations into Italy they occurred chiefly in the age of metal and the culmination of the movement was towards the end of the bronze age and at the beginning of the iron age. Two facts unite with the data supplied by implements and rites to prove that there was, in upper and middle Italy, an infiltration of peoples from the central regions of Europe. First, the presence in these parts of Italy of a different anthropological type with a rather large and round head, whereas in lower Italy the old Mediterranean type of the oblong, finely modeled cranium has remained almost unaltered. Second, the advance and then the predominance of the Aryan language whereas the ancient Mediterranean race which occupied Italy and its islands at the end of the stone age had a non-Aryan language.

From the beginning of the iron age the differences between the different regions of Italy remain practically stationary as far as the ancient indigenous civilizations are concerned; but they soon became intensified and simplified by two conquests or civilization movements which divided Italy between them. These two movements came from the eastern basin of the Mediterranean. From the insular and peninsular countries which afterwards constituted classic Greece, there came into Southern Italy and into Sicily small successive waves of peoples, at first not yet Aryanized as to language and perhaps driven out from their old habitations by new invasions (in these people we can recognize the Pelasgians of tradition); then, peoples who corresponded more and more to the conception which we have of the classic Greeks (a Mediterranean stock, Aryanized in language). The pre-Hellenic proto-Hellenic, and Hellenic peoples colonized chiefly the coast and some stretches of contiguous territory. A parallel movement was the establishment of Phœnician settlements, which were, however, (except in a part of Sicily) covered up by the Grecian colonization, and are not of great importance as regards the Italian peninsula. The Phœnicians contented themselves with trading with the latter.

The other immigration, which divided Italy with the Greeks, was that of the Etruscans—a people of Mediterranean stock and of non-Aryan language. They came across the sea from Asia Minor and, finding the coasts of Southern Italv occupied as far as Cumæ, they crossed the Tiber and occupied the country to which they gave their name. From there, crossing the Apennines, they conquered the Æmilian plain as far as the Adriatic. Their influence branched out also into upper Italy, became extended to Latinni and over Rome, to the citizens of which the Etruscans were masters in the liberal arts and in religion, even giving them a king. Finally even the most southern Greek costal colonies felt their influence which asserted itself in the Campania of the interior by its systematizing work of changing old indigenous dwelling places into regular cities with religious and military organizations, which rose to great importance and to vigorous life (Capua, Nola, Pompeii).

The intensification of the pre-Hellenic and Hellenic commercial currents into real colonization movements took place on the old foundation of the same very ancient Mediterranean stock. The new comers were not far from their mother country in which the sons of their own progenitors continued to live and with which they liked to connect themselves, giving to their new home the name of Larger Greece Μεγάλη ἐλλάς. Essentially traders and navigators, the Greeks did not give much care to the organization of territory. All these circumstances were extremely unfavorable to the establishment by them of an Italian nationality, hence the indigenous population of the south and of Sicily in part underwent a rather superficial assimilation which fell at the first blow and in part relapsed into barbarity and rapid decline.

Very different were the conditions in middle Italy when the Etruscans reached it. Before they, in their turn, conquered it the region inhabited by the old Mediterranean stock had already been conquered by the Umbri, who had an Aryan language and European civilization; and the prehistoric Umbria, which was considerably larger than the region which has preserved the name, then underwent a sort of mediævalism, of transformation and of revival. For their part the Etruscans did not have a home country near at hand where their brothers continued to live and with which they could keep up an intercourse. Their motherland was far distant and the connecting links were broken so completely that even to-day it is not possible, except very generally, to identify their original home. For that very reason the Etruscans were much better prepared than the Greeks to regard Italy as their real home, and to co-operate in developing a national spirit. But we should also mention the characteristics they show in the monuments which have come down to us. Profoundly religious, connoisseurs of art and excellent technicians, although not gifted with the sublime æsthetic sense toward which Greek art was tending, caring less for navigation and commerce than for organization of territory, the Etruscans got along better with the simple and rough Umbrians and conferred on them the dignity of a superior civilization, beginning with a true architecture, as shown in houses and tombs, and the organization of a city and public and military works, up to a religion pregnant with doctrinal and cosmological content. One fact which had a great influence in this connection was that the Etruscans, unique perhaps among the Mediterranean stocks in this respect, had preserved primitive and homely customs; they honored the hearth and gloried in the maternal name, mentioning it in epigraphs, whereas the Greeks had inherited from the «Myceneans» the separation of the two sexes and the very inferior position of women. By this conjunction of favorable circumstances notwithstanding the different language, the Etruscans very soon forgot, or made others forget that they were strangers; they amalgamated the indigenous elements and assisted in creating that Italic civilization with its sentiment of nationality, in opposition to the Greek; a sentiment which still existed among the Roman conservatives at the end of the Republic who regarded anything with a flavor of Greek as foreign and reprehensible. Without the Etruscans there would probably not have been a superior Italic civilization opposed to the Greek; there would have been only the contrast between a rudimentary and semi-barbaric civilization with one more advanced.

The Gallic dominion in the Cisalpine bounded the Etruscan power on the north and still further circumscribed it by descending into the Cispadana. There was without doubt a momentary return to a simpler and more primitive civilization in upper Italy, but it is not at all true that the Gauls did not manufacture their own pottery, metals, and other implements; their civilization has merely been less studied because it was ruder; but in certain points its centres of production can be established. For example it appears that Picinum (Pavia) was the centre of production for bronze buckles, which present a variation from the *La l'ène* type.

But the Roman eagles were drawing near to the confines of Italy; they closed the vista opened up to us by Italian archæological material by restoring to uniformity the civilization of the peninsula and its products. Rome, the inheritor of the Etrusco-Italic national spirit, founded its power not so much on commerce and navigation as on the organization of territory, on the development of terrestrial communication, of public works and power, and of military and political ordinances. Under the powerful hand of the ruler the old population became uniform in civilization and language. The old name of Italy, born in the extreme south of the peninsula, set up for a moment as the standard of the national spirit in rebellion against the leading city, is taken up by Rome, is carried as far as the Alps and remains through the centuries as the symbol of national unity.

In the following outline, necessarily condensed, an attempt will be made to give a more detailed idea of Italian archæology in the present stage of the study.

I. Stone Age. *A. Archæolithic.*—Besides the localities mentioned in an article by Mortille (*Revue mens. de l'école d'anthrop. de Paris,* 1891) on the diffusion in Italy of axe heads of the type of Chelles, it appears that these objects have been found in other places also. Still more recently they have been seen on the island of Capri (*Bul. di paletn. ib.* 1906), where, as in the black earth (*Terra nera*) of Venosa, they are found with bones of animals of an extinct species and precede the great conflagrations caused by the volcanoes of the region. On the spread of the so-called Monster and Campigny types (see Colini, *ibid.* p. 203 *et seq.*) these stone implements had a large diffusion in Italy.

It is now certain that in the quarternian age dead bodies were placed in the caves of the *Balzi Rossi* (which although situated in Italy belong to the French sphere of influence), with rites which were still in use among the neolithites of western Liguria. (Consult Issel, in *Bullett. di paletnol. ib.* 1906, p. 102.)

B. Neolithic Period.—This age is characterized by stones which are polished and bored (hammers, axe-heads, studied principally by Colini) or finely retouched. Polished Italian axes are not usually of silican material, but the most ancient are of green rocks, later of various rocks. Green rock was for a time held to be exotic and a proof of the immigration of the neolithic people, but local strata of it are beginning to be found, and in any case such proofs of immigration do not hold good, because it is much more easy for the object itself to have traveled from tribe to tribe as among modern savages. Besides, this epoch has a beautiful and solid pottery made by hand and burned over an open flame as continued to be the case during the prehistoric age down to the introduction of the pottery oven and of the wheel which came with the Hellenic and Etruscan influence. But the neolithic Italian pottery is not only more beautiful and more solid in form, it is also more rich in ornamentation, which phenomenon is found also outside of Italy. A class of this pottery, indubitably neolithic, although the descendants of its authors afterwards possessed bronze, is better represented in Southern Italy, especially in the grotto of Pertosa, near Salerno. The neolithic period of Sicily, on the other hand, admirably represented by the deposit at Stentinello near Syracuse, is connected in form and ornamentation rather with occidental development and with the pottery of the *dolmens,* as Pigorini has already shown in connection with the famous bell cup of Villafrati. Megalithic monuments are especially known in Southern Italy and in the Italian islands.

The Italian neolithites lived in four ways: in grottoes; in fragile huts, the traces of which have been lost; in semi-subterranean huts (in which the part beneath the earth is found filled with human deposits, the so-called «hut remains»), and on pile structures. The arguments formerly advanced for distinguishing different peoples by the varying style of their dwelling places no longer hold good, in view of the facts; at times, however, a difference of age may be so distinguished. The dead were buried in caverns or in open ditches, mostly in a doubled-up position, sometimes on a bed of ochre from which the bones became colored, and which led to the belief in the practise of scarifying; this is no longer admitted to-day.

II. Metal Age. *C. Æneolithic.*—The population which occupied Italy and the islands during the neolithic age still remained when it began to possess and to cast objects of copper and then of bronze, or rather of an imperfect alloy as are the oldest ones. The rites and customs remained in substance the same, only becoming more developed. This has been amply demonstrated in the profoundly scholarly monograph of Colini 'Il Sepolcreto di Remedello e il periodo eneolitico in Italia.' It is noteworthy that in that epoch there were already sporadic cases of cremation, which shows how even primitive indigenous customs evolve and change without the intervention of new people. The singular position assumed by Sicily in this epoch is also worthy of note, with its typical small funeral grottoes cut in the rock, and its bichromic pottery painted with linear ornaments of savage taste.

D. Age of Bronze.—For this epoch also we have a scholarly monograph by Colini in Vol. V. of the 'Atti del Congresso Storico di Roma' (1904, p. 3, *et seq.*, reprinted with figures in the *Bull. di paletn. ib.* 1903 *et seq.*). With full understanding of his subject the learned author shows that all the regions of the Italian peninsula and the islands had their age of bronze with tools and with the evolution of a characteristic civilization, but which varied in different regions according to the different ethnical constitution of the inhabitants. In Sicily, as is shown by the splendid research work carried on and accurately described by Orsi, there is no doubt that the age of bronze was evolved without any intrusion of new ethnic elements, but by the superposition of related elements (Siculi), passing through the straits of Messina, upon the most ancient islanders of the same Mediterranean stock (Sicani), and it would have come about independently even without their aid. The Siculan age of bronze is particularly characterized by the multitude of funereal cells out of which lateral niches frequently open, by the introduction of certain architectonic principles, by weapons, instruments, and ornaments of bronze of a characteristic style, and by new commercial influences substituting «Mycenean» products for the pre-Mycenean which already appeared in the eneolithic period. Together with the facts of simple evolution, which would always have come about, there is a revolutionary one, that is, the sudden abandonment without decadence or decline of the singular bichromic eneolithic pottery and the brusque introduction of an achromic smooth pottery of an angular mould (imitation of metal), which almost instantly supplants the other. This fact, inexplicable by the simple theory of evolution, should be placed in connection with the historically certain event of the arrival of the Siculi in the island.

This opinion which the writer advanced (comp. 'L'Anthropologie,' 1897, p. 129 *et seq.*), and has held for some years, is in its turn confirmed by two facts: In Southern Italy the archæological stratum with the characteristic bichromic pottery of the Sicilian eneolithic period is lacking; also the neolithic pottery with decorations, of the type of Butmir and of Knossos evolves in the metal age into an achromic pottery of angular mould. The characteristics of this pottery are the high, broad handles with an opening. They are lacking in the Siculan eneolithic period, but are found in the Siculan age of bronze; and what is more important, in types which represent a typological or chronological continuation of those of the peninsula and which belong to a more recent strata also as regards certain chronology, and represent a stylization and geometrization, an exaggeration or an atrophization of the pure cave forms which persist in Southern Italy.

In this lower part of the peninsula, to judge from the studies of those who, like Orsi, know its material and that of the large neighboring island from personal observation, there can be no doubt that the ethnic basis is identical with that of Sicily, and that dwellings, graves, and implements are to be attributed to the same very old Siculan people who had occupied the peninsula from time immemorial. In Southern Italy, therefore, the connection with Sicily in civilization shows the influence of propinquity and not only the commercial one. The dwellings of Taranto, held to be analogous to the so-called *terremare* of Æmilia, in reality are not that, but are a Siculan village with houses or huts held up by piles planted in the ground, also surrounded in part by a stone wall continuation.

The neolithic period lasted tens of thousands of years; the tombs recently discovered belong to a very ancient age, and show primitive types. The dwellings, on the contrary, begin (as at Pertosa) in the recent neolithic period contemporary with those of Knossos and of Butmir, and end with the Mycenean period. The types of the vases of the dwellings of Taranto cannot be derived from those of the *terremare,* because they are older, as Brizio rightly observed.

Ascending the peninsula, there is found in middle Italy, especially in Latium and in Rome itself, at least from the end of the bronze age, as it were the meeting of two currents; on the one hand the partial persistence of the rite of sepulture and of similar types of implements, which are considerably more numerous than is generally believed; on the other the superposition of cremation and of certain new types or varieties.

In upper Italy, in which Æmilia may be included, we find cremation predominating. The theory according to which this rite was brought by a special invasion of pile dwellers of the age of bronze, is founded on an observation, on a hypothetical explanation of the same, and on a second hypothesis. The observation regards the difference between the material of the eastern or Venetian dwellers, and that of the westerners; the hypothetical explanation is that this difference was caused by the coming of a new people: the second hypothesis is that this new people began rapidly to descend the peninsula, preserving their customary living on pile structures, even on terra firma, far from the lakes, and becoming builders of the mound dwellings (*terremare*) of Æmilia. This theory has been opposed by Brizio in his 'Epoca preistorica,' and practically the distinction between the Western and Eastern pile dwellings was asserted without sufficient reason.

E. Age of Iron.—In Sicily the character of the preceding age remains with a few modifications, with the decadence of indigenous industries and with the increase of commercial influences in which the proto-Greek element takes the place of the Mycenean. The same thing takes place in Southern Italy of which the Campania has been studied in the last years more than other regions. Here, in two points, there have come to light new centres of prehistoric inhabitants who saw the dawn of Greek history and colonization, and also in their funeral rites as in their local industries, restricted chiefly to pottery, reveal the persistence of relations with the prehistoric caves, and with Sicily. The cemeteries of the valley of the Sarno are sufficiently enlightening in this respect, but much more important are the graves and the pre-Hellenic dwellings of Cumæ, which show us the origin of the Greek western colonies in a way very different from the conventional one, that of literary tradition and of pure history.

The rare and problematical traces of the Villanovian (Umbrian) civilization can point only to commerce. In middle Italy, especially in Latium, the traces of two ethnic elements still continue to be distinguishable, but in the end become confused with Etruscan influences and with those of Greek and Phœnician traders, and the whole is under way to that happy fusion which gave us Rome. Æmilia and pre-Etruscan Tuscany constituted the real sphere of Umbrian influence, whose largest centre was Bologna. For the classification of the Umbrian tombs of Bologna, for the traces of dwellings, and for the celebrated deposit of S. Francesco, consult, in addition to the works of Brizio, the work of Montelius, entitled 'La civilization primitive en Italie.' An important centre of antiquity with close affinities to that of Bologna is at Este.

The general type of all these tombs is an excavation (*Pozzo*) at the bottom of which are collected the ashes covered by a cinerary urn (*cistola*), protected still further by an enclosure of stone slabs, or by a wall of small stones which covers the excavation, in which is also the funeral outlay. Altogether this civilization differs and diverges widely from that of the south and of the islands; it is less Mediterranean and more European.

F. The Pelasgians.—There is no doubt that before the colonization movement of the classic Greeks, of Aryan language, there came, especially into the Italian peninsula, small waves of Oriental non-Aryan peoples; one of the last was that of the Messapi, who Herodotus makes come from Crete, and who have left us documents in an incomprehensible language, isolated from the other Italian dialects, and standing alone except for reminiscences of style, partly Mycenean, which they preserve in their implements. The last, strongest, and most surely Pelasgian was that of the Etruscans. The question as to whether the wall girdles, otherwise called Cyclopean, should be referred to the Pelasgians and as to what materials and people correspond with them, has not yet been answered. The excavations of Norba, which were loudly heralded as a discomfiture of the Pelasgophiles and which concluded by attributing the walls to the Romans, have in reality decided nothing, not having succeeded in finding a single tomb belonging to the city. More conclusive were the excavations carried out by the writer in *Atena Lucana,* not so much because they succeeded in obtaining very positive results as because through them it was shown that the Romans could not have constructed the walls. The material found there of the historic age goes back at least to the 7th or 6th century before the vulgar era, and the prehistoric age is also represented; but the implements collected were few, poor, and left many gaps.

III. HISTORIC AGE. *G. The Etruscans.*—Etruscan archæology deserves a separate article, but it is fairly well known through manuals of history, art and civilization. Here we will only mention that the theory of their descent from the Alps and of their ethnic unity with the so-called Italicans, is no more admitted, now the derivation of the Etruscans from Asia is recognized, together with the non-Aryan character of their language. Brizio has the merit of having proved this, but the credit of having reopened the question and coordinated it with more recent research is due to Modestov. A great progress in Etruscan studies is represented by the *Musco topografico del' Etruria* founded at Florence by Milani and described by him in a special illustrated publication which has the same title as the institute. Milani is publishing a remarkable collection of the principal monuments in the archæological museum in Florence with good plates, with an attempt at a religious explanation. To the most ancient Umbrian pozzo tombs with the right of incineration are added the rich chamber tombs, with the rite of sepulture, with characteristic architecture, art, and a directly imported industry, which the Etruscans developed in their new home, whereas the indigenous population progressed in its turn, but gradually fell under the influence of its rulers. A too violent reaction against the ingenuous exaggeration of the old archæologists, who too easily attributed everything to the Etruscans, fell into the opposite extreme of despoiling them of almost everything to attribute it to the Ionian Greeks. But now there is a tendency to return to the old standpoint; the important studies of Karo (in 'Studi e Materiali') return to the Etruscans the glory of the fine filigree and lace goldsmith work; we may also mention the studies of the writer on the origin of the Italic house whose first real architecture, which derives nothing from the hut of the age of iron, as Nissen believed, it owes to the Etruscans.

The existence of Etruscans in the Campania was, a few years ago, denied by some archæologists, but the question was reopened by the writer, who attributed to them the production of the black ware (*bucchero*) which is peculiar to the interior of Campania in all the southern regions, and is met only in Etruria; there was also found in old Capua an Etruscan inscription on terra-cotta, and lastly in Pompeii an old column of Etruscan art, preceding the oldest houses of the city, which are of a non-Grecian character, and calcareous stone, and whose construction as well as the regular map of Pompeii are also attributed to Etruscan art.

H. The Greeks.—The Hellenic colonies of Sicily and Italy also deserve a special article, but they also are well known and are discussed in all manuals of ancient history, of art and of Greek civilization. The oldest colony appears to be Cumæ, which furnishes a geometric pottery more archaic than that of Sicily, and in the foundation of which city the part taken by Æolian Kyme is confirmed.

The Greeks, as has been seen, occupied a place already inhabited by an indigenous population, as was also the practise of the Etruscans, and they organized it into the form of a city. Cumæ has furnished precious archæological material, which is now mostly collected in the National Museum at Naples, and which is still largely unpublished.

For the Greek colonies of Sicily we have exhaustive works, due in large part to the activity of Orsi. After the volume of Cavallari and Holm on Syracuse, our knowledge of the necropoli of that city and of their material has been greatly augmented by the numerous researches of which Orsi has given an account in 'Notizie degli Scavi.' On Megara Hyblæa we have a very good and complete study by Cavallari and Orsi, and others by Orsi about Kamarina (in 'Monum dei Lincei'). But the other Sicilian colonies have been little studied; likewise the Italiote colonies, except now Taranto, which also was neglected for a long time. Among the most important monuments left by the Greeks of Italy and Sicily are without doubt the temples, for which consult the work of Koldewey and Puchstein, 'Die griechischen Tempel in Unteritalien und Sicilien.'

Peculiar to southern Italy is the abundant production of decorated pottery, born under the Greek influence, but developed in large part in Italic cities or according to local spirit. Consult the writer's monograph on 'Ceramica antica nell' Italia meridionale,' of which Mr. Walters has given a good summary in his 'History of Ancient Pottery.'

I. The Gauls.—The Gauls have been met with by the students of the Transpadana, of Venice, and of Æmilia and Picenum. But their implements, of which there are scanty remains, are not at all beautiful, and are very little studied. We will mention only the works of Bianchetti on the sepultures of Ornavasso, of Castelfranco, and of Brizio on various necropoli of Lombardy and of the provinces of Bologna and Ancona.

J. The Romans.—In unifying Italy, the Romans unified also its civilization and its products. The great artistic character of the monuments in which the Romans developed the national elements, inherited from the Etruscans, also taking up Greek elements, passed beyond the confines of Italy. These arts are above all architecture, historic and iconographic sculpture, mural and decorative painting (into which was transferred much of Greek and Hellenistic art), and mosaics, of a more specifically Alexandrine derivation, but to which, nevertheless, Roman artificers knew how to give an individual development and character. In their archæological material we can distinguish diversity of province and of fabric, but no longer different civilization and peoples.

A large part of our knowledge of the intimate life of the best Roman period is derived from Pompeii (q.v.), which, buried by an eruption of Vesuvius in 79 A.D. has preserved better than any other source the little implements of daily use, the circumstances surrounding their use and their application. A special article would be necessary to treat of Pompeii, but the place is so well known that a mere mention will be sufficient in this summary. A special importance attaches also to the topography and history of the city which was the great crucible in which were fused and from which were diffused all the elements which constituted Roman civilization. The most important of the finds recently made in the Forum are the pre-Romulean necropolis and the now celebrated stele with the inscription in which, after much hesitation and contradition, a *lex regia* is now generally recognized.

K. The archæology of Sardinia deserves a separate treat on account of its special character.

Traces of the palæolithic age have not yet been discovered in Sardinia. The neolithic period is connected with the civilization of the western basin of the Mediterranean, hence with the Sicilian and with that of the Italian peninsula; likewise the eneolithic period to which must be attributed the *domus de janas* analogous to the oven grottoes of Sicily. An excavation recently completed by Taramelli at Anghelu Ruju, near Alghero (consult *Notizie degli Scavi,* 1904), not only shows us much better than before that period of prehistoric Sardinian archæology, but proves to us that the Sardinian æneolithic period is superior to the Sicilian, as regards its greater antiquity, the more notable progress and richness of its local industries, and its development of funeral architecture. It proves besides that the beautiful pottery of chalcolithic Sardinia is very closely connected with that of the megalithic monuments of France and Spain, without having any relationship to that of Sicily, which with its singular and wild ornamentation in two colors always remains more isolated and stands out as a distinct ethnical individuality, taking the word in its historical rather than anthropological sense, because the race is the same. At the end of this epoch begins the civilization of the wall period (*nüraghes*) and of the «tombs of the giants,» so typical of Sardinia and lasting without doubt many centuries, to come to a close at the time of the most ancient Phœnician colonization of the island. The more recent researches confirmed the opinion that the numerous and imposing Sardinian walls (*nüraghes*) which are not tombs, are fortified houses, often erected to guard passages which of themselves would attest to a period of greatness and power.

The discovery at Haghia Triada in Crete of large bronze tablets like those found some time ago in Sardinia at Serra Ilixi (comp. *Bull. di paletn.* 1904), gives occasion to mention the good services of the Italian mission in Crete directed by Prof. Halbherr, to whom are due noteworthy discoveries and full illustrations of them.

A worthy but hasty synopsis is the work of Pinza, 'Monumenti primitivi della Sardegna,' the conclusions of which, like those of Mayr ('Die Vorgeschichtlichen Denkmäler von Sardinien,' in Globus, Vol. 86, n. 8, 1904), should be corrected in the light of more recent discoveries.

But Sardinian archæology does not assume an individual aspect merely during the prehistoric age; it stands apart from that of Italy, even in the most ancient phases of the historical period. The superior and more advanced civilization of the Orient, the literary culture, is not represented either by the Etruscans or the Greeks, but by the Phœnicians; who did not put foot on the Italian peninsula and managed to maintain themselves in opposition to the Greeks in a part of Sicily, although they certainly did not represent the preponderating element. The study of Sardinian Phœnician antiquity was neglected for a long time. In the year that the writer directed the excavations he carried on researches on the site of the city of Nora, completing the data gathered by others and gave the results of his studies in a monograph published in Vol. XIV. of the 'Monumenti dei Lincei.' In that he has tried to prove that the first colonization of Sardinia goes back to the eastern Phœnicians, and not to the Carthaginians, and, both by analyzing the connections with preceding, contemporary, and subsequent civilizations, and by studying the primitive elements of Semitic culture and religion, he hopes to have established the basis for a historical synopsis of the Sardinian antiquity on a higher plane than any yet attempted.

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3. Italy—History of the Middle Ages. In the Middle Ages Italy took the first rank in the history of civilization. The differences that arose under the Roman rule between the Greek Orient and the Latin Occident continued in the new historical period and included also the religious beliefs, terminating in schism.

During the greater part of the Middle Ages, Italy, the seat of the Papacy and of the Empire, was the centre of political life of the Western Empires, and in the 14th and 15th centuries became the centre of culture.

The Middle Ages are generally supposed to begin with the year 476, because from this time till the reign of Charlemagne no Western prince held the imperial power. Nevertheless, during these three centuries the Empire did not remain in the West. It was a unique institution even when, under Diocletian and his successors, it was represented by several associated princes. After 476 it was again represented in the Occident as a sovereign power by the resident prince at Constantinople, the legitimate heir of Romulus Augustulus, this unity manifesting itself above all in the uniformity of the laws and of the consulships, with their similar official designations of the year, as long as it lasted.

Odoacer assumed the title of king out of regard for the barbarian army of Italy, but ruled only as an imperial functionary. His residence was at Ravenna, where he maintained the Roman form of administration with its complex organization, and its rigorous separation of the military from the civil functions. He ceded Provence to the Visigoths, conquered Dalmatia and Sicily, granted a third of the landed property of the Italians to the barbarian soldiery, where they took possession and settled, and thus through the application of the principles of hospitality there arose among those people the institution of private landed property.

Odoacer's reign was a short one. Zenone sent him against the Ostrogoths under Theodoric, who desired fresh conquests. Theodoric acted as an imperial functionary. He substituted his own rule for that of Odoacer, resided at Ravenna, ceded to his soldiers the third of the Italian lands wherever the army was stationed. Thus continued the imperial sovereignty in ideal and judicial order; for the Consulate continued, and as long as the Ostrogoth kings were in power, they published edicts and not laws, and an edict came within the limits of a magistrate's power, but they in reality ruled as independent sovereigns.

Theodoric endeavored to amalgamate the Goths and the Romans. He maintained, with slight alterations, the tributary and administrative system of the last years of the Empire, and in compiling the edicts, obligatory on both peoples, he established a common and general legislation. But this policy failed, especially by reason of the diverse religions of the two nations. His failure to accomplish these ends inspired him to violence against the Romans. He was more fortunate in his external policy, for he restrained the power of Clodovicus, reconquered Provence, and maintained a moral hegemony over some of the Germanic kingdoms.

He was succeeded by Atalaric under the regency of his mother, Amalasunta, who desired to govern in accord with the Emperor; but when Atalaric died the National party, opposed to the Romans, forced her to associate with her cousin, Theodatus, who had her assassinated, thus giving to Justinian an occasion to interfere in the affairs of Italy, and Belisarius, having conquered the Vandals, was commanded by the Emperor to march against Theodatus, thus beginning a war that lasted 20 years, during which the kings Vitiges, Totila and Teia, and the Byzantine generals, Belisarius and Narsete, were conspicuous by their valor. At length Italy passed under the direct jurisdiction of Justinian, who rehabilitated it by Pragmatic sanction. Provence was reconquered by the Franks.

The Greek domination in the whole peninsula lasted but a short time. In 568, or thereabout, the Lombards invaded Italy, followed by adventurers of various races, and they continued to extend their dominion, but could not conquer the whole peninsula. Italy lost its political unity and the Roman division of it into provinces. A Lombard Kingdom was formed. Italy in part was divided into Duchies, of which later on Pavia was the capital, and its cities, the residences of dukes and *gastaldii,* became the centres of the new administrative divisions. Italy continued to be in part a Byzantine province, governed by an exarch in Ravenna, and formed of scattered regions, almost all on the coast, which slowly reorganized as military circuits.

Meanwhile Gregory the Great gave to the Roman Church the priority over all the other churches of the Occident, and she thus rose in reality to be a universal institution. Gregory II. defied the decree of Leo the Isaurian against the worship of images, and although the dissension did not go beyond the limits of a religious controversy and the popes remained loyal to the Emperor, as they preferred his rule to that of the Lombards, the papacy became conscious of its power and under Zachary intermeddled in the nomination of the kings, consecrating the substitution of the dynasty of Pepin le Bref for that of the Merovingians.

The Lombard Kings of the most importance were Alboino, Autari, Agilulfo, and then through the means of Theodolind began the conversion of the nation to Catholicism;—Rotari, who published the Edict, a territorial law binding to both conqueror and conquered; Lintprando, Rachi, Astolfo, Desiderio. The latter two strove bitterly with the popes; Astolfo occupied the Exarchate and threatened Rome. Stephen appealed to Pepin who confiscated Astolfo's conquests and gave them to the Church. In this way the Pope arrogated to himself the domination in Rome, in the Exarchate, and in Pentapolis, in the name of the jurisdiction of Saint Peter. Desiderius quarreled with Adrian I. who appealed to Charlemagne. The latter conquered the Lombard kingdom except Beneventum, and renewed Pepin's donation to the Church. The Lombard kingdom, however, maintained its individuality, its union with the kingdom of the Franks being only personal and dynastic.

Charlemagne made many campaigns into Italy; and little by little, he substituted Frankish counts and marquises for the Lombard dukes, giving them authority to preside at the tribunals and in the administration, and to proclaim a conscription in time of war. He obliged the dukes of Beneventum to recognize his sovereignty, and in the year 799 obtained from Pope Leo III. the imperial crown, this dignity having lapsed in the Orient at the death of Constantine VI., and the Pope was only too anxious to assure to himself the protection of the ruler of what was now nearly the whole Occident. Thus the Catholic world had two universal institutions: one the Papacy; the other, the new Empire, consecrated by the Pope.

Under Charlemagne's weak successors the Carlovingian monarchy became divided into several kingdoms which were frequently at war between themselves. «Charles the Fat» re-united them, but in 887 he was deposed. The monarchy was then divided into five states, one of which was the feudal kingdom of Italy. With the weakening of the sovereign authority the local governments instituted by Charlemagne, were transformed into hereditary principalities. Thus arose the feudal aristocracy, the chief cause of the weakness of these monarchies. The feudal kingdom of Italy was continually disturbed by this proud and rebellious nobility, until through the instrumentality of Otto I., in 952, it became a fief of the German crown. During this time the imperial throne was often vacant.

Meanwhile the Duchy of Beneventum had been divided into the Lombard states of Beneventum, Salerno, and Capua. The Greeks, through the machinations of the Arabs, lost Sicily, but reconquered a great part of Apulia; Naples, Gaeta, and Amalfi had become autonomous duchies under the suzerainty of Byzantium. Rome was in a state of anarchy through local factions. Lacking imperial aid the papacy lost political authority. The islands of Venice became autonomous states under the suzerainty of Byzantium. Towards the end of the 7th century they formed a duchy which at the beginning of the 9th century had its capital at Rialto, an island that thus imposed its preëminence on the rest, and later took the name of Venice.

Otto I. in the year 961 assumed the government of the Italian kingdom, and in 962, received the imperial crown at Rome. The Pope had need of protection against the adverse faction, and the king rose to the highest political supremacy. The coronation with the iron crown —a custom introduced by Berengarius I.—and the coronation as Emperor became from thenceforth essential, consequent and complement to the title of King of Germany; but the title to universal political supremacy came to the Emperor through the Pontifical consecration, and this stirred up bitter strife in future times.

The policy of the House of Saxony (Otto I., II., and III., and Henry II.) towards Italy was determined by three aims: to weaken the power of the feudal laity by placing it in opposition with the feudal ecclesiasticism; to establish the sovereignty over Rome by making the pontiff a vassal; to conquer Southern Italy. With the first was associated the granting of the rights of supremacy and administration to certain bishops; hence the temporal jurisdiction over cities, and its consequent restriction of the power of the count, which power was thus restricted to the county or state, and sometimes this episcopal jurisdiction extended to the whole county, and thus its limits coincided with those of the spiritual jurisdiction. As for Rome, its authority was uncertain, as it varied according to the power of the Emperor; and in Southern Italy the expeditions sent thither had been unsuccessful. The succession of Henry II. in Italy was contested vainly by Arduino, assisted by the feudal secular party.

The House of Franconia succeeded the House of Saxony, in the person of four princes, Conrad II., Henry III., IV., V. Conrad II. placed the minor feudal secular party in opposition to the feudal ecclesiastical party, granting to the former the right of heredity, and the inalienability of tenure, by this means strengthening the middle ranks and decreasing the power of the great feudal ecclesiastical and secular parties. During the minority of Henry IV. (through the efforts of Hildebrand) the Church began its emancipation from subjugation to the Empire, and rendered itself independent of the imperial power and of the civil factions, by entrusting the election of the Pope to the College of Cardinals.

When Hildebrand became Pope, Gregory VII. instituted a political theocracy and formulated the principle that the Pontificate held supremacy over the Empire, and consequently over all Catholic powers, spiritual and temporal; and as Henry IV. pursued the traditional policy of the Emperors, which was in direct contradiction to that of the Pope, there arose between the two institutions the most characteristic contest of the Middle Ages. Then it took form in the question of ecclesiastical investiture, for the Pope would not permit to the secular princes this concession. This contest lasted during the reigns of Henry IV. and Henry V., and came to an end at the concordat of Worms, which did not determine the chief question—which of the two powers was supreme—but only the accessory question of investiture, establishing exclusive right of the Pope to spiritual investiture, and that of the King to temporal investiture.

These dissensions were of utility to the Lombard cities. Owing to the comfortable, peaceful life they enjoyed because of the reconstruction of the walls, and the somewhat mild rule of the episcopal government, their population increased in the 10th and 11th centuries, and the middle ranks, whose party had been strengthened by Conrad II., formed new social classes, which resumed the profession of arms. During the contest for the rights of investiture the urban aristocracy, alone, or combined with the wealthier portion of the bourgeoisie, acquired the political rights of the local authorities. Thus arose a new civic order, the Commonalty, who attained the position of consuls and the *consilia.* But all this was done without the sanction of the sovereign, and therefore was not as yet a legitimate institution.

Meanwhile, in Southern Italy, in the 11th century, arose the Norman Principalities of Drengot and Altavilla. These, under Robert Guiscard and Ruggero, took Apulia and Calabria from Byzantium, Sicily from the Arabs, subjected Salerno and Beneventum, and in order to legitimize their conquests received investiture from the Church. Ruggero II. completed the conquests by the subjugation of all the other states of Southern Italy and of Abruzzi, and obliged the popes to recognize his royal title.

With the fall of the House of Franconia there arose in Germany a dynastic contest between the Guelphs (House of Bavaria) and the Ghibellines (House of Suabia) for the succession to the throne. Lothair of Saxony succeeded Henry V., then came Conrad of Franconia, then Frederic Barbarossa. These wished to recover their rights as kings of Italy and as Emperor; whence their contest with the Commonalty of Upper Italy who formed, in defense of their autonomic authority, the first Lombard League, and with Pope Alexander III.—for at that time, two popes having been elected by two parties in the College of Cardinals, King Frederic thought he had the right to suppress the schism and thus he reopened the question of supremacy between Pope and Emperor. He made peace with the Pope at Venice in 1177, but even then the only question settled was that of the legitimacy of Alexander. He came to an agreement with the Lombard League at Constance in 1183, and in this way the Emperor recognized the autonomous authority of the Commonalty with the reservation to the sovereign of the right of investiture of consuls, and the right of Appellate Jurisdiction. The Altavilla family being extinct, Henry, son of Barbarossa, obtained the throne of Sicily by law of descent; at the death of his father succeeded him, but died in 1197, leaving a son four years old, the future Frederic II.

In 1198 Innocent III. rose to the papacy and resumed the policy of Gregory VII. and marked the apogee of the theocracy. The Guelphs and Ghibellines fought for the succession in Germany; the former being victorious under Otto IV., assisted by the Pope. But the usual dissensions arose between Otto and Innocent; the Pope placing the king of Sicily, Frederic, in opposition to the Emperor. Frederic was victorious, and obtained the imperial crown from Honorius III.

The Commonalty, meanwhile, had become almost the chief political party in upper and Central Italy; the counts of Savoy, the marquises of Lunigiana and Montferrato and some other princes being the few that remained of the feudal party. The rights reserved to the sovereign by the Treaty of Constance were already denied; the Commonalty had become an independent republic. It extended its territory to the smaller neighboring communes—which it treated as subjects—to the rural communes and to the feudal proprietors of the country, obliging them to reside temporarily in the city.

There then arose in the Commonalty new factions with the ancient name of Guelphs and Ghibellines, but impelled by local interest. The conquered feudality and the increasing power of the lower orders took part in these discords, but neither side gained a definite victory. The economic condition being thus imperilled by the instability of the government and continual wars, the idea was formed of substituting for the consuls a governor, *potestas,* of the order of cavaliers, chosen from other cities, and foreign to the local factions. This was accomplished by degrees. At first by an unusual method—suspension of the consulate; then, in the first ten years of the 3d century, by stable and regular method.

The new provision proved inefficacious, because the new authorities lacked the material strength necessary to overcome the factions. Thus sometimes this governor was drawn into their discords; and the people formed in several cities a commune of their own, with a captain of the people at its head. Under similar conditions, a party requires unity of action and one ruler. There was at the head of this one a leader, of an illustrious house, who sometimes deserted his own class to defend that of the people. Thus, the factions became identified with their head, and the dissensions between the two parties became dissensions between rival houses. When the head of the triumphant faction, who might also be the mayor himself or the captain of the people, held an unlimited tenure of the urban authority, there should be a new government—the *signoria,* who represented a necessary consequence of the new political and social conditions of the Commune. They do not represent a special official but the sum of the political power of the government. The first *signoria* arose in the latter half of the 3d century, in the form of a provisional dictatorship bound to the interests of the faction; later on, they became more stable, for the people had lost the consciousness of their rights, and, by the introduction of a mercenary soldiery, the practice of arms; and also owing to the fact that the *signoria* promoted the interests of their own people.

Frederic II. ruled according to Barbarossa's methods, and consequently the dissensions with the papacy and the Communes led to the formation of a second Lombard League. The war was ended in 1250 through the death of the Emperor, and without any treaty. The Italian cities maintained their independence. The imperial power remained vacant until 1312, in which year it was resumed by Henry VII., but it had become a mere shadow of its former supremacy, an honorary position conferred on the King of Germany after his coronation at Rome. The papacy took from the last Suabian princes (Conrad and Manfred) the kingdom of Sicily in order to bestow it on Charles of Anjou, who was not successful in his contest with the empire; thus even the excellent mind of Boniface VIII. had not the power to re-establish the theocracy, now quite incompatible with the intellectual and moral development of the laity. By degrees in the political order the papacy was transformed into an elective principality, restricted to one portion of Italy.

After this period the history of mediæval Italy became the history of its particular states and should be studied separately in separate articles. Here the history is only treated of in the whole.

The popes, not feeling secure in Rome, moved the Holy See to Avignon. On the re-establishment of the pontifical authority by Albornoz into the Ecclesiastical State, they returned, but the Western schisms weakened their authority. At length they took direct and real possession of the Roman Commune—which became an administrative entity—and exercised an uncertain sovereignty in the other portion of the Pontifical States.

The Kingdom of Sicily, their fief, by the war of the Cicilian Vespers, was divided into two kingdoms: Sicily under the kings of Aragon, and Naples under the rule of the line of Anjou; then under the Durazzo; and lastly, under Alfonso of Aragon, who left Sardinia, Sicily and Aragon to his brother John; Naples to his natural son Ferdinand. Genoa, mistress of Corsica, destroyed the naval power of Pisa, and for its own commercial interests waged a bitter war against Venice; after this being weakened by internal discords she passed under the protectorate of Milan, or of France. Florence conquered Arezzo, Pistoia, and Pisa. In 1400 the Medici, without any title, or external mark of authority, became the arbiters of the Commune. In Tuscany the *signoria* insinuated themselves like a sporadic growth; and the Commune continued as before in Florence, Siena, and Lucca. Venice, mistress of the Adriatic through the domination of Istria and Dalmatia, extended her dominion into the Orient by the Fourth Crusade, and in the Occident her conquests included all Venetia and part of Lombardy. In upper Italy the «higher signoria» placed the «minor signoria» under subjection. The princely family of Visconti arose in Milan and conquered almost all Lombardy, and for a time other regions, and in 1395 obtained the title of dukes. When the Visconti family was extinct, Milan was ruled by the Republic Ambrosiana; then she again became a dukedom under the Sforzas. The House of Savoy extended its dominion in Italy as far as the Sesia, and under Amedeus

VIII., in 1416, rose to the ducal dignity. All these states, although prosperous in respect to political economy and culture, were weak on account of the grave defects of their military and political institutions, which finally brought their decadence in modern times.

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4. Italy—The Renaissance (14th to 16th Centuries).—*Historical Introduction.* Chronologically considered Italian history from 1300 to 1599 may be divided into the Age of the Despots, the Age of Invasions, and the Spanish-Austrian Ascendency, and the beginning of the 14th century witnessed the bitter struggle between Guelfic democracy and faithfulness to the Pope arrayed against Ghibelline aristocracy and loyalty to the Emperor. Every Italian city, every hamlet, felt the strife. Every city was divided against itself and there could be no tranquillity until one half of the citizens had driven the other half into exile, while from these battlements floated the banners of the partisans of the Empire and from those the banners of the partisans of the Church. Soon the captains on each side, men of noble families experienced in war, took the lead in the struggle and finally became masters of the cities. The Estensi made themselves lords of Ferrara, the Torriani masters of Milan, the Della Scala dynasty arose in Verona and the Malatestas at Rimini. In Tuscany the strongly entrenched Guelf party long held the nobles in check, and for a time the Communes remained free from hereditary masters. But wherever they obtained a foothold these tyrants annihilated both parties for the sake of peace and their own advantage. The tyrant won favor by levelling down the classes and favoring the multitude. Italians tiring of the fury of these civil wars gradually settled down and turned to home comforts, arts and literature, content to pay foreign mercenaries and adventurers to do their fighting for them. These mercenary troops hired out to the highest bidder and sometimes fought alternately against and in defence of the same city. After 1350 these foreign mercenary soldiers were supplanted by the Italian mercenary, and Alberico da Barbiano, a nobleman of Romagna, formed the first exclusively Italian company. Henceforth Italian battles were fought by Italian paid troops under Italian generals (Condottieri). But these soldiers were not patriotic; they sold their swords for money and fought for the highest bidder. Naturally they were not anxious to die or even to kill in a cause in which they had no interest, and battles became almost bloodless and diplomacy and skill were the requisites of victory rather than courage. Intrigue and treachery were rife and military vigor ceased to exist in Italy.

Between 1305 and 1447 approximated self-government and five great powers were established in the Peninsula: The Papacy, the republics of Venice and Florence, the Duchy of Milan and the Kingdom of Naples. In southern Italy Joan, the childless wife of four husbands, succeeded her grandfather in the kingdom in 1343 and was murdered in 1382 by Charles of Durazzo—who reigned five years. He was followed by his son Ladislas in 1387 and by his daughter Joan II. in 1414, and in 1435 Alfonzo (called the magnanimous) combined for the first time since 1282 the crowns of Sicily and Naples. The 23 years of Alfonzo's reign were the most splendid in South Italian history. The greatness of the Visconti family, Dukes of Milan, date from John, archbishop and lord of Milan, who died in 1354, and after a succession of incompetent and assassinated aspirants for the throne in 1378 Gian Galeozzo, his son, became duke and the most powerful and richest of the Italian despots, who pushed his dominion to the verge of Venice, subjugated Lombardy and attacked Tuscany, when suddenly he was cut short by the plague in 1402.

After the expulsion of the Duke of Athens in 1343 and the great plague of 1348 the common people of Florence rose against the merchant princes, and the necessities of war and of state soon placed Florence in the power of an oligarchy, headed by the great Albizzi family; Pisa was enslaved and Florence gained access to the sea. But the Medici gradually gathered strength and in 1433 came to open strife with the Albizzi and finally won.

When the popes settled in Avignon they lost their position as Italian rulers, but when Gregory XI. returned to Rome and when Urban VI., elected 1378, put an end to the exile, the popes again became Italian sovereigns.

Martin V. (1417-1431) and Eugenius IV. (1431-1447) resided principally in Florence, but Nicholas V. before his death in 1455 had firmly established the papacy in its temporal power.

Through the Middle Ages it had been the policy of Venice to refrain from conquest on the Italian mainland, and the first important entrance of Venice into Italian affairs was when in 1336 the republics of Florence and Venice formed an alliance against Mastino della Scala; and from 1352 to 1381 Venice and Genoa contested the supremacy of the Mediterranean, when Venice finally, though after many reverses, was victorious. In 1406 they added Verona, Vicenza and Padua to their possessions, and during the long Dogeship of Francesco Foscari (1423-1457) attained the height of its prosperity.

The year 1492 when Lorenzo Medici died, opened for Italy the age of invasions. Soon Spanish, German and French armies hastened to occupy her territory. Each petty Italian potentate strove for his own private advantage and there was no united resistance to the invaders. Though Rome and Florence rejoiced, the election of Leo X. as Pope in 1513 brought no repose to Italy, and in 1527 occurred the famous sack of Rome by German and Spanish soldiers. But there was a great Emperor Charles V., and he in 1529 entered Italy and received the Imperial crown in Bologna and achieved the conquest of the entire peninsula, and from 1530 to 1796 Italy ceased to have a history of her own. THE EDITOR.

THE ITALIAN RENAISSANCE.

To the most genial of the great events recorded by history since the age of Augustus, was given the expressive name of Renaissance. Born of a profound intellectual movement, which aroused throughout almost all Europe a love for and research into classical antiquity, the Renaissance rendered human thought active and paved the way for modern civilization and culture. Except in the Middle Ages the study of the Classicists had never been less intellectually understood than at the beginning of this period. Religion, art and literature were all in a state of transition. Gradually Europe shook off the night of the dark ages and rebelled against their gloom. It was a beneficent movement, though sometimes in drinking deep draughts from these cups of classic learning, of pleasure and of freedom from superstition and ignorance, these drinkers became inebriated with the strong wine. The long duration of this transition constituted the Age of Renaissance, the 14th, 15th and 16th centuries—an age which, according to the common acceptation, was no longer mediæval, and not yet modern. It had its own peculiar characteristics, resembling in some respects the later Alexandrine Era; and in others, the splendid Age of Pericles; and it was distinguished by a marvelous activity in the world of letters and art, and in the development of universal genius and of heroic women, or *viragines,* as they were called.

Famous names are exceptionally numerous, and the importance of each increases the difficulty of making a choice and causes confusion in summing up results.

Add to this the preëminently individualistic character of the Renaissance, due to its origin; the intricacies of greater and lesser warlike undertakings, tumults of the people, the bloody greed of the princely families, the rebellions of the popes, religious discords and contests, and one may form some idea of the obstacles overcome.

The causes which impelled these seekers to look to the past for the motives and the means of progress were many, and diverse. The defects of actual civilization were apparent and the natural evolution of ideas revealed to human reason a new point of view from which to contemplate the varied phenomena of the visible and of the invisible world. As the 13th century drew near, the imminence of antiquity made itself more constantly felt. This revival began by lifting the veil from the human form. Niccolo Pisano, in a very decided manner through sculpture; the author, whoever he may be. of the 'Carmina Burana'; Cerminate, Albertino, Uzzato, and other literary contemporaries of Allighieri (1263-1321) carried forward the movement; as did also the masters who inspired Dante and Petrarch. A debt is also due to the rhetoricians and scientists of Byzantium and to the Hellenists of Sicily and Calabria, whence came Barlaam who gave the initiative to Petrarch and Boccaccio in the study of Greek.

We now come to Dante. The political and religious ideals of Dante Allighieri are almost identical with those of Petrarch. The art which the most celebrated poet displayed ('Purgatorio XII') belongs to another age, and possibly he got his inspiration from the columns of Rome and the sarcophagi of Pisa and Florence. No one observed and felt nature more than he did, and what he said about it came with the meaning of oracular thought; he loved fame, sought solitude, individualized himself; virtue and attributes which, combined, distinguished the man of the Renaissance from the man of the Middle Ages. Besides Beatrice, Allighieri had as a guide, Virgil, and, occasionally, Statius; Guido Cavalcanti was his friend whose doubts or convictions he shared in the nights when, wandering through the dense forests, he had not yet left the course from which none ever come out alive. Separated from the pleasing and cold severity of the schools, Dante belonged to the Renaissance. But with him it has not the graceful coloring, almost like the breath of dawn, which already began to tinge all literature—the culture of the human race. This was made evident for the first time in the life and in the works of Petrarch, the father of Humanism, who sang the praises of Laura. From the appearing of Petrarch, or, to fix the date more definitely, from his sojourn in Rome in the year 1337 until the time of Queen Elizabeth (1558-1603), Humanism and Renaissance are more or less synonymous. Some of those who followed the movement were realists; but since the philologist has prepared, or prepares the way by which we penetrate into the treasures of antiquity, and become acquainted with its principal actors and rulers, he is a Humanist by autonomy.

The intellectual culture of the newly awakened civilization began after Petrarch had abandoned his scholastic methods of reasoning and the Dantesque scourge had slipped its leash and made use of ridicule to demolish scholastics, astrologers, physicians, and other charlatans, and placed the ignored Plato above the dominant Aristotle. And it did not stop here; Florence, Arezzo, Bologna, Ferrara, Venice, became also the seats of the Renaissance. At Naples, the king of preachers, converted by Petrarch; in Milan, the Archbishop Giovanni Visconti, his host; in Piacenza, Mantua, Padua, Verona, the Da Correggio, the Gouzaga, the Da Carrara, the Della Scala, friends of Petrarch; in Avignon, popes not indifferent to the new philosophy, his generous admirers, formed the first nucleus of that company of «Marcenases» of the Renaissance, numerous even in the 14th century, innumerable in the succeeding century.

Already the movement was becoming ever more intensified; little by little the faint voice of the Classicists was revealed, and the ruins uttered their voice, and the treasures were brought forth from the cloisters and the church. At the end almost of the 1st century of Humanism (about 1414), those persons who were only moderately cultured were already animated by the spirit of the new age, and classical culture had become an indispensable requisite to all who loved civilized society.

In the middle of the 14th century all minds were so well disposed that the design of Cola di Rienzi, so nobly conceived, seemed feasible. In Italy, Humanism had from the beginning patriotic characteristics. It is worthy of note that precisely in the 14th century there arose in Sicily a Latin faction in opposition to a foreign faction—the Catalana; Alberigo da Barbiano with an Italian character in a company of adventurers till then foreigners. The whole of Italy, either by money or by peaceful and unopposed usurpation, acquired political independence. Humanism, meanwhile, invaded the pontifical domain; first in Avignon, with the friends of Petrarch—Zanobi da Strada and Francesco Bruni; thence (when the schism was almost at an end), in Rome, where it soon mastered the papal secretary. In Florence and Bologna, with the Visconti and the Estensi, and all through the too numerous states of the Peninsula, convents, bishoprics and universities with more or less caution opened their gates to Humanism. At the time of the Council of Constance (1414-18) the Renaissance received another impulse from the many and happy discoveries of Poggio, and subsequently from those of other unwearying researchers of the Codici. They filled up deplorable gaps and improved our knowledge of classical civilization. The Humanists of the recent school diffused the knowledge of Greek civilization from the rostrum, searched for, guarded and preserved Greek *Codici;* excavations and travel enriched with inscriptions and the results of precious labor the museums which were then being established. Ciriaco Anconitano and Aurispa da Noto made themselves famous; the former by his collection of inscriptions, and the latter by his researches for Codici; while Flavio Biondo, of Forli, with Poggio, the Florentine, restored archæology. Then for the second time the favor of princes and republics, of universities, cardinals, magnates was sought in order to obtain the rarest antiquities, the best *Codici.*

In 1447 Humanism issued triumphant, amid universal plaudits and rejoicing, in the very chair of St. Peter (Tommaso Parentuccelli Nicolaus V.). In 1458, the poet, whom an emperor had crowned with laurel, assumed the name of Pius II. (Enea Silvio Piccolomini). In the 15th century it had, besides the popes, the splendid protection of Alfonso the Magnanimous, of the Estensi, the Sforza, the Malatesti, the Gouzaga, and the Montefeltro; but at the head of them all stood Cosimo di Medici, and Lorenzo di Medici the Magnificent, who were the most sincere lovers of Humanism.

At the very time that the students of moral science approached the thought of the classicists, the artists demanded of antiquity the secret by which they might produce artificially the fascination which the beauty of nature exercises over the human mind. Although their attempts were not always successful they arrived at the first transformation of mediæval art, which is distinguished by the glorious names of Donatello, Squarcione, Leon Battista Alberti. All the artistic manifestations of human sentiment became modified, from the greatest to the least. There is the Humanistic literature and the literature of the Renaissance. At this time, Humanism had reached its apex. Humanism brought discord into the camp of the Latinists. All minds were partisans of Plato or Aristotle. At Padua, Averroism began to revive. The Middle Ages also seemed about to revive. The orators became rhetoricians; writers sometimes became awkward imitators; canvases and walls became peopled with fauns; and the philosophers in reviving the forms of ceremonies no longer understood made themselves an object of ridicule to the Humanists themselves. The reaction came, and even before Savonarola planned his Catholic reform other men in the Church had set out to fight the spirit of the Renaissance, which now entrenched on the very foundations of the religion of which they were the ministers. At the same time sincere Humanists reacted not so much against the Boccaccio sincerity as against the obscurity which never was, and never can be the lot of any art.

The need was felt of new fields outside of the trodden paths. The broad philosophy of the Florentine Academy in reconciling classicism and Christianity, was one of the most characteristic examples of this moral necessity. Other philologers began to explore the Semitic literature; they studied Hebrew and Arabic. Contemporaneously, the Italian language, at once the child and the means of civilization, became reinvigorated, and resumed the position that the ages had awarded it. Finally, Pico della Mirandola formulated the new Norm (programme) affirming the rights of science, and the necessity of learning to know man in all the manifestations of his thought—the thought of the schools, which Humanism had overthrown. On this point the action of the revival was logical and complete; eclectic modern thought was born; a new era commenced. We are at the discovery of a new world.

Undoubtedly classical thought injured the religious fabric of Christianity in the minds of cultured people; but the new thought did not renounce the virtue of Christian morality. It is strange that the fact has not been taken into account that in Italy the only persons who were interested in Grace and Justification were those very Humanists of the 16th century, and the legitimate descendants of the Humanists of the 15th century. And in the very centres of the first period of Humanism those philologers who apparently enjoyed gossip and pleasure were troubled by the same doubts as ourselves, which like great breakers break here and there, from pole to pole. The two or three Obediences; the disposition, the arrest and the condemnation of a fugitive Pope; the long contest between the Council and the Pope, while they attacked the ecclesiastical question and forced the potentates of the Catholic world to support and remodel, they placed the thinkers of the day in the identical conditions in which modern thinkers are placed by victorious science. That is why the Humanists faced the same questions which to-day preoccupy mankind. In their writings breathes the modern thought, and the Renaissance has for half a century attracted the special attention of students who, when they have collected all that has been published regarding that period, will have a rich and precious library.

The action of Humanism was beneficial in other ways. Many ills for which it is held responsible were the effect of very remote causes; and the Renaissance, in which Humanism played so large a part, is one of the glorious victories of civilization. To the lasting conquests that the present age owes to the age of the Renaissance, must be added another, which is that science at that period entered the path which has led it to the wonderful discoveries of our times. The study of anatomy first obtained a secure footing in the school of Bologna. In Florence, Toscanelli paved the way for the triumph of Christopher Columbus in the very year that the Portuguese discovered the African coast. Navigation became a science, opened the unexplored ocean, and Europe became the watch-tower of the civilization of the world. Meanwhile, independently of Humanism, but always in this 15th century of its activity, printing began to diffuse knowledge and to become the most efficacious means of promoting the brotherhood of humanity! See RENAISSANCE.

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5. Italy — Modern History (1492-1815). *Foreign Intervention* (1492-1530).—The great Italian historian, Francesco Guicciardini (1483-1540), begins the history of his time by declaring that Italy was never so prosperous as towards 1492. Certainly the economic and intellectual condition of the Italian people was then far superior to that of the rest of Europe; but they became weak from lack of unity. Whilst France and Spain organized powerful kingdoms, Italy remained divided into a number of States; none of which was strong enough to unite to itself the scattered portions of the peninsula, though each was sufficiently strong to hinder another from carrying out the great work of unification. Italian policy at that time consisted in a continued series of combinations to maintain a kind of equilibrium, always difficult and unstable, between the five large States of the peninsula, Milan, Venetia, Florence, Rome, and Naples.

The Lord of Florence, «Lorenzo the Magnificent,» specially distinguished himself among his contemporaries by the great tact with which he prevented the breaking out of discords among various Italian princes; but he died in 1492 and at his death the political equilibrium was suddenly disturbed.

The first dissensions arose between the court of Milan and that of Naples. Then the young king of France, Charles VIII., who as heir of the House of Anjou—the eternal rival of the House of Arragon in Naples—had a right to the Neapolitan crown, descended on Italy to conquer it (1494). He crossed the peninsula without meeting any opposition, except at Florence, where Pier Capponi with his energetic words of defiance induced the French king to modify his demands. The Arragonese in Naples did not know how to organize a serious resistance; and on 22 Feb. 1495, Charles VIII., without opposition, made his solemn entry into Naples. The extraordinary ease with which he accomplished this conquest alarmed the Italian princes. The Duke of Milan, Ludovico Sforza, called the Moor, who had invited Charles VIII. to this undertaking, now began to organize a league against the French, which was joined by the republic of Venice; by Pope Alexander VI. (Borgia); by the King of Spain, Ferdinand II., Lord of Sicily and Sardinia; and by the Emperor Maximilian. Thus for the ancient Italian equilibrium they began to substitute the idea of European equilibrium. At Fornovo on the Taro, on 6 July 1495, a furious battle was fought which cost the French army many lives, and the allies boasted a victory. Charles VIII., however, succeeded in escaping and returning to France. But the few troops left by him in Naples were speedily driven out, and the Arragonese dynasty was once again established on the throne.

Whilst Charles VIII. was marching into Italy, the rule of the Medici had been overthrown in Florence, and that city reorganized its old republican form of government. A Dominican Friar, Girolamo Savonarola (q.v.), of Ferrara, at that time exercised a great influence over the people of Florence. But he aroused terrible enmity when in his holy enthusiasm he endeavored to improve Christian Society, inveighed against the scandals that the Court of Rome, represented at that time by the Borgias, furnished the world.

The Pope ex-communicated him, and the discords in Florence furnished him a pretext for getting rid of the friar. On 23 May 1498, on the Piazza della Signoria, in Florence, Girolamo Savonarola, and two of his devoted followers were hanged, and their bodies burned.

A new expedition to Italy was meanwhile preparing in France. The new king, Louis XII., being descended from Valentina Visconti, claimed his right to the dukedom of Milan, and to make his conquest more sure, he entered into an alliance with the Venetians, promising them a portion of his territory. Ludovico Sforza, the Moor, betrayed by his Swiss mercenaries, was made prisoner at Nevara, 10 April 1500, and taken to a castle in France where he remained until his death.

Once Master of Milan, Louis XII. considered the conquest of Naples, and to ensure success he made pact with Ferdinand, King of Spain, that they should together attack Naples, and divide the territory between them. The conquest was easy (1501); but in the division of land there arose disputes between the victorious monarchs. During the war which followed, there occurred the celebrated tournament combat between 13 Italians and 13 Frenchmen, in which the palm of valor was awarded to the Italians. The war terminated in a sudden rout of the French on the banks of the Garigliano, 28 Dec. 1503. The Spaniards remained masters of all of Napoletano.

Whilst the two principal regions of Italy, Lombardy and Napoletano, thus passed under foreign domination, in central Italy the family of the Borgias attempted to establish a court and sovereignty.

One of the sons of the Pope, Cæsar Borgia, called Duke Valentino, of the dukedom of Valentinois, which was ceded to him by the King of France, undertook to overthrow the ruling families in the cities of Romagna and the Marches. By most cruel and dishonorable methods he captured Imola, Forli, Cesena, Pesaro, Rimini, and Faenza. As his captains had rebelled he pretended to accept their claims, but when he had them in his power, condemned all to die. But on 18 Aug. 1503, after a few days illness, Pope Alexander VI. died. The Duke Valentino then became ill. This determined the dissolution of his State. Many of the subjected cities recalled their former rulers; others were occupied by Venetians. The new Pope, Julius II., obliged him to restore to the Church the few remaining fortresses. Cæsar Borgia left Rome, and died a few years later while fighting with Spain.

Pope Julius II. initiated a very warlike policy. In order to retake from the Venetians the lands in Romagna which they were occupying, he formed a powerful league, which was called the League of Cambrai, from the French city, where it was signed. In this participated the Pope, the kings of France and Spain, and the Emperor of Germany. They all united against Venice. Thus, the old republic of S. Marco, which just at this time was beginning to find a formidable rival in its commerce with the Orient in the Portuguese, the discoverers of the new maritime route to the Indies, saw itself menaced also on the mainland by the principal powers of Europe.

In the spring of 1509, the French, after conquering the Venetians at Agnadello, captured Bergamo, Brescia, Crema, and Peschiera. The pontifical troops seized the territory of Romagna. The Spaniards took from Venice the ports of Apulia, and the Emperor Maximilian, descending the Alps, advanced to Padua; but his repeated assaults on the city were valiantly repulsed, and he was finally obliged to return to Germany. But the salvation of Venice was due to the ability of its diplomats rather than to the arms of its generals. The former detached the Pope from his alliance with the League which he had organized. Julius II., interested in preventing the extension of the French power in Italy, made peace with Venice (1510) and invited Alfonso of Este, Lord of Ferrara, to follow his example; and because he would not obey he invaded his territory. But the French hastened to aid the Duke of Ferrara, and then the Pope, carried away by the idea of succeeding in freeing Italy from foreigners, organized against France a league with Venice and Spain, an alliance which was called the «Holy League,» and was inaugurated with the battle cry of, «Away with the barbarians.»

At first victory smiled on the French, chiefly due to their young and valiant general, Gaston de Foix. But after the Battle of Ravenna, which was won by the French, and in which Gaston de Foix was killed (1512), the allies regained the advantage and were then joined by the Emperor, who had been the ally of the French. In a few months the «League» succeeded in driving almost all the French from Italy.

The allies met in council at Mantua and assigned the Dukedom of Milan to Maximilian Sforza, son of Ludovico, the Moor, and sent an army to restore in Florence the rule of the Medici, in order to punish the republican government of Florence for having shown itself favorable to the French.

The most prominent member of the Medici family at that time, was Cardinal Giovanni, who on the death of Julius II. (1513) became Pope, and assumed the name of Leo X. According to the traditions of his family, he protected men of letters and artists, so that this period of marvellous development of Italian genius is called after him.

Meanwhile wars continued. The French could not reconcile themselves to the loss of Milan; but the attempt of Louis XII. to reconquer it proved disastrous. His successor, Francis I., on the contrary, at the battle of Marignano (13-14 Sept. 1515) succeeded in capturing it.

He desired to make France the first European power; but the young Charles V., who was descended from Ferdinand, King of Spain, became a formidable rival. The army of Charles regained Milan from the French and placed in power Francesco II. Sforza, last son of Ludovico, the Moor (1521). The French vainly attempted to reconquer Lombardy. In the battle of Pavia (24 Feb. 1525) Francis I. was taken prisoner. In order to regain his liberty he agreed to hard conditions of peace, but hardly had he touched French soil than he broke faith and entered into an alliance with Venice, Florence, and with the new Pope, Clement VII., who also belonged to the house of Medici. During the war which ensued, 12,000 Germans, followers of the doctrine of Luther, descended on Italy, captured and pillaged Rome (1527). On hearing the news Florence overthrew the rule of the Medici, and proclaimed anew the republic. Finally, the tide of war turned in favor of the Emperor, more especially after the great Genoese Admiral, Andrea Doria, went over into his service. The Pope and Francis I. made terms with him; and then the other allied forces had to submit to the conditions imposed by the victors. Charles V. went to Bologna, where he was solemnly crowned Emperor, 24 Feb. 1530. In the diplomatic Congress called together, it was determined to allow Francesco II. Sforza to retain the duchy of Milan on condition that at his death it should pass into possession of Spain. Florence was to reinstate the Medici, as Charles V. had promised the Pope. Already, at the end of the Autumn of 1529 a Spanish Army had come, to lay siege to Florence, which, however, showed itself prepared to defend its liberty to the last. All the citizens, without regard to age, flew to battle on its walls. But this heroic resistance was in vain, owing to the treachery of Malatesta Baglioni, to whom Florence had entrusted the command of her troops. The decisive battle of Gavinana, near Pistoia, was fought 3 Aug. 1530, at which time was slain the Florentine, Francesco Ferrucci. A few days later, Florence surrendered to the imperial army, who ceded the rule to the Medici family.

Spanish Predominance (1530-1700).—In the midst of the wars which, during the first 30 years of the 16th century convulsed Italy and ruined it economically, its political conditions also greatly changed. Of the five leading states, the Napoletano (Naples) had become a vice-royalty of Spain; Lombardy was occupied by the military forces of Charles V., the other two states—Rome and Florence—had lost almost all their political importance and were obliged to bow to the Spanish rule; and Venice, although proudly maintaining her independence, was no longer in a position to hold her own against the great powers of Europe.

France made another attempt to oppose the predominant power of Charles V. in Europe, and renewed the war on several occasions. Piedmont was the chief sufferer. The Duke of Savoy, Charles III., who had desired to remain neutral, ended by losing almost all his territory. Fortunately his son Emanuele Filiberto, who had entered the service of Spain, gained (10 Aug. 1557) the great victory of St. Quentin, in Flanders, and decided at the conclusion of the war to revisit his own state. Peace was concluded in 1559 at Cateau Cambresis. By the terms of this peace France was to restore almost all the territory occupied by her during the war, and thus the long rivalry between the two powers was definitely settled in favor of Spain.

The Spanish Domination soon enervated the minds and corrupted the customs of the people; and they became an enfeebled race, weak, enervated, without enthusiasm, and without ideals; and to make it worse, religious intolerance prevailed, which induced the Italians to mask their incredulity by hypocrisy.

The richest and most fertile provinces, Milan, Naples, Sicily and Sardinia, were subject to Spain, and the rest of the peninsula felt the reflex action of this subjection. Thus, the popes were on friendly terms with the Spaniards, because the latter had supported their ecclesiastical policy, and this friendship was soon changed into servility. The Medici were favorably disposed towards Spain in order that they might be let alone; the republic of Genoa from the time of Andrea Doria was an ally; or rather a servant of Spain; and the dukedoms of Ferrara, Mantua, and Parma were too weak to venture on an independent policy. Italy was indeed a Spanish province.

Two of the Italian States alone maintained their dignity and independence: the Duchy of Savoy, and the Republic of Venice; and in these two regions were comprised all that was best in Italian life of the period.

Emanuele Filiberto was the second founder of the House of Savoy. With his sword he regained the inheritance of his family, and then devoted his attention to performing the duty of a restorer and legislator to his people. His son and successor, Charles Emanuele I. (1580-1630), ambitious, bold, restless, endeavored by a continual series of wars to aggrandize his states. Through an agreement with France, he obtained the Marquisate of Saluzzo, ceding in exchange la Bressa and other territory on the Rhone. It was an advantageous exchange for him, for in this way the French were totally excluded from Italy. He then sought an alliance with France in order to wrest Lombardy from the domination of Spain, but the unexpected death of Henry IV. prevented the execution of this great design. Spain demanded that he disarm; but, instead of obeying, he invited the Italian states, and particularly Venice, to combine against Spain in a war of independence. However, none of them accepted his invitation; but, unaided for many years he bore the assaults of the Spanish arms, showing that, in the midst of the military decadence and the political enervation of the various states of the peninsula, there was one who knew how to maintain the dignity of the Italian name!

His last war was for the succession to the duchies of Mantua and Monferrato, in which Spain also took part, as did the Emperor and France. The whole upper Italy was traversed and devastated by various foreign armies, who also spread the plague. These were the sorrowful years described by Alexandro Manzoni in his historical romance, 'I Promessi Sposi.' The war still continued when Carlo Emanuele died.

Vittorio Amedeo, his son and successor, signed a peace by which he obtained the greater part of Monferrato, but ceded Pineolo to France, who once again got a foothold in Italy. The prime minister of France, Cardinal Richelieu, succeeded anew in forming a league against Spain, which was joined by the Dukes of Savoy, Mantua and Parma. The war had scarcely begun when Vittorio Amedeo died (1637). His widow Maria Christina, called Madame Royale, assumed the regency in the name of her son; but her cousins, Cardinal Maurizio and Prince Tommaso wished to be associated with her in the government, and to this end they sought the aid of Spain. The Duchess, in her turn, had recourse to France, and thus Piedmont was once more traversed and devastated by Spanish and French soldiery. At length the princes of Savoy perceived that foreign powers were taking advantage of their dissensions for their own profit, and thought it best to come to an agreement among themselves.

During this time the King of France, Louis XIV., was attaining an extraordinary powerful kingdom, the weight of whose authority could make itself easily felt even in little Piedmont until the day when Vittorio Amedeo II. of Savoy, in order to put an end to this servile friendship, formed an alliance with the other powers against France. Louis XIV. sent to oppose him one of the armies that devastated Piedmont; but the Duke of Piedmont sustained his disasters with courage, and at the conclusion of peace (1696) was not only able to compel restitution of his territory that had been occupied during the war, but also of the city of Pinerolo, ceded to France 60 years before.

In the second half of the 16th century Venice was apparently at the zenith of her power and prosperity, and her great painters, Titian, Tintoretto, Paolo Veronese, etc., by their *chef-d' œuvres* proclaimed her triumph to the world. In reality, however, she was depending on the wealth gathered in the past. Her power was already seriously threatened. In 1570 the Turks attacked Cypress, and notwithstanding the long and glorious resistance of the Venetian troops, they succeeded in taking possession of the whole island. The Christian League, formed at that time through the zeal of Pope Pius V. armed a great fleet which gained the memorable victory of Lepanto over the Turks in 1571; but the results were meagre on account of the jealousy between the allied powers.

The Republic, while professing zeal in religious matters, had always upheld the rights of the State in opposition to those of the Church. On that account it waged a lively dispute with Pope Paul V., who, annoyed at seeing his demands disregarded, excommunicated the Republic (1606). Venice, who had chosen to consult Friar Paolo Sarpi, commanded the priests to continue the exercise of their worship under penalty of being banished from the territory, and almost all obeyed. Finally, through the interposition of the King of France, the Pope and the Republic came to an agreement.

From now on, Venice became even less interested in Italian affairs, and in the Orient she sought only to defend against the Turks her farthest possessions. After a long war Candia passed under the dominion of the Turks. In 1684 Venice again took arms against the Turks, having as allies the Emperor and the King of Poland. Her great general, Francesco Morosini, conquered at that time the Peloponnesus, but on his death (1694) the era of the great Doges of Venice came to an end. Twenty years later the Peloponnesus again came under the power of the Turks.

Spanish domination in Italy lasted until the first years of the 18th century, and left sad traces behind it. No government ever took less care of its subjects than the Spanish government, which looked upon Italian provinces as lands that they might despoil, but not govern. The taxes became daily more intolerable, and the income which the government received from them was not disbursed for the advantage of those who paid them, but went to enrich the viceroys sent to Italy, to maintain the pomp of the court of Spain, and the enormous expenses of the wars which this power had to carry on in many parts of the world. There were frequent insurrections, notably that of Naples (1647) which is associated with the name of a young fisherman, Masaniello; but the government always succeeded in suppressing them by temporary concessions which did not alter the true condition of affairs.

Contested Predominance Between France and Austria (1700-1789).—The death of the King of Spain, Charles II. (1700), and the war of the succession precipitated a long war between the French dynasty of the Bourbons and the German house of Hapsburg, supported by England and Holland. The Imperialists sought to retain possession of the territory which Spain had in Italy; hence, the war was carried on largely in the Italian peninsula. The Duke of Savoy, Victor Amadeus II., was at first supported by the Bourbons, but when they understood their own interests better, and being advised by their illustrious cousin, Prince Eugene of Savoy, commander-in-chief of the Imperial army, they went over to the Imperial army. Then Piedmont was invaded and traversed in every direction by the French, who ended by laying siege to Turin (1706). Among the many glorious episodes during its defense is that relating to a private of the Miners, Pietro Micca, who at the sacrifice of his life saved the citadel from a nocturnal surprise assault. On 7 Sept. 1706, Duke Victor Amadeus II. joined his troops to those under the command of Prince Eugene, and gained a great victory under the walls of Turin, in consequence of which the French were obliged to vacate Piedmont and the rest of Italy. In short, the Spanish domination came to an end in Italy. By the Peace of Utrecht Sicily was given to Victor Amadeus II., who assumed the title of King. Sardinia, Naples, and Lombardy were yielded to Austria. But a few years later the Italian Cardinal Giulio Alberoni, who had become prime minister to the King of Spain, attempted to regain possession of Sardinia and Sicily; but being threatened by the principal powers of Europe, the King of Spain retired his fleet and discharged his minister. Austria profited by this opportunity by compelling Victor Amadeus II. to exchange Sicily for Sardinia (1720). Austria, however, did not long retain Sicily and Naples; for one of the sons of the King of Spain, Charles of Bourbon, taking advantage of the war of succession in Poland which upset all Europe, seized these territories and founded the Bourbon Neapolitan dynasty (1734). To make up for this loss the Emperor Charles VI. received the Duchy of Parma and Piacenza, in which the Farnesi dynasty was extinct; and on the extinction of the House of Medici (1737) he assigned the grand duchy of Tuscany to Francis of Lorraine, husband of his daughter Maria Teresa.

The death of the Emperor, Charles VI., (1740) gave rise to a fresh war of succession, which lasted eight years, and covered with blood many regions of Europe. In Italy the French and Spaniards attempted to wrest from Austria both Milan and the duchy of Parma and Piacenza; but the Empress Maria Teresa was aided by the King of Sardinia, Carlo Emanuele III. Maria Teresa then sought to reconquer Naples, but the army she sent out was defeated at Velletri (1744). Meanwhile the French and Spanish fought, in alliance with the Republic of Genoa, renewing their attacks in Lombardy; but after a few successes they were repulsed. Also the Austrians advancing as far as Genoa placed heavy tribute and humiliations on the people, but the inhabitants of Genoa rose up and repulsed them (1746).

The year after the French and Spanish attempted to cross into Piedmont by way of the Colle dell'Assietta, but were routed. The only important change that took place in Italy in consequence of this war was the assigning of the duchy of Parma and Piacenza to Don Philip of Bourbon, son of the King of Spain.

After the treaty of Aquisgrana, which signalized the end of this war, Italy enjoyed a long period of peace (from 1748-1792), which the various states of the peninsula devoted to their internal development. A current of new thought had overrun the whole of Europe through the writings, specially, of French authors; and these had given rise everywhere to a sort of tendency towards reform, animated by a principle of toleration in matters of religion and by the idea of the need of a great social regeneration to insure a greater degree of justice among men. The governments ended by accepting these and sought to put them in practice, the more willingly because the abolition of the privileges enjoyed by the nobles and the clergy represented an advantage for the sovereigns and also pleased the people, who were thus freed from a thousand annoyances, burdens, and vexations.

In Naples, Charles of Bourbon (1734-1759) acquired a good character for his civil and ecclesiastical reforms. In the other branch of the Bourbons, at Parma Duke Philip (1748-1765), who introduced great reforms, was succeeded by his son Ferdinando, who abolished even those already established.

In Lombardy, on the other hand, under Maria Teresa (1740-1780) was inaugurated a period of material and intellectual regeneration; and Joseph II., who succeeded her in the government, prosecuted reforms with even greater energy than his mother. Thus also in Tuscany, where Francis of Lorraine (1738-1765) was succeeded by Peter Leopold (1765-1790), who may justly be considered the greatest of the reform princes of Italy.

French Preponderance (1789-1815)—The breaking out of the French revolution produced a two-fold effect on Italy. Her rulers, in terror, halted their reforms, whilst the people, excited by the news from Paris, began to desire a change in the order of things with more eagerness than ever. Hence arose discords which daily became more aggravated, when arrests and torture were resorted to to suppress the revolutionary spirit.

Piedmont, together with Austria, opened the war against France in the summer of 1792, and the French were victorious, and in the same year, 1792, took Savoy and Nice. In 1796 the young general, Napoleon Bonaparte, separated the Austrian army from that of Piedmont; obliged King Victor Amadeus III. to make peace; then penetrated into Lombardy in pursuit of the Austrians, and by a series of brilliant victories secured possession of it. These events awoke Italy from her torpor, and encouraged the secret aspirations of the people. Reggio and Modena rose in insurrection against the duke, and uniting themselves to Bologna and Ferrara, which had been wrested by the French from the rule of the Pope, they organized a republic, called Cispadana, which adopted the Italian tri-colored flag with the white and red of the French flag substituting green for blue, a color which was in use among the local militia.

Bonaparte also invaded the Pontifical States, obliging the Pope to subscribe to burdensome conditions of peace; then he pursued the Austrian army across the Alps as far as Leoben, at which place Austria decided to conclude preliminaries of peace (April 1797). Just at this time, in Verona, the populace and the peasantry rose in arms against the French and butchered them (Pasque Veronesi). This insurrection was quickly wiped out in blood, but General Bonaparte made use of it as a good pretext for an attack on the aristocratic Republic of Venice, and by threatening war, he compelled it to transform itself into a democratic government. In Genoa also, by Bonaparte's orders the ancient form of government was abolished and the Ligurian League restored in imitation of the French government. Lombardy, which had been retaken from Austria, was made part of the Republica Cispadana and they became one republic, called the Cisalpine Republic.

In October 1797 peace was agreed on with Austria at Campoformio, in Friuli. By the terms of peace Austria was to renounce possession of Lombardy, but received instead the territory of the Republic of Venice, which from this time ceased to exist. The cession of Venice to Austria gave the lie to the fine promises of liberty and independence that had been made by the French invaders, which was probably the reason for the harassing attacks and the plundering expeditions that occurred in the Cisalpine and Ligurian republics, which were now considered almost as vassals, which fact caused great dissatisfaction among the Italian populace. However, the two years (1796-97) showed a great awakening in the life of the peninsula.

In 1798 the French, on the pretext that the house of the French ambassador had been violated, took possession of Rome, declared the government to have fallen into decadence, and established a republic. Then, as the King of Naples had dared to declare war on them, they entered Naples and proclaimed a republic there, which they called Parthenopea, from the ancient name of the city. On hearing the news that Austria, in alliance with Russia and England, meditated a fresh descent into Italy, the French took possession also of Piedmont and Tuscany.

But the Austro-Russian army entered Italy in the spring of 1799, and repeatedly defeated the French, so that the latter were forced to retreat into Liguria. Naturally the republican governments, which had been established by them, not having sufficient standing in the country, were overthrown, and many of the citizens who had compromised themselves by the favor with which they accepted the new ideas were obliged to emigrate. The republicans of Naples capitulated on the promise of amnesty; but King Ferdinand and Queen Maria Carolina violating their promises took fierce vengeance on the heads of the republican government. Among them were Doctor Domenico Cirillo, Judge Mario Pagano, Francesco Conforti, Admiral Francesco Caracciolo, etc.

Napoleon Bonaparte assumed the rule in France, with title of First Consul. He intended to reconquer Italy, where the French now owned only Genoa, and even here they found themselves besieged. Massena, commander of the French army, shut up in Genoa, held out heroically until 4 June 1800. In the meantime Napoleon at the head of another army entering Italy by way of the Saint Bernard threatened the Austrians from the rear and forced them to retreat towards Lombardy. At Marengo, near Alexandria, on 14 June 1800, a great and decisive battle was fought. The Austrians were forced to abandon all their conquests and again confirm the Treaty of Campoformio. Napoleon re-established the Cisalpine and Ligurian republics, and annexed Piedmont to France. The Neapolitan and Austrian troops evacuated Rome, which was presented to the new Pope Pius VII. Shortly after this Parma and Piacenza were ceded to France, and the Bourbons, who owned that duchy, were given Tuscany, which was made into the Kingdom of Etruria.

At the close of 1801 Napoleon convoked a meeting at Lyons of 452 leading men of the Cisalpine Republic for the purpose of forming the new constitution, which was to be similar to that which then obtained in France. The republic was to be called Italian, and Napoleon Bonaparte was elected president. He nominated Francesco Melzi as vice-president. From this time the evils consequent on the military occupation of the preceding years began to diminish and this republic was able to enjoy true prosperity. The name of Italian Republic was pleasing to the people, and as the president was at a distance their independence seemed all the greater. Melzi knew how to attract general sympathy and governed wisely. But when Napoleon became Emperor of the French he changed the Republic of Italy into the Kingdom of Italy, and was crowned at Milan 26 May 1805. He named as vice-regent Eugene Beauharnais, a youth of good and gentle disposition who endeavored to show his gratitude toward the Emperor by a blind obedience. As a result of the war of 1805, Austria had to renounce Venice, which became part of the Kingdom of Italy, to the great joy of the Italian people, who flattered themselves that this was the first step towards the unification of the entire peninsula. Instead of that, Napoleon drove the Bourbons out of Naples, and made of it a separate kingdom, placing his brother Joseph Bonaparte on the throne. Then, as he had already annexed Liguria to the French crown, he also annexed Tuscany and Latium, leaving to the Kingdom of Italy only the Marches. With this invasion ceased the temporal power of the popes (1809).

Thus the whole Italian peninsula was dependent directly, or indirectly on Napoleon. The house of Savoy retained only the island of Sardinia; and the Bourbons of Naples Sicily. Napoleon, who moved the kings about as though they were chessmen, in 1808 raised his brother Joseph to the throne of Spain, and sent to Naples in his stead his cousin Joachim Murat.

A great change had taken place, materially, intellectually, and socially, in the Napoleonic dominions. New roads were opened, large canals dug, splendid monuments erected, agriculture encouraged, industry and commerce favored, letters and the fine arts promoted. But his despotic will alienated Napoleon's subjects, especially when they remembered that having attained such great power, nothing could hinder his ambitious aims, and that to satisfy his own vanity he was always ready to sacrifice the lives of his soldiers. Hence, when his hour of disaster came he found little support in Italy.

In the autumn of 1813 Austria advanced threateningly on the kingdom of Italy. The viceroy, Eugene Beauharnais, attempted to defend it, but in vain, particularly as the King of Naples, Joachim Murat, in order to retain his own throne, had entered into secret negotiations with Austria, and had also led an army towards upper Italy. The Austrians had already occupied a great portion of the kingdom when the news arrived in Italy that Napoleon had been forced to abdicate. Then arose an insurrection in Milan against the French government. Count Prina, minister of finance, was massacred by the mob (April 1814). In consequence of these outrages, the viceroy, Eugene Beauharnais, left the kingdom. Milan was occupied by the Austrian troops.

Almost all the former governments were restored. The Pope, Pius VII., re-entered Rome. Duke Ferdinand III. took back Tuscany. The duchies of Parma and Modena were re-established. Victor Emanuele I. of Savoy re-entered Turin.

Joachim Murat alone retained the kingdom of Naples; but he soon had reason to doubt that Austria would keep the promise she had made him. He therefore, became reconciled to Napoleon, who was then in the island of Elba, and when he left it to set out on the marvelous 100 days, Murat took up arms against Austria, inviting Italy to assist in a war of independence. He was defeated, and obliged to renounce the throne (20 May 1815). From Corsica, whither he had fled, he tried to re-conquer Naples, but was made prisoner at Pizzo in Calabria, and shot (13 Oct. 1815).

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6. Italy—History from 1815 to 1907. Before the French Revolution, the territory, which now forms the Kingdom of Italy, was inhabited by about 17,000,000 people and was composed of nine principal states: The Kingdom of Sardinia with Piedmont and Savoy; the Republic of Genoa; the Duchy of Parma and of Piacenza; the Duchy of Modena; the Republic of Venetia; the Republic of Lucca; the Grand Duchy of Tuscany; the Pontifical States; the Kingdom of Naples with Sicily; and besides two regions belonging to foreign powers, *i. e.* Corsica to France, and Lombardy and Mantuoa to Austria. In these countries the political, social, economic, judicial, financial and intellectual conditions were deplorable; the power of the sovereign was absolute; the population was divided into classes, some of which possessed remarkable and varying privileges; industry, commerce and agriculture were neglected, with consequent poverty of the laboring classes; justice was meted out unfairly to all, barbarously conducted and with no proportion between the crime and its punishment; the public finances were in a ruinous state; education was very limited and difficult to acquire. Into this Italy, so complex and unprogressive, came the French Revolution (1789-1814) with the arms of the Republic and of the Emperor; destroyed the existing states and set up and supported the *Glorious Principalities* of 1789. After undergoing various transformations, Peninsular Italy (Sicily always belonged to the Bourbons of Naples, Sardinia to the House of Savoy and Corsica to France) was thus partitioned by Napoleon I.: one part was united to the French Empire (Piedmont, Liguria, Parma and Piacenza, Tuscany, Umbria, Lazio); a second part formed the Kingdom of Italy, which was destined to become independent under its own king, with the capital at Milan (composed of Lombardy, the Province of Venetia, Modena, the Province of Rome and the Marches); a third part, with the title of the Kingdom of Naples, was held successively by two French kings, Giuseppe Bonaparte and Gioacchino Murat, with a certain independence. In these countries, through the initiation of foreign folk, but with the coöperation of many Italians also, arose a period of economic activity; streets were opened; institutions were founded for the progress of science and the diffusion of knowledge; the government and administration of affairs became vastly superior to what had preceded; and the equality of all before the law was established. The moral, civil and economic progress throughout the entire peninsula was very evident and very considerable; but the people ended in becoming very discontented because of the incessant levies, which robbed the country of the flower of its youth, following the military enterprises of Napoleon, and also because of the enormous taxes which the emperor imposed upon every one according to his own despotic will. When the Napoleonic dynasty fell, the United Powers, which had overthrown it, in order to wipe out every trace of the revolution in Italy, wished to reëstablish the states exactly as they were before the coming of the French (except the republics, which were not reconstituted), and they recalled the former sovereigns, and the entire country was placed under the rule, direct or indirect, of Austria, who had driven the French out by force of arms.

The Treaties of Paris and the Congress of Vienna (1814-1815) finally reorganized Italy in the following manner: there were seven principal states, nominally independent, and two regions governed by foreign rule. The independent states were: (1) The Kingdom of Sardinia, to which the House of Savoy returned, which had at its head Victor Emanuel I., and to which was also given the territory of the former Republic of Genoa; (2) The Duchy of Parma and of Piacenza, given to Marie Louise of Austria, the wife of Napoleon I.; (3) The Duchy of Modena, to the Archduke Francis IV. of Austria; (4) The Grand Duchy of Tuscany, to Ferdinand III. of Austria; (5) The Duchy of Lucca, to Maria Louisa of Bourbon; (6) The Pontifical State, to which Pius VII. returned freed from prison; (7) The Kingdom of the two Sicilies, *i. e.* Naples and Sicily, to which Ferdinand IV. (now become I.) of Bourbon returned. The regions subject to foreign powers were: Corsica, which remained French, and the Kingdom of Lombardy-Venetia, which passed to the House of Austria. The latter, therefore, possessed incontestible power in all Italy, since in addition to the direct authority over the Kingdom of Lombardy-Venetia, it had its own princes in power over Tuscany, Parma, Modena, and exercised a sort of guardianship over the other states. Austria, the centre of reaction in Europe, represented in Italy the Holy Alliance, which had the plan to reëstablish the divine right of monarchies and to hold the people quiet and submissive, and to carry out this plan the sovereigns belonging to the Alliance were obliged to help each other whenever called upon.

The returning princes were well received, because the allied powers had fraudulently promised that they would not forget the aspirations of the nation, and because the people hoped that, not only would the excellent institutions founded by France be preserved, but also that there would be an end to the waste of money and of blood which characterized the last years of the oppressive Napoleonic régime. The princes, on the contrary, enraged against everything that reminded them of the usurpers, gave themselves up to destroying all that the revolution had created. They banished or humiliated every one who had received offices from France; abolished all liberty of thought, of the press, of speech; reëstablished the ancient laws which provided for privileged classes; denied civil rights to Hebrews and to Protestants; gave excessive power to the clergy, and restored to courts of justice the savage methods which barbarity had formerly furnished her. Education became possible to only the few. In this mad reaction the Piedmont and Napoleonic Government distinguished itself especially. The King Victor Emanuel I. of Sardinia said that he considered that he had slept all the years of his exile, and that he desired that his subjects should do so hereafter; therefore, he endeavored to establish the state in every place exactly as it had been before the revolution. Discontent soon manifested itself everywhere. The people, finding themselves in an unjust and unbearable situation, commenced a Titanic struggle by means of secret societies, of conspiracies, of revolutions, even of open war, which lasted from 1815 until 1870, and finally made Italy one, free and independent; after which the new state was able to develop its own powers in such a way as to attain in a very short time that grade of prosperity and success in which it finds itself to-day.

The years from 1815 to 1907 are those of the *Italian Resurrection*, which should be divided into a *Political Resurrection* (1815-1870) and an *Economic Resurrection* (1870-1907), and embraces five periods: (I) Conspiracies and insurrections promoted by the Carbonari (1815-1831); (II) Conspiracies and insurrections promoted by «Young Italy» (1831-1846); (III) Action by the political neoguelfic school (1846-1849); (IV) Work under the direction of the House of Savoy and the foundation of Italian Unification (1849-1870); (V) Development and progress of free Italy (1870-1907).

PERIOD I.—*Conspiracies and Insurrections Promoted by the Carbonari* (1815-1831).—The general discontent, the necessity of a radical change in public affairs, and the impossibility of displaying their own aspirations in the full light of day, compelled the Italians to form secret societies by means of which they hoped to attain their prohibited ends. In this first period the Carboneria was the principal one, an emanation from the Mazzoneria, whose symbols and language they had preserved; it arose in Naples during the reign of Murat, and was propagated after the return of the Bourbons for the organization of the oppressed against their oppressors, and hence spread throughout all Italy between 1815 and 1820. It enrolled among its members especially persons of the middle class, professional men, employés, the military, and also some nobles. The sections called themselves Vendite (Avengero). The society gradually disbanded and the subdivisions assumed contrasting and fantastic names: Society of the Filadelfi, of the Adelfi, of the Maestri Perfetti (perfect masters), of the Spilla Nera (black pin), of the Federazione (confederation), etc. The program common to all was: independence of all foreigners, a form of liberal government, and the confederation of all Italian states, which did not exclude the fact that some of the Vendita (Avengers) changed this general program, in so far that instead of the Confederated Italy they wished one Italy under the republican form of government, not the monarchial. The reactionary government, which feared the Carboneria, gave their countenance to some societies formed with the opposite designs, the more important among which were the Calderari and the Sanfedisti. The history of Italy from 1815 to 1831 is contained in the history of the Carboneria.

The first revolutionary movement broke out in 1817 in Macerata, in the Marches, where the Carbonari were numerous, and was at once repressed by the Papal Government. In 1819 the Austrian police discovered a Carboneria conspiracy in Polesine in Rovigo, arrested many persons implicated, who were found guilty and put into prison, together with Pellico, who recorded in a book called 'Le Mie Prigioni' («My Prisons»). In 1820, after *Il Conciliatore,* organ of the liberal patriotic party, had been suppressed, the discovery of other conspiracies led to the arrest in Milan of Pietro Maroncelli and of Silvio Pellico, followed by the arrest of Federico Confalieri, head of the conspiracy, of Giorgio Pallavicino, of Gaetano Castiglia and a hundred others, who, found guilty during the years 1821-1824, went to populate the dreadful Austrian prisons, the most notable of which is the Castle of Spielberg in Moravia.

In Naples, the Carboneria conspirators were very numerous, especially in the army, and it was precisely the army which initiated the Revolution of 1820-1821. On 2 July 1820, their spirits roused by the triumph of liberty in Spain, two officers and 130 soldiers started from Nola towards Avellino to the cry of «Liberty and a Constitution»; then uniting themselves with two insurgent regiments under Guglielmo Pepe, whom they proclaimed their general, they all went to Naples, where the king, taken by surprise and also under compulsion of the citizens, promised a constitution, to which he swore fealty (13 July), invoking the lightnings of the Almighty upon his head if ever he violated it. In Palermo also the people rose, but in Sicily the movement took the form of a Separationist Movement, so that the constitutional government at Naples was obliged to send two generals to overcome the insurgents and preserve the union of the two parts of the kingdom. Meanwhile the king, breaking faith, invoked the aid of the sovereigns of the Holy Alliance, who invited him to Lubiana, where in January 1821 they held a congress. The king had promised to defend before the allied sovereigns the constitution to which he had pledged himself; but instead, the powers decided to intervene in the affairs of the Neapolitans by force of arms in order to reëstablish the absolute monarchy. An Austrian army, commanded by General Frimont, invaded the kingdom, conquered the constitutionalists led by General G. Pepe, at Antrodoco, entered Naples 23 March 1821, and then occupied Sicily. The constitution was abolished; those who had headed the movement were cast into prison, some were sentenced to death, and many were exiled.

In Piedmont, where the Carboneria was more commonly known as the Federazione (the Confederation), the Revolution of 1821 had two objects: to obtain a constitutional government and to drive the Austrians from the peninsula, in order to form with the House of Savoy a kingdom of all northern Italy. The promoters of this were chiefly officers of the army belonging to the principal aristocratic families, and they believed that the young prince and heir-presumptive to the throne, Carlo Alberto of Savoy-Carignano, was also of their party, since in private conversations with his friends he made no attempt to conceal his ardent love for the independence of his country and his desire to do something for her. The insurrection burst forth when it became known that an Austrian army had arrived at Naples to quell this revolution, and they believed that they could attack it from the rear with the help of the Lombardy-Venetians, who were to rise at the call of the Piedmontese. On 10 March 1821 a regiment in Alessandria rose, and formed there a provisional government, and during the days following other garrisons arrived in that city, some soldiers, at the gate of Turin, shouting for the constitution, raised the tri-colored banner; and the king, Victor Emanuel I., who felt that he could not change the order of events and did not wish to use violence against his subjects, abdicated in favor of his brother, Carlo Felice, naming as regent during the latter's absence, the Prince of Carignano, who, in obedience to the demands of the people, conceded the Spanish constitution. But the king, Carlo Felice, in Modena, annulled this concession, ordered Carlo Alberto to withdraw into Tuscany, assembled that part of the army which had remained faithful, and called for help from Austria. The soldiers in favor of the constitution were beaten (8 April) near Novara; the heads of the movement—the most famous of whom was Santorre of Santarosa—in order to escape the gallows, were obliged to exile themselves in Spain, Portugal, Greece, France or England.

These attempts at gaining liberty were followed by ten years of frightful reaction, in Piedmont as well as at Naples and everywhere in Italy. Austria more than ever was master of all; nevertheless, the Carboneria, beaten but not destroyed, continued to work in secret.

When in 1830 upon the accession of Louis Philippe to the throne of France, it seemed that the liberal aspirations of Europe had found strong and secure foundations, the patriots of central Italy hoped to be able to form a kingdom with a constitutional government, consisting of Lombardy, Modena, Parma, and Ferrara; a kingdom which they would give to Francesco IV., Duke of Modena, who had much ambition and great wealth, and who they knew had an understanding with the Carboneria and was a friend of one of their most highly esteemed chiefs, Ciro Menotti. It is said that at the last moment the duke was seized with fear of being discovered and severely punished by Austria, and therefore abandoned the conspiracy. Menoti, in consequence of this, wished to anticipate the revolution; but on the night appointed for the rising (3-4 Feb. 1831) the duke, with 800 soldiers, surrounded his house and took him, with many others, prisoner; and when he knew that the revolution was so widespread throughout the state, he repaired to Mantova, taking with him Menotti, to be under the protection of the Austrian cannon. This revolution extended to the Pontifical State, where Bologna (5 February) and later other cities rose in rebellion; the temporal power of the Pope was declared abolished, and they founded, together with Romagna and the Marches, a free state which they called the United Provinces. From Parma also the Duchess Maria Louisa was obliged to flee and take refuge in Piacenza. The Austrians, called upon for help, intervened, overcame the Italians and again established in every place the preceding government. The Duke of Modena was savage in his revenge; shortly after his return Ciro Menotti and others were hanged on the gallows. The foreign powers in a Memorandum publicly invited Pope Gregory XVI. to give to his state a more pacific administration; but the Pope, instead of ameliorating public administration of public affairs gave himself up to a violent reaction, so that in 1832 the revolution again broke out. The Austrians returned, and the French occupied Ancona in order not to leave Italy in the power of Germans alone, and neither of them took their departure until 1838.

All these movements of the Carboneria, therefore, failed, because they were successive, not contemporaneous; because they were not sufficiently prepared and not wisely guided; because, being the work of the minority, they were not participated in by the people; and finally, because their plans were to establish a kingdom, not a nation.

PERIOD II.—*Conspiracies and Insurrections Promoted by «Young Italy»* (1831-1846).—The impossibility of obtaining independence and freedom for Italy by means of the Carboneria was impressed upon the people chiefly by Giuseppe Mazzini (1805-1872) of Genoa, who had been a member of this society and in 1830 by a piece of ordinary treachery had been cast into prison. While incarcerated in the fortress of Savona, he conceived the idea of forming a new association, which should be national and not sectional, and which while preparing in secret for a revolution, should openly propagate its principles by means of the press. Released from prison, he was obliged to go into exile, and in Marseilles he became convinced that it was useless to expect any generous initiative on the part of any sovereign; he therefore (from among the many Italian refugees of the Revolution of 1820-21 and that of 1831) founded in 1831 «Young Italy,» an association of persons who believed in the law of progress and duty, and who were obliged to swear to work—by means of education and insurrection—to the end that Italy should become one, free, independent and republican. To disseminate the ideas and the aims of the association they published a periodical (1832) entitled *La Giovane Italy* («Young Italy»), and the society and the paper spread throughout the peninsula, especially in the kingdom of Sardinia, in which the king, Carlo Felice, the last of the eldest branch of the house of Savoy, had been succeeded by Carlo Alberto of Savoy-Carignano. Upon this state Mazzini founded his greatest hopes, because he was convinced that having brought under the influence of these new ideas the Piedmontese army, the chief military force of the Italian states, the society would be able to drag down the tyrants from their thrones and hunt the foreign oppressors from out the land. Therefore they sought above all recruits from the Sardinian army. But the police were not slow to discover the conspiracy in 1833, and proceeded to make arrests in Geneva, Alessandra, Chambery, and other places. Vicenzo Gioberti, not being able to disprove his guilt, was sentenced to exile. Standing courts were immediately set up, which instituted proceedings that ended with severe condemnations and punishment of soldiers and citizens. Young Italy then sought her revenge. An expedition composed of some hundreds of Italians, Poles, Germans and Swiss, prepared by Mazzini, invaded Savoy from Geneva (1834); but, not finding help from the inhabitants, was easily repulsed by the soldiers of the king. Genoa, which was supposed to rise at the same time, did not stir; there followed at once condemnations of the conspirators, among which was a sentence of death against Giuseppe Garibaldi (1807-1882).

Young Italy remained stunned by these severe blows for some years, but after a decade had passed she again became active. In 1843 at Savigno and in other places in Romagna, several revolutions against the pontifical government took place, but the insurgents were beaten, and many of them were imprisoned or condemned to death. A band of Calabrian patriots marched towards Cosenza (15 March 1844) and entered the place carrying the tricolored banner and shouting «long life to liberty and down with despotism,» but being attacked vigorously by the Bourbon militia, they were quickly dispersed. Information of this somewhat insignificant movement reached two courageous youths, brothers Otillio and Emilio Bandiera, of Venice, who, being of the same political faith as Mazzini, had abandoned the service of the Austrian marines (in which they were officers and their father an admiral) and had fled to Corfu, there to wait for the moment to strike a blow for liberty and their country. Having collected other exiles, among them Nicola Ricciotti, they set out for Calabria, where they believed that the insurrection was being carried on, and disembarked at Cotrone, not expected, not knowing to whom or where they should turn, but convinced that if the undertaking should end with the sacrifice of themselves, then such sacrifice would help the cause of Italy. Received in an unfriendly manner by the people—perhaps victims of treachery—they were attacked by the police and a battalion of the Bourbon military; some were taken prisoners, some were wounded and some were killed. A court martial condemned to death the survivors, who were shot near Cosenza, only a very few being allowed to go free. In 1845 the agitation by Mazzini induced the Romagnoli to make another attempt; Rimini rose and a provisional government was installed; but the liberal troops were put to flight by the Papal soldiers, and the rebels fled, reappearing in Tuscany.

These and other attempts all met with failure, because the people who should have made them succeed were not as yet sufficiently educated up to the national idea, and because the number of insurrectionists did not suffice for the extremely difficult task of redeeming and uniting Italy.

PERIOD III.—*Action of the Neoguelfa Political School* (1846-1849).—In 1843 Vicenzo Gioberti, an exile for ten years in Brussels, published there a book entitled 'Upon the Moral and Civic Preëminence of the Italians,' in which, with much eloquence, he developed the following conceptions: that Italy could rise again without recourse to insurrections; that this resurrection could come to pass, uniting the entire peninsula, by means of a confederation of her princes; that to establish this Italian unity two provinces especially should be active,—Rome, which should give the Pope as head of the confederation, and Piedmont, which should give its military force; that the princes should and would make wise and pacific reforms; and that Italy, thus leagued together, guided by a liberal Pope, would then rise to exercise that universal influence in action and in thought which she was destined to by her very nature. This book was rapidly disseminated throughout the peninsula and gave a great impetus to thought. In 1844 Cesar Balbo, in a work called 'Upon the Hopes of Italy,' argued that the confederation would be possible only after the Austrians had been driven out from Italy; he advised, moreover, above all that the young men should be instructed in arms for a national war. In 1845 Massimo d'Azeglio wrote 'Upon the Latest Developments in Roman Affairs,' in which he demonstrated that conspiracy, sedition, partial insurrections, could not but be injurious to the establishment of liberty; that they should, on the contrary, first give proof of their civic courage by demanding openly from the government liberal reforms and institutions; and then of their military courage by conquest—when the occasion should arise—of their independence from foreign invaders. Following the publication of these books, came many others, which argued the necessity of abandoning revolutionary movements, the advantage of looking frankly to the princes themselves for the reform of public ordinances, and the possibility of making liberty and religion go peacefully side by side. Thus they went on, forming a new political school, which was called «neoguelfa,» and of which Gioberti was the inspiration and the leader. The Neoguelfi, then, differed from the disciples of Mazzini in their aim and in their methods. In their aim, because deeming it impossible to take Rome from the Pope on account of the opposition which it would raise among Catholics throughout all Europe, they wished to substitute for the united republic desired by Mazzini, a confederation of princes presided over by the Pope; and they differed in their means because in place of popular and partial revolutions they wished to substitute pacific propaganda in order to obtain liberal reforms from the sovereigns, and preparation for national war in order to acquire independence.

This program seemed to be realized at once, for on 15 June 1846, Cardinal Giovanni Mastai-Ferretti was elected Pope with the name of Piux IX.; he was noted for his liberal sentiments, and his first act, most unusual, was a general amnesty to political offenders who filled the prisons of the pontifical state, which amnesty awakened enthusiastic joy, not alone in Rome but throughout all Italy. In 1847 other reforms followed, such as the concession of moderate liberty to the press, which allowed the foundation of various newspapers; the institution of a Committee of State, composed of the laity, and a Council of Ministers; and the organization of the Civil Guards. The populace not only applauded but were really delirious with joy and demanded that the sovereigns should do as much as the Pope. And in this way they influenced the Grand Duke of Tuscany, Leopold II., and the king of Sardinia, Carlo Alberto. The latter dismissed his reactionary minister, Solaro of Margarita, and in October and November 1847 he granted a moderate liberty to the press, improved the judiciary ordinances, conceded to the citizens the election of Municipal Councillors. Public enthusiasm was extraordinary and the names of Pius IX. and of Carlo Alberto were shouted to the stars. The movement extended throughout the peninsula and spread through all classes of the population, because the initiative came from the head of the Church and because literature had taken upon herself a civic duty and disseminated widely sentiments of liberty and independence. Every mode of literary expression became an instrument for patriotic propaganda. The romances of Guerrazzi and of d'Azeglio, the tragedies of Manzoni and of Niccolini, the poetry of Leopardi, of Berchet, of Rossetti, of Giusti and of hundreds of others recalled to Italians in words of fire their former greatness and glory and incited them to rise from the pitiful conditions into which they had fallen. Literature, painting and music had civic and national intentions.

The tiny spark which started the great conflagration was lighted in Sicily. The natives of Palermo rose in arms 12 Jan. 1848, and their example was promptly followed by the entire island; and as soon as they also rose in Naples, the king, Ferdinand II., who had not imitated Pius IX. and other princes in regard to reforms, was seized with great fear and did more than any of them, for he gave them directly a representative constitution. The excitement throughout the entire peninsula became enormous at this piece of news, and the sovereigns were forced to concede also everything which the most reactionary of the princes had ever refused. Carlo Alberto on February 8 promised and on March 4 published the 'Statute,' which, preserved by him and his successors, is still the foundation of all law in the Kingdom of Italy. Yielding to the persistent demands of the citizens, Leopold II. and Pius IX. also promulgated a constitutional statute. Having become free henceforth as far as the princes were concerned, the people could now think of securing freedom from foreign oppression, and a favorable occasion was not long in presenting itself.

When the news that on February 24 the Parisians had overturned the throne of Louis Philippe, arrived at Vienna, it incited an insurrection; the news that this insurrection at Vienna had caused the fall of Minister Metternich, induced Venice first of all to rise against the Austrians, drive them out and proclaim a republic; then Milan in a heroic struggle of five days (March 18-23) succeeded in forcing the hated oppressors out of the city. Carlo Alberto thereupon on March 23 declared war against Austria and took the field to give independence to Italy. The Pope, the King of Naples and the Grand Duke of Tuscany were constrained by the demands of the people to take part in the expedition and sent soldiers into the Valley of the Po. But the Pope, in a proclamation on April 29—probably because he feared a schism in Germany—declared that he could not participate in a war against the Austrians because they were Christians; and the King of Naples, declaring that he had not set forth on this road to liberty of his own free will, came into conflict with Parliament, dismissed it, smothered in blood the agitations in the principal cities, and recalled to the kingdom the troops which had been started for the war. Carlo Alberto, who had arrived at Mincio, found himself consequently quite alone and deserted, but nevertheless he conquered the Austrians at Goito (May 30), but was in turn beaten in several encounters; he was forced to a retreat, which was rendered more disastrous by other defeats, and which terminated by the Armistice of Salasco (August 10), by the terms of which Lombardy and Venice, which had given themselves to the king, were left in the hand of the triumphant enemy. Venice, however, declared herself a republic under the Presidency of Daniele Manin, and thought of defending herself alone. The Pope, terrified by the rage of the Democratic party and by the assassination of the President of the Council of Ministers—Pellegrino Rossi—fled on November 24 to Gaeta near the King of Naples. In Piedmont, the radical party wished a renewal of the war, although the country was quite unprepared; and the king did commence it again, but in a very few days all was over. At Novara (23 March 1849) the Sardinian army was completely defeated by the Austrians, and on the same evening, Carlo Alberto, convinced that the conquerors would make better conditions with another sovereign, abdicated in favor of his eldest son, who became King Victor Emanuel II., and retired in exile to Oporto in Portugal, where he died July 28 in the same year.

Two glorious conflicts ended this first unfortunate war for Italian independence.

The Pope having fled to Gaeta and being invited in vain to return, a Constitutional Assembly (9 Feb. 1849) abolished by proclamation the temporal power of the popes and set up the Roman Republic. Pius IX. called for armed intervention from the Catholic nations to recover his temporal domain, and Naples, Spain, Austria and France took arms. Rome prepared to defend herself and Italians from all over the peninsula flocked to her standards. General Giuseppe Garibaldi, although he was not commander-in-chief of the military forces of the republic, played a most splendid part. A triumvirate, composed of Giuseppe Mazzini, Aurelio Saffi and Carlo Armellini, with unlimited power, provided for the public necessities. The Austrians occupied Bologna and took possession of Ancona; the Neapolitans were compelled to halt at Velletri by Garibaldi; the Spaniards, disembarking from their ships, covered themselves with ridicule. The French, landing at Civitávecchia under the command of Oudinot, were driven from Rome April 30. And when they turned against Gianicola (Janiculum) (where rose the greatest number of epic deeds of blood), the defenders in numerous attacks from the 3d to the 30th of June gave extraordinary proofs of valor and sacrificed many noble lives. But the enemy nevertheless constantly approached nearer the city and bombarded it. The French finished by entering Rome, while the Constitutional Assembly in the Campidoglio ordered the army to «cease a defence which had become impossible and to remain at its post.» The triumvirate was dissolved, and Garibaldi with some of the best of his men left the city July 2 and, pursued by France and Austria, commenced that famous retreat in which he aimed to go to the help of Venice, still in a state of siege, and during which he lost his heroic consort Anita.

Venice, turned republic, had decided to resist at all cost the Austrians who were besieging her; and splendidly did she keep her word. Surrounded by a circle of iron which each day grew closer, bombarded day and night, tortured by hunger and cholera, after a defence which was an honor not only to the city herself but to all Italy, she was obliged to capitulate on August 24, and her most strenuous champions went into exile.

Thus, after the attempts of the Carbonari and those of Young Italy, the efforts of the Neoguelfi also failed. Put to the test of deeds, their program had proved itself impractical, although they had proved that it was useless to hope for anything from the liberality of princes irremediably retrogressive; that it was disastrous to start the campaign with unprepared popular forces against a strong enemy hardened to war; that it was unwise to commence the struggle for independence without first spreading and disseminating throughout the entire country the sentiment of duty toward one's country. At all events the errors as much as the heroism of 1848-49 would serve as education to all Italians in the near future.

PERIOD IV.—*Direct Action by the House of Savoy and Formation of United Italy* (1849-1870).—Austrian dominion over Lombardy and Venetia having been established by force of arms, Marshal Radetzky desired to render impossible any fresh attempts at independence, and spread everywhere fear and terror with his savage military action; and to this end he constantly caused the arrest, condemnation and punishment of citizens guilty of having taken part in the deeds of 1848-49, of having in their possession arms or patriotic publications, or of having uttered generous sentiments concerning Italy. The result of this violent oppression was a new conspiracy, promoted by Mazzini, now an exile in London; this conspiracy had its centre in Mantova and was to prepare for a popular insurrection in Lombardy-Venetia in order to drive out the intruder and to establish the republic. At its head was the priest Enrico Tazzoli. Some traces of the plot having been discovered by the police, many persons were arrested whose names appeared on the lists of the conspirators; the prisoners were treated in the most infamous manner by the State Tribunal; and on 7 Dec. 1852, Tazzoli and four other patriots were hanged on the pavement of Belfiore. Mazzini made speedy answer to this severity, inciting on 6 Feb. 1853 an insurrection in Milan, which was the cause of fresh condemnations and fresh punishments. The consequence was that the proceedings of Mantova were repeated, and ended with a decree that sent to the gallows other patriots. Austria, seeing that she would never succeed by violent measures in ruling the spirit of Lombardy-Venetia, tried to draw her to herself by more gentle measures; so the Arch Duke Maximilian was entrusted with the government of the Italian provinces. But it was now too late. On 15 Jan. 1857, upon the same day that the Emperor with his wife entered Milan, the Milanese displayed their feelings towards him by dedicating to the Sardinian Army a monument commemorating the first war of Italian independence, which was placed in the Piazza Costello in Turin.

Reaction raged also in other Italian states, especially in the kingdom of the two Sicilies, where the government of Ferdinand II. was, because of its odious character, called by Gladstone a «denial of God.» All those who had taken part in the movement of 1848-49 were frightfully persecuted at Naples and in Sicily.

Thus, between 1849 and 1859 there raged throughout the peninsula the most unjust reaction; but during this decade arose also a program for national redemption dictated in the hope of actual attainment, and there was one region in which the banner of liberty already waved and where that program was already approaching realization.

This new political policy, as well as that which had sought realization in 1848-49, was headed by Gioberti, who published a book about it in Paris in 1851 with the title 'Upon the Civic Rehabilitation of Italy.' In this work Gioberti, having learned by experience, had destroyed that part of his preceding program which had proved impractical, and had adopted that part of the program of Mazzini which was practical, and presented the new political platform as the special task to be accomplished by the House of Savoy, which alone had demonstrated itself as capable and worthy of performing it; no more any Primate, no more papal supremacy, no more a confederation of princes, but the supremacy of Piedmont, the state to belong to the laity, the abolition of the temporal power of the Pope, unification with Rome as the capital. Such was the program by means of which they accomplished the Italian Revolution from 1859 to 1870 and from which emerged the new free state.

Victor Emanuel II. (1820-1878), King of Sardinia, who succeeded his father after the unfortunate day at Novara, had pledged himself to the statute with a faith which he always kept and which won for him the title 'Re Galantuomo' («The Honest King»); and he dedicated his life to the triumph of liberty and to Italian independence. Reigning thus, with the help of his ministers at the head of whom were Massimo d'Azeglio and that great statesman Camillo Cavour (1810-1861), he laid in Piedmont the foundations of a government absolutely liberal, national and progressive. They offered a generous hospitality to emigrants from all the other Italian states where reaction raged; since all were equal before the law, they abolished the Ecclesiastical Forum; they put through administrative, financial and economic reforms; they stimulated agricultural and industrial production and extended commerce; they reorganized and improved the army because it was obliged to sustain future experiments. The king and the Piedmontese government exerted themselves for the representation of the entire Italian nation; when the war against Russia broke out in the East, the King of Sardinia allied himself with France and England, and the Italian army acquired much glory in the Crimea (1855), thus giving an opportunity and justification to Cavour to speak with authority in the name of Italy in the Congress of Paris with which this war closed. In order to prepare the way for harmony among all the Italians in the coming rehabilitation, the «National Society» was founded in Turin in 1857, and Cavour, since the campaign of 1848-49 had demonstrated that Italy could not act by herself, succeeding in establishing harmonious relations with the Emperor Napoleon III.,' obtaining from him a promise of help in driving the Austrians out of the peninsula. Victor Emanuel II., in opening a new session of the Subalpine Parliament (10 Jan. 1859) declared that he «was not insensible to the cries of suffering» which were directed towards him from every part of Italy; and a few days afterwards a Treaty of Alliance between France and Piedmont was arranged, which formed a fitting conclusion to a glorious decade and which was to give independence to Italy.

Napoleon III., descending into Piedmont with 110,000 Frenchmen, promised to make Italy free from the Alps to the Adriatic. The Austrians, having crossed the Ticino on April 29, hoped to be able to defeat the Piedmontese before the arrival of their allies and to occupy Turin, but it was not possible. The French and Sardinians together were victorious at Montebello, Palestro, and Magenta; and after that, the conquered enemy having withdrawn towards Mincio, Victor Emanuel II. and Napoleon III. entered Milan triumphantly on June 8. These happy events caused the central Italian states to rise against their respective sovereigns—first Tuscany, then Parma and Piacenza, while Modena and Reggio, and finally Ferrara and Romagna, offered allegiance to the King of Sardinia and accepted commissioners appointed by him. In the meanwhile the war continued, and at Solferino and at San Martino (June 24) the allies were victorious in great battles; but the Emperor Napoleon III. unexpectedly called a halt in the redemption of his promises, and on July 11, for reasons not yet well understood, he concluded an armistice of Villafranca with the enemy, which armistice Victor Emanuel was regretfully forced to accept. By the terms of this armistice, followed in November by the Pact of Zurich, Lombardy was ceded to France, to be transferred to Victor Emanuel, and in central Italy those princes were to return who had been driven out, since the populace demanded their return. But this they no longer desired; therefore, hardly had the Royal Commissioners departed, when they elected provisional governments which at once set to work to thwart any attempts at return on the part of the abdicated sovereigns. Napoleon was at last convinced that it was not possible to detach from Piedmont those regions which so earnestly wished to be united with her; but he wished a recompense, which was the cession of Savoy and of Nice (24 March 1860), granted in the Treaty of Alliance in exchange for the freedom of Lombardy-Venetia. Henceforth the kingdom of Sardinia included Piedmont, Lombardy, Parma and Piacenza, Modena, Ferrara, Romanga, Tuscany, Liguria and the island from which it takes its name; and this was the beginning of the present kingdom of Italy.

In the kingdom of the two Sicilies Ferdinand II. was succeeded by Francesco II., a son worthy of his father. In the beginning of April 1860 a conspiracy gave rise to a small rebellion in Palermo, followed by other insurrections in various parts of the island. The time seemed opportune to Garibaldi to attempt the liberation of Sicily and of Naples. On May 5 1,000 enthusiastic volunteers set out from the Rock of Quarto near Genoa, under his command and with the good will of the government and the King of Piedmont; they landed at Marsala, where Garibaldi assumed dictatorship in the name of Victor Emanuel II., King of Italy, conquered the Bourbons at Culatafini, entered Palermo after a brief struggle, and, his numbers constantly increasing, had a decisive victory at Milazzo; and in a little more than a month the entire island was free. Henceforth, some small risings discovered here and there opened up the way for him; he landed in Calabria, and almost without a blow, was welcomed as a liberator everywhere. He advanced towards Naples, into which city, preceding his men, he entered almost alone on September 7, the day after King Francesco II. had fled to the Fortress at Gaeta. At this point an event occurred which has been called the masterpiece of Cavour. The governments of Europe were much disturbed by the triumphs of the popular hero Garibaldi, which rendered the Italian Revolution so terrible. Cavour thought that if the secular monarchy of Savoy, which up to this time had only assisted this expedition of Garibaldi's, should boldly assume the direction of it, it would not only add to its prestige in Italy, but would furnish the European powers with such guarantees of order as to render their intervention unnecessary. He decided, therefore, to come to the aid of Garibaldi. Having first traversed and captured from the Pope the Marches and Umbria in the victory of Castelfidario (September 18), the Piedmontese army entered Naples, where Garibaldi and his followers had won the battle of Volturno but had not been able to capture the fortresses which still resisted them, among them Gaeta where the Bourbon king was staying, and which were besieged by the royal army. Victor Emanuel II. and Garibaldi entered together into Naples. A plebiscite of Neapolitans and of Sicilians declared the desire of these regions to be united with the others, as they had been in the former state of Savoy; and Garibaldi, after he had presented the result of this vote to the conquered king, withdrew into his island of Caprera, carrying with him as the rich booty of conquest a sack of straw. In February 1861, the first Parliament of all the regions of Italy was assembled in Turin; on March 17 that law, which declared the *Kingdom of Italy* constitutional was ratified, and on March 27 Rome, still in the possession of the Pope, was boldly proclaimed the capital of the new state.

When Cavour died (6 June 1861), only two provinces were lacking to make Italian unity complete—Venice and Rome—and all were agreed that these should be joined to the mother country. But since the government, following in the footsteps of the great minister, wished to proceed with caution, especially as regarded the question of Rome, in order not to draw down upon the head of the young king the resentment of Catholic Europe, many Italians under the inspiration and guidance of Mazzini and of Garibaldi, formed a so-called party of action, which wished to proceed more rapidly and without so much consideration for foreign susceptibilities. The work of this party was some attempts by Garibaldi to settle the two questions by force of arms; in 1862 the government was obliged to interfere, first, to stop the general at Sarnico, near Bergamo, since with his volunteers he wished to invade those provinces still held by Austria, and then to stop him at Aspromonte in Calabria, since he was advancing to take Rome from the Pope and then intended to march through northern Italy to free Venice. The final arrangements of the Convention of September 1864 between France and Italy were much discussed; by these terms France was obligated to remove from Rome the garrison which had remained there since 1849, and Italy agreed not to attack nor to allow others to attack the Papal State, and also declared her willingness to move the capital of the kingdom from Turin to Florence. This change was made in 1865. In the meantime the liberation of Venetia was approaching, to accomplish which, Italy arranged an alliance with the Kingdom of Prussia, which at this time appeared to be unfriendly towards Austria, her antagonist in Germany. In 1866 the two allies attacked their enemy at the same time, with the intention of entering Vienna to dictate there the terms of peace. But while the Prussians in Bohemia were victorious, the Italians, through mistakes of their leaders, met with two reverses, at Custoza on the land, and as Lissa by sea. So that they were obliged to consent to receive Venetia from Austria on the most humiliating terms and to leave Trentino, Trieste and Istria still in her power.

The liberation of Venice sharpened the need and the desire to also redeem Rome, and Garibaldi and his party of action set to work in the autumn of 1867. Bands of volunteers penetrated the Pontifical State (narrowed down to Lazio by the deeds of 1859-60), and while an insurrection was being arranged in Rome itself, they occupied Monterotondo. The insurrection failed; but notwithstanding, a handful of 70 brave fellows led by the Giovanni brothers and Enrico Cairoli, approached the city as near as the Villa Glori, where they were overcome by the Pontifical troops and killed or captured; and the French having landed at Civitávecchia, because they insisted on the observation of the Convention of September which had been broken by this unlucky invasion, Garibaldi betook himself to the mountains of Tivoli in order to prolong resistance; but arrived at the basin of Mentana, he was here attacked and defeated (November 3) by the Papal troops and the French. This glorious defeat of the Italians had innumerable consequences, since the entire nation felt that it could not any longer endure that a foreign decree could withhold from them their rightful capital. They prepared, therefore, with zeal and with negotiations for the supreme moment, which was not slow in presenting itself. When the Ecumenical Council of the Vatican in 1870 had proclaimed the dogma of the infallibility of the Pope, and the Franco-Prussian war had caused the downfall of Napoleon III., the Italian government held itself freed of the obligations which it had assumed personally with the emperor through the Convention of September, and it decided to act. First it attempted to induce Pius IX. to open the gates of Rome in a friendly way; upon receiving a refusal of this request, it was decided to use force. An army commanded by General Raffaele Cadorna (20 Sept. 1870), made a breach in the wall near Porta Pia, entered the city, and was warmly welcomed by the population. The Pope made protest and declared himself a prisoner of the Italian Revolution; but on October 2, a plebiscite of Romans consecrated the union of Rome with Italy. The Parliament in Florence in 1871 passed a law guaranteeing the papal security, and thereupon the capital was transferred into the free city without any opposition on the part of the Catholic powers, and Victor Emanuel II. could declare «we are at Rome and there we shall remain,» and Quintino Sella could say «*hic manebimus optime.*» This unification of Italy was the realization of the dream of Dante, of Machiavelli, of Alfieri and of the myriads of martyrs who from 1815 to 1870 sacrificed themselves for their country. Italy had completed one of the most important efforts for liberty and for human progress; and in the years to come she could expect the development of her own resources and consequently that prosperity and that grandeur which had been prohibited for so many centuries.

Period V.—*Development and Progress of Free Italy* (1870-1907).—The various members of the country being brought together in one body, the Political Resurrection was necessarily followed as a natural consequence by an economic, intellectual and social Resurrection. All power after 1870 remained in the hands of that party which had had Cavour as master, and which had had the wisdom to guide Italy to unification. But this party, because of its oligarchial tendencies, lost its majority in Parliament and in the country, and political power passed in 1876 into the hands of the progressive party, which kept it for several years and did many good things, such as the extension of electoral rights, the abolition of the most distasteful taxes, the compulsion of elementary education. Then the Right and Left became mixed and confused and there were no longer distinct parties with different programs. In 1862 occurred the death of Mazzini, who had been the first to preach to the nation its duty to unite; in 1878 Victor Emanuel II. died in Rome, the man who had realized that which Mazzini had thought, and whose sepulchre is the Pantheon. During the reign of Humbert I. (1878-1900) the liberal institutions continued to develop with order and regularity, and socialism, which was spreading throughout the country and sent its representatives to the Chamber of Deputies, was spurred to reform. They passed laws to improve the administrative, judicial and financial regulations; they provided for public hygiene; they protected the rights and the interests of the laboring classes, establishing obligatory insurance against accidents to the operatives, and limiting the hours of labor for women and children, founding a pension bureau for artisans, etc. Two very important events took place during the reign of Humbert I.: the stipulations of the Triple Alliance, and the acquisition of colonies in Africa.

Pius IX. and his successor Leo XIII. did not give up the pretence of still possessing temporal power and threw obstacles of every kind in the way of the reign of the so-called usurpers. In France the republic was not yet upon a firm foundation and might at any time fall into the hands of the clericals, who were in favor of pontifical vindication. To this should be added the occupation of Tunis, made provisionally by France in 1881, which awakened great wrath from there to the Alps. Italy believed herself in danger; and at the same time Austria threatened her from the other side, because she was irritated by the agitations of the Italian party, called the Redemptionists, expecting the speedy liberation of Trentino, Trieste and Istria; they felt the need of relying upon Germany, which was already united with Austria; and thus in 1882 arose the Triple Alliance, which has been repeatedly renewed and has preserved peace throughout Europe. Later, her wrath being appeased, Italy again approached France, and her consequent agreements with this power and with England safeguarded her interests in the Mediterranean.

Her colonial possessions in Africa commenced with the acquisition of Assab in 1882, then with the occupation of Massaua in 1885. Wishing to occupy the high plateaus in Ethiopia, the Italians came into conflict with Emperor John of Abyssinia; but he, after a victory at Dogali in 1887, was forced to withdraw. Some years afterwards, Italy wished to exercise a sort of protectorate over the new Emperor Menelik, because of her occupation of some territory; he refused and war again broke out, and this, after some honorable defeats for the Italians, ended with the disastrous conflicts of Adua and of Abba Garima (1 March 1906.) Thus the dream of a vast African Empire vanished, and Italy was obliged to content herself with a more restricted territory, called Colonia Eritrea, which is being peacefully developed with hopes of a prosperous future. Besides this colony, there have been acquired upon the shores of Eastern Africa the colonies of Somalia (Somaliland) and Bessadir.

The reign of Humbert I. had a tragic ending. In consequence of a serious disagreement between the ministry of General Luigi Pelloux, who wished to restrict some liberties, and the more advanced party of the Chamber, which defended them, a conflict which became most acute and which at length reached obstructionist tactics and produced great resentment, an Italian anarchist left the United States, in order to revenge upon the irresponsible King the retrogressive attempts of the Minister, and killed Humbert I. at Monza July 29, awakening horror of the murderer and sympathy for the victim throughout the entire world. His young son, Victor Emanuel III., ascended the throne; he had been educated with the greatest care in regard to his exalted position, and he has proved that he respects liberty and is worthy of the esteem and affection of the Italians.

This nation, which has already given two civilizations to the world, when her redemption from foreign oppression and her own unification commenced, could already in certain aspects stand upon equal footing with the most progressive of the civilized nations, but in others she was inferior to all. In fact, even in those centuries of slavery Italy was always the country of science, literature and art; but in those same centuries her economic conditions were deplorable. Liberty not only made it possible for her to preserve those requisites which she already possessed, but also put her in a position to acquire those which she lacked. In science, the national genius which had produced Leonardo da Vinci, Galileo Galilei, Allesandro Volta, and many other distinguished persons, continued to manifest itself; to mention only the principal names, there were the astronomers Angelo Secchi (1818-1878) and Giovanni Schiapparelli (1835——); the great psychologist Cesare Lombroso (1836——), founder of criminal anthropology; the physiologist Angelo Mosso (1846——), inventor of pletismografo and of ergografo, and the electricians Galileo Ferrario (1847-1897), who discovered the rotary magnetic field, and Guglielmo Marconi (1875——), who gave us wireless telegraphy; the philologist Graziadio Ascoli (1829-1907), the chemist Stanislav Cannizzaro (1820——), the mathematicians Eugenio Beltrami (1835-1900), Luigi Cremona (1830-1903) and Giuseppe Veronese (1854——). In letters, the country of Dante, of Petrarch, of Boccaccio, of Machiavelli, of Ariosto, of Tasso, after having seen her redemption assisted by the works of so many famous authors, whom we have already mentioned, having become free could already boast of writers like Giosuè Carducci (1836-1907), Edmondo de Amicis (1846——) and Gabriele d'Annuzio (1862——). In the fine arts, of which Italy had produced for many centuries so many masterpieces, it was difficult to keep herself on the heights to which she had formerly risen and to which so many other countries had arrived. Especially in architecture are there many examples worth mentioning, as regards originality, grandeur and purity of style, for instance,—the Gallery Victor Emanuel in Milan by Giuseppe Mangoni (1827-1887); the National Museum of Italian Renaissance in Turin, called Mole Antonelliana from its author, Alexander Antonelli (1808-1888); the monument to Victor Emanuel in Rome by Giuseppe Sacconi (1854-1905). In painting, we may mention as among the most illustrious, Domenico Morelli (1826-1901), Giacomo Favretto (1849-1897), and Giovanni Segantini (1858-1900). In sculpture those worthy of mention are Giovanni Duprè (1817-1882), Vincenzo Vela (1822-1891), and Giulio Monteverde (1837——). In music, after Rossini, Bellini and Donizzeti, who attained their greatness during the period of struggle for Resurrection, Giuseppe Verdi (1813-1901) continued his admirable productions, and Pietro Mascagni (1863——) commenced to make himself heard of, as well as Ruggero Leoncavallo (1853——), Giacomo Puccini (1858——), and Umberto Giordano (1870——).

More difficult than the preservation of their former importance in the scientific, literary and artistic world, was the beginning of their economic importance. The energy which liberty developed in the inhabitants, especially in the northern parts, and the provisions of the state rendered possible many great public works, destined for the progress of agriculture, of industries and of commerce; for example, the redemption of marshy lands in Ferrara and near Rome; the colossal aqueduct of the Puglie; the tunnels of Cenisio, St. Gottard and the Simplon, which it is intended to follow by those of Spluga and Montebianco (Mont Blanc); the construction of railroads, which now exceed 16,000 kilometres; the regulation of the harbors, among which Genoa bids fair to become the foremost on the Mediterranean. Industries which had never existed before now appear and prosper from day to day; in some lines, for instance in weaving cotton cloth and silk fabrics, in the construction of automobiles, Italy does a large export business. The Alps which surround the peninsula, and the Apenines which traverse it, furnish in their streams cheap and abundant electric power; which will constantly lessen the amount now paid for the importation of coal. Commerce has increased to such an extent that Italy is now the eighth power in the world for exports and the seventh for imports. The country does not yet produce all the wheat which it needs, but agriculture is constantly progressing. The population has risen to 33,000,000, and 4,000,000 Italians work in foreign countries, from whence they contribute their savings to add to the national wealth. If all the regions of the kingdom, in industries, in commerce, in agriculture, in the diffusion of popular education, should arrive at that degree of efficiency to which the northern provinces and a part of central Italy has risen, in less than half a century, Italy would in these aspects also stand on an equality with any of the most progressive nations. What she has been able to accomplish in spite of the enormous difficulties created by her peculiar conditions, was well seen in the International Exposition held in Milan in 1906 to celebrate the opening of the Simplon tunnel, and one will see even better what is being accomplished in Rome and in Turin at the celebration in 1911 of the fiftieth anniversary of the foundation of the Kingdom of Italy and the proclamation of Rome as its capital.

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7. Italy — Political Administration. *General Characteristics.*—In order to understand the political character of the administration in the kingdom of Italy, we must take into consideration certain essential elements of her constitution, determined by her political history and by the manner of the formation of the Italian kingdom. The reaction against the secular division of Italy into a number of more or less insignificant states, none of them strong and all more or less at enmity with each other, determined the formation of a government that should not only be rigorously unified, but absolutely concentrated. There should be not only one source of sovereign power, but also the greatest possible concentration of power in the central authority. Thus the original type of Italian administration was moulded to a perfect similarity to that of France before Napoleon. Meanwhile, the broadly liberal spirit in which the Italian constitution was applied and interpreted, and the domination of democratic influences, rapidly led to a full and absolute adoption of the parliamentary system, by which the cabinet is responsible in parliament for the acts of the Crown, and the parliament exercises a direct and constant influence on the proceedings of the public administration, either in virtue of the ever-widening and increasing scope of its legislative functions, of the annual acceptance of the budget, or of what, strictly speaking, may be called the inspectional function (*interrogazione, interpellanza ed inchiesta*) and the power of censuring the cabinet and instigating dismissal from office.

In a unified and concentrated government, which is at the same time a parliamentary government, and as such subject to the rule of the majority or of parties, the influence of politics with all its menaces and all its perils on public administration, seemed almost inevitable. The Italian government is certainly not free from this accusation. But the gravity of these dangers was fully foreseen, and determined a reform government with the view of avoiding or diminishing them. Corresponding to this was an ulterior phase of administrative development in the Italian government which, in the field of science, encountered the influence of the German theories on the jurisdiction of government and on the judicial auto-limitation of the powers of the State as a guarantee not alone of political, but also of the civil rights of the individual. Thus, while according to the statute the right of appointing or removing officials belongs to the head of the executive, successive rulings gradually limited this power so as to make it little more than a formality and subordinate it to a multiplicity of limitations and privileges; thus the discretional powers of the public administration were regulated and disciplined with great strictness; thus a series of very severe inspections in administrative laws, judicial ordinances, and parliamentary ordinances. Perhaps, taken altogether, the government of Italy has to fear the dangers of weakness rather than those of violence and absolutism. The truth is that Italy has had too brief an education in the hard school of freedom; she is still passing through periods of transition, and has not yet conquered all the phases in the perfect formation of an administrative organization.

Direct Administration of the Government.—The outward and formal affirmation of the unity of the administration is in the head of the kingdom. According to Art. 5 of the Statutes of the Kingdom, «To the King alone belongs the executive power.» Art. 5 affirms further that the King is the supreme head of the State, commands all the forces on land and sea, declares war, and has control of the foreign policy of the kingdom. The king makes appointments to all the offices of the government and makes the decrees and ordinances for the execution of the laws (Art. 6, Stat.).

With the parliamentary form, however, of the Italian government all these prerogatives of the King are always exercised subject to the responsibility of the Ministry, either collectively (the cabinet), or individually according to the nature of the act.

The responsible representatives of the government are therefore the Ministry; and in Italy they have a double function: constitutional on the one hand, in which they assume the responsibility of the acts of the Crown before the parliament; administrative on the other hand when they take the active direction of an important branch of public administration. There are 11 branches of the Ministry in the Italian government: (1) The Ministry of the Interior, which is really the political ministry par excellence (on it are dependent the departments of police and of public sanitation, the local government offices, the communal administrations, the prisons, etc.); (2) the Ministry of Foreign Affairs; (3) the Ministry of War; (4) the Ministry of the Navy; (5) the Ministry of Public Finance; (6) the Ministry of the Exchequer (which administers the wealth of the kingdom and represents the financial economy of the government); (7) the Ministry of Justice and Religion (which is supreme in all jurisdictionary and ecclesiastical matters). Then come the departments of social administration: (8) the Ministry of Agriculture, Industry and Commerce; (9) the Ministry of Public Works (which comprises also transportation and railroads); (10) the Ministry of Public Instruction; (11) the Ministry of Postal Communication and Telegraphs. The supreme organ in the councils of the government, intended to give advice to the Ministers, without, however, limiting their freedom or responsibility, is the Council of State, besides the special supreme councils which are instituted in the various Ministries for the discussion of special matters.

The direct administration of the government—emanating from the ministerial centre—is felt throughout the whole territory of the kingdom by means of a network of local government officials, co-ordinate and subordinate. Every special administration has, naturally, its special territorial organs; but even in this diffusion of the administrative action it has been the object to maintain a sort of subcentral unity, by the institution of a suitable official who should represent all the powers of the government within a certain extent of territory. This office is filled by a Prefect, within a circumscribed area known as a province; the kingdom is divided into 69 prefectures, The Prefect, according to Art. 3 of the Communal Law, represents the executive power in the whole province, provides for the execution of the laws, supervises the conduct of all the public government offices, superintends the safety of the public, has the power to make use of the police force, and to call out the soldiery. Thus, all the provincial government officials find their unit of co-ordination in the Prefect, who upholds and confirms their subordination to the managing official of the Ministry. The judicial representation of the central administration is also assured in even the smallest section of territory, for in every commune the Mayor (besides being the head of the communal administration, as we have said) is also empowered to represent the government, especially in whatever regards public safety, the police department, and local sanitation.

The Administrative Departments and Public Offices.—The unification of the Italian administration is specially shown in the bureaucratic and departmental organization. All the offices of the government are united by a chain of obedience which mounts gradually from the lowest to the highest, from the local to the central government, up to the supreme Head of the Administration, *i. e. the King*. The administration, except in certain very exceptional cases, is bureaucratic, *i. e.* consists in paid individual responsibility of public functionaries who are at the same time professional employes. In Italy there is no general law on the judicial status of employes. There are, however, several special laws and a lengthy and complex series of special regulations, forming, as one may say, a species of common law regarding public employment. The appointment of public employes is generally through competitive examination, and in this way the various grades do not depend on the arbitrary whim of their superiors. The exceptions to this rule are in the case only of certain official positions that are pre-eminently political, and especially that of prefect.

Local Administration.—The antecedent history of the Italian government gave rise from the first to a spirit of mistrust of the local autonomies, ill concealed by purely external and formal recognition of an auto-administration to a great extent democratic. This led to the breaking down of all connection with those great natural divisions of territory which in Italy were formed by regions many of which had a real and true geographical autonomy (such as the large islands of Sicily and Sardinia), and others a parallel in antecedent history, in the usages, customs, dialect (as in the ancient kingdom of Naples, in Tuscany, Piedmont, etc.). The whole territory of the kingdom was instead divided symmetrically into communes which were given a uniform government, without any juridical recognition of the difference between large cities and small communes, between industrial and rural centres, etc. An aggregation of communes constituted a province (which is at the same time the circumscribed section under the local authority of the Prefecture, as has been previously mentioned). There are 69 provinces, and the average population of each of these amounts to about 500,000 inhabitants, but in actual fact the number and density is variable. Only occasionally the province is identical with the region (for example, Umbria and Basilicata); in general, every region comprises several provinces (Sicily, seven; Sardinia, two; Tuscany, eight; Piedmont, four, etc.).

Thus the communes which the provinces may juridically retain as self-governing bodies are territorial corporations of which the government makes use as organs of its administration; while, at the same time, they represent and take charge of the collective interests of the corporation itself. It follows that these corporations, as far as their activity in the field of public administration is concerned, have never any original rights of their own, but act in virtue of a delegated legislative authority, and use the powers transmitted to them by the government.

The legal limit of their autonomy is found in the normal functions of vigilance and control which the government (through the instrumentality of the Prefectures and the Ministry of the Interior) exercises over the local bodies, reserving to itself the right of annulling in these communities such enactments as might prove contrary to the laws and outside the limits of their right (*competenza*). By certain enactments (but not as a law), the government exercises a real guardianship over the communal administrations, looking into their very actions with the consideration of their expediency and utility. The organ of this guardianship is a college of seven members, partly honorary, partly official functionaries, called the Guinta provinciale administrativa (Provincial Administrative Assembly).

The communes and the provinces, according to a general law, do not exercise any of the activities of political organizations, but only the economic and social institutions, particularly transportation, public instruction, hygiene, and local police, and the assistance of the poor. Some of these services are made obligatory on them by law; others may or may not be instituted at discretion. An insuperable obstacle to this theoretical liberty is doubtless, however, the lack of financial means. The local Italian administrations have no true and individual financial autonomy: the principal income from taxes are the exclusive appurtenance of the government, which leaves to the communes only a quota of the amount within certain limits. A recent law (1903) permits the communes to assume the direct management of commercial or industrial enterprises that have a bearing on public interests and constitute to a certain extent natural monopolies (aqueducts, public and private lighting, tramways, telephones, mills and furnaces, public baths, etc.).

As regards the constitution of the communal representative bodies, the Italian law is sufficiently comprehensive and democratic. In all communes there is a deliberative body which sets forth the will of the community in matters of serious importance, and the communal council (in the provinces, the provincial council) composed of a number of citizens (from 80 to 15, according to the population of the commune) nominated by the popular vote of the majority. All citizens are entitled to vote if they pay into the commune any kind of legal tax, provided they know how to read and write, and those who, having their domicile in the commune, shall be absolved from the obligation of elementary instruction. As a rule no direct interference by the assembly or by popular vote was permitted in the management of communal affairs; but, lately, the law on the municipalization of the public utilities insisted that the deliberations of the communal council which resolved to assume the service should be put to the vote of the electors of the communes (referendum).

The Mayor is the head of the communal government and the organ of its active administration. He has, at the same time, as above mentioned, the dignity of a functionary of the central government. In spite of this complex position, his appointment is entrusted to the communal council, who elect him from among their number. The Governor has the power to recall him from office as he has also the prerogative of selecting the communal council and to place the administration of affairs in the hands of a commission in extraordinary until the next election and for a period not exceeding six months. The Mayor is assisted in the exercise of his official functions by a body (*Guinta*) of lawyers (assessors) elected also by the communal council. The provincial council elects a provincial deputation which, with its president, is the organ of the active administration of the province itself.

Jurisdictionary Inspection.—Besides the parliamentary jurisdiction over the entire administration of the kingdom of which mention was made (notably the practical drawing up of the obligatory balancing of expenses and the sum allowed by the government, which is controlled by the Corte dei Conti), Italian public law has ordained a series of mutual inspection (*controlli contenziosi*), and yet strictly jurisdictional.

The law of 1865 gives to the ordinary tribunals the power to reinstate in his rights the citizen who has been wronged by an act of the public administration, abolishing the ancient government courts of *controlli contenziosi*, which formerly existed, modeled on those of France. This full judicial power is, however, subordinated to two conditions: that a true and inherent subjective right of the citizen should have been infringed; that the sentence should be limited to the recognition of the wrong suffered in the specific case, without the ability to revoke in itself the administrative act. Thus much in regard to the theory of the distinction between powers, which, although it has been discussed and is capable of discussion in the abstract, remains one of the positive accepted unwritten laws of the Italian constitution. To offset the lack of protection of the legal sphere of individual interests caused by these limitations, a law of 1888 established a high tribunal of administrative justice (creating special section of the government council) which, with all the forms and guarantees of legal procedure in *contradictorio*, adjudicates on the objective legality of the acts and provisions of the administration, it being sufficient that the citizen should prove that not necessarily a law, but a legal privilege has been impaired by this act. The council of the government in the seal of administrative justice has the privilege of annulling the impugned administrative decree. For the settlement of disputes that may arise between the government authority and the judicial authority, the supreme tribunal is the highest court in the kingdom—the Court of Cassation in Rome.

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8. Italy — Crown and Parliament. The nature of the relations between the ruler or head of the State and the Parliament is the best guide in determining the character of a representative government. These relations are harmonious in the constitutional systems of Prussia, and of the German Empire; inharmonious in the republics; distinctive in England, Belgium, and Italy.

The note of discord is formed by the Cabinet, when that Cabinet represents the intermediary between the ruler, or head, and the parliament. From the historical point of view representative governments which have been formed through royal concessions recognize in their statutes the predominating influence of the sovereign, who is the centre of gravity of the State; and although these Parliaments have distinct power they yet consider him the head who inspires them and ordains their powers and the limitations of those powers. But this can only be a transitory state of affairs. Liberties, though they have the appearance of concessions, are no longer revocable; the suffrage is being gradually extended, and the influence of the popular assembly on the action of the government is ever on the increase. There may be a more or less prolonged period of resistance on the part of the Crown, but parliamentary government expressing the will of the people, will finally triumph over the constitutional form.

THE CROWN.

This brief general statement will aid us in understanding the origin, the historical and constitutional value of the Crown, in its relation to the character, and to the proceedings of the parliament in Italy. We can then, in bolder lines, portray a double period which corresponds to the gradual development of our political organization. This political organization in its dynastic concessions resembles a charter; as regards its title, its form, it is a statute, as regards the spirit that prompts it, the manner in which it has evolved, it is a true constitution on a parliamentary basis. In its outward and superficial appearance it differs little from other statutes in which, as in Prussia, the ruler of the State is the Head of the Executive.

In Italy the statute has not the restrictive authority that it had in France in 1814, in Prussia in 1850, in Austria in 1867, all of which represented royal concessions; and yet it still suggests the old abolutism in many particulars. To the Italian statute, as regards jurisdiction, the same standard cannot be applied that political science suggests in the examination of other constitutions. A scientific analysis will show that a statute conceded by royal initiative must have a special character. The King thought that by creating the organization necessary for political government he would restrict his own power; but he really in this way ordained that such matters as referred to the exercise of power or freedom should be regulated by law.

This complication of regulations, restrictions, of written (codified) principles form a series of limitations that the Head of the State has placed on his own actions, and which is analogous to the restrictions which the executive lays down by decree and ordinance. Without this we could not explain the provisions which do not come under the ordinary classification of the three forms of government. We will merely cite the various forms of the *Jus Imperii* which daily become more comprehensive, and avoid the civic as they do the legal authority. These provisions, which assumed the form of royal decrees, represented the exercise of the highest sovereignty, and had some analogy with the orders of the Privy-Council in England; but on the other hand they must not be confounded with the royal enactments, such as those permitted by the charter of 1814 in France, which cost Charles X. his throne and overthrew the Polignac ministry, or with that which authorized the decree of May 1882, in Prussia.

It would be natural in Italy to expect a similarly enlarged sphere of royal authority which would appear to detract from the reality of parliamentary government. And in the preliminary period of our constitutional history we have not a few instances of such a condition of affairs. But through the natural evolution of parliamentary government the rights immediately belonging to the Crown were preserved, and all the rest were included in the responsibilities of a ministry directly responsible to a House of Deputies elected by the people.

The manner of procedure in the Law of Necessity, which comes up in extreme cases before any government, whether monarchist or republican, has not been clearly defined. The proclamation of a state of siege depends, in substance as well as form, on a royal decree which, although countersigned by all the members of the Cabinet, does not guarantee it from possible abuses. While preserving to the Executive the right of action by means of decrees, the limits of such a Law of Necessity should be fixed by means of laws, such as they have in France and Germany; or better still, by the English method, which requires the intervention of parliament.

The Italian Statutes contain various dispositions in regard to the prerogative of the Crown, namely, the mass of guarantees ordained to maintain the prestige of the Crown and its preeminence over a representative government, such as: the hereditary character of the Crown according to the Galic law (art. 2); the inviolability of the person of the king (art. 4); fixing his majority at 18 years of age (art. 11); the allowance to the members of the royal household; the regency, etc.

The royal income, the successive increment to which, accruing from the annexation of the various Italian States to the old kingdom of Piedmont, in regard to which there were about seven laws on the Civil List, from 16 March 1850 to 31 May 1877, besides the last one decreed by King Humbert, corresponds almost to the permanent government expenses in England, and is free from parliamentary control. Its administration is autonomous and preludes all interference by either chamber.

The minister of the royal household, according to the decree of 14 Nov. 1901, is nominated by the suggestion of the Council of Ministers, but has no responsibility towards the Parliament. The prerogatives constitute the traditional element, whose precedents extend far back in the limited monarchy, as in the absolute. But there is another element—impersonal and non-statutory, but with a political significance and history connected with the State and with modern society. This is the most difficult matter the Crown has to contend with because it is relative to its *raison d'être* with regard to the democracy.

The Crown in Italy resumes all the chief characteristics of the Parliamentary Monarchy. Hence, in spite of diversities of origin, of customs and traditions, it resembles by analogy those of England and Belgium. A more profound observation of the acts and functions of the King has established the fact that a Parliamentary Monarchy, will find its *raison d'être* in an elective principle, although the form be hereditary. History gives instances of this. The transition from the Constitutional to the Parliamentary form was determined in England in 1688 by solemn Act of Parliament which deposed James II. and put in his place William of Orange.

In Belgium the new monarchy arose by elective act of parliament, after having obtained a separation from France, and proclaimed a Constitution in 1831.

In France the Crown underwent a profound transformation which distinguished the declaration of 1814 from that of 1830, when the Parliament proclaimed Louis Philippe King of the French. The same character was seen in the dynasty of the Second Empire: Louis Napoleon was elected Emperor in 1852, and called a plebiscite in 1869.

The Crown in Italy has a special hereditary character through its historical traditions, but in virtue of the annexations, and of the plebiscites has been invested with an elective character, which is reflected in its actions; whence the constant and effectual support which it has given to the democratic evolution of the Italian constitution. Within the limits of the Constitution the King, free from all restrictions, has the right to ameliorate the various organizations of the State. This is shown by the foreign policy: the authority to form alliances, to enter into agreements with foreign nations, to form a government, to renew the parliament, to convoke the assembly.

These eminent prerogatives are distinct from the functions that the King exercises with the co-operation of the other functionaries of the government, which may be called co-operative functions:

(1) Co-operation with the legislative power in regard to the royal decree for the presentation of all the laws projected by the Ministry, and to the sanction of those laws; for once they are voted on by the Chamber and the Senate, they become law. In theory the King's veto is absolute, but its peremptory character does not

hinder the passage of a law, in fact this right has never been exercised. The method of veto granted to the President of the United States answers the purpose better, and has a beneficial influence in allowing time for the amendment of many important laws. It would be advisable to introduce it in Italy where the lack of a mixed commission prevents any means of adjusting the want of unanimity in the two Chambers, and thus leads to an acquiescence which is harmful to the efficiency of the laws.

(2) Co-operation with the executive power in the nomination to all the offices of State, which presupposes always a preference designated by the government, which is responsible for its nominee. This series of mutual relations does not include (at least in form) the initiative of the King even in making those nominations which seem to pertain exclusively to his prerogative, for instance, the nomination of Senators. This, properly speaking, is his special right, in regard to the members of the government, and has also to be subscribed by responsible ministers.

(3) Co-operation with the judiciary in whatever else belongs to the power of nomination; the power of pardon and of amnesty.

The distinctive feature in a parliamentary monarchy was constituted in Italy by the Cabinet, the choice of whose members depends on the free will of the King. According to the letter of the Statute this privilege is absolute (art. 67); but in practice it has been modified to suit the conditions of Parliament and the country, in accordance with the best traditions of England and Belgium.

In the preliminary period, from 1848-1860, the King had a greater power of initiative. His prerogatives savored of the original character of the Statute which was a concession by the Crown; and the exercise of those prerogatives was a complete success, especially in the choice of the Prime Minister, Count Camillo Benso di Cavour, who directed Italian politics and their functions, seconded by King Victor Emmanuel II., which led to the independence and unity of Italy. With the new kingdom, the national representation became of more value, the selection of the Cabinet was made the choice of a majority, and depended on the political votes of the Chamber of Deputies. This proper method has been followed until the present time, by the King, who thus maintains himself superior to all parties, and can adapt himself to the exigencies of public opinion.

In the exercise of the right of choosing the members of the government, is also comprehended the power to refuse any such nominees if the Crown thinks that the legal majority in Parliament does not correspond to the royal majority throughout the country. Thus it happened that in 1864, after the sad cases in Turin, which provoked a violent repression on the part of Minister Minghetti, subsequent to the Convention of September, at which the capital was transferred from Turin to Florence, the King demanded the dismissal of the Cabinet, although it had a majority in the Parliament.

In several cases the Crown has not been willing to accept the retirements caused by hostile votes in the Chamber of Deputies, but it is a right which must be exercised with discretion, and it is always connected with the power of appeal to the country.

Collecting together the various solutions of the crises during a period of 58 years it will be found that the Crown exercised greater freedom in the choice of ministers under Charles Albert and Victor Emmanuel II.; that in many instances it used the power of discretion under King Humbert, and that it conforms strictly to the designation of a parliamentary monarchy under the present government.

THE PARLIAMENT.

Although the Parliament with its two Chambers, in its construction resembles that of France in 1830, it is different from it in its evolution of more liberal customs.

The Chamber of Deputies, composed of 508 members, begun on a restricted electoral basis, acquired a democratic character after the reform of 1882, which established a limited membership, with the requisite of elementary education. This reform still has an influence on the formation of the parties. From the first these took the name of Right and Left; the former, the party of order, had the predominance until 1876, and endeavored to bring about national unity and to establish financial equilibrium, and to proclaim the secular attitude towards the papacy; the latter, as the party of action, endeavored above all to promote the more democratic tendencies and to improve the economic condition of the country. But these two parties subsequently became subdivided into groups which made the formation of a cabinet of harmonious members very difficult, particularly when, in latter times, a strong group of socialists entered the Cabinet, in 1900.

The Upper Chamber, although founded on a basis of life tenure, consists largely of high officials. It has always maintained a liberal attitude; and even if it has sometimes opposed administrative reforms it has never attacked more important political reforms. This connection between the two branches of the Parliament has usually helped to decidedly modify many provisions of the Senate.

The Senate, compared with the other Chamber, has more restricted attributes in regard to finance, although in practice it has several times exercised the power of amendment. It retains special judicial functions as ancient traditional survival of preceding statutes. It may in fact constitute itself a high court of justice for the consideration of cases of Ministers accused by the other Chamber, and also for cases of political crime and where its own members are accused (Statute, art. 36). It may accept in the first case the special judicial function (which is paralleled in the American Senate in regard to impeachment of the President, but it cannot be justified in the other two cases, which savor of privileges. With this exception the two branches of Parliament have identical rights in the exercise of the legal function; in the simultaneity of convocation, and in the closing of their sessions, which depends on the will of the King.

But there is a notable difference as regards the very existence of these two branches of parliament which is shown in the nomination of Senators and the dissolution of the Chamber.

The Italian Statute (art. 33) in the organization of the Upper Chamber requires as members those holding the most important positions in the public service and in social life. This characteristic feature gives to life membership a different stamp from that of the French Charter of 1830 from that of Prussia, in 1859, and from every other monarchical charter.

The 21 categories, in fact, constitute a true representation, with a species of gradual selective choice, because it presupposes grades in membership. The standard of nomination adopted by the Crown has followed the democratic evolution of modern society, admitting as members of the Upper Chamber even those who give expression to advanced views. On the other hand, the Senate has understood its position towards the extension of the suffrage through the composition of the Upper Chamber. With remarkable instances of initiative it has more than once even attempted to reform its own organization, introducing the elective element as a primordial basis.

This ingenious system elaborated in the Sared's report in 1894, shows how the Senate has understood the spirit of the times. It has, besides, on many occasions, stretched the exercise of its power of approval to the point of disapproving the nomination of certain Senators, according to a standard which seemed exaggerated to some minds. With the organic decree of 14 Nov. 1901, the Minister declared explicitly his right to propose the nominees for Senator; but if he thus fulfils his ministerial responsibility, it does not lessen the supreme authority of the Senate, exercised by virtue of a constitutional function, and which contains an exclusive right to decide in regard to the merits of its members (Statute, art. 60).

Not less to be considered is the royal prerogative in regard to the choice of the Chamber of Deputies. On its right exercise depends largely wise development, or disorder in public affairs. The Statute places no limitations on him except in the request that Parliament be reconvoked within four months.

No statutory limitation exists to this high prerogative which, except in Norway, holds in all constitutional monarchies; and among the republics is recognized only in France, tempered by the previous assent of the Senate.

In the lack of regulations the experience and the wise judgment of the sovereign contributed largely in Italy to the right use of the Statute. There are certain special conditions that practice has shown may determine the necessity and the occasion for a selection.

1. When there is continued dissension in regard to high matters of State; as occurred on the occasion of the treaty between Piedmont and Austria with the celebrated Edict of Moncalieri, in 1849.

2. When a serious conflict takes place between the two branches of Parliament, and the King has not been able, or has not thought of settling it by renewing the Upper Chamber, augmenting the number of Senators to assure a government majority. This is what King Humbert did in 1880, calling the assembly to decide on the flour tax, which the chamber wished to abolish, and the Senate intended to retain (1880).

3. When the chamber and the government had not fixed standards of general political rights it became necessary to take a popular vote to avoid more serious disturbance (1904).

4. When the new Cabinet had not obtained explicit approval, or results did not clearly show a majority of votes, on account of many absent votes (1892).

5. When through internal disturbances, notwithstanding the established majority, parliamentary business was impeded, as in 1900, when obstructionists paralyzed the work of the assembly.

6. When some grave event occurs which modifies the territory of the country, as in the occupation of Venice and Rome, which gave rise to an election in the Chamber on 13 Feb. 1867, and on 2 Nov. 1870.

7. When a new electoral law is voted. In this way the Chamber was elected in 1882 after the reforms. But it was not thought necessary to re-elect it in 1891, after the law which substituted *viva voce* nominations for nominations by ballot.

From this short exposition it is seen how in Italy the Crown, while preserving its high dynastic prerogatives has from the beginning followed such a liberal policy as to render monarchy compatible with a wise democracy. The co-operation in the national re-organization, the common struggle for independence and unity, and the plebiscites have consolidated this union between the Crown and the Parliament.

The Statute and political science may define the outlines, indicate the forms, but the rest must be governed by good customs which are the true guarantee of free institutions. Italy can boast of a parliamentary monarchy which will bear comparison with the correct traditions of England.

On its side the Parliament, following the trend of the times, has, without shocks or excesses, adapted its constitution to modern needs.

Thus, with harmony established between the powers of the government, and political forms adjusted, Italy may proceed serenely on the path of social reform.

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9. Italy—Communal and Provincial Administration. *Local Government.*—The local government in Italy is administered partly by bureaucratic functionaries appointed by the central government, and partly by independent civic corporations under the administration of officials elected by the people Many of the public services have in various portions of the kingdom special administrative officials. Thus, Justice, the Army and the Navy, the administration of the mercantile marine (heads of departments and maritime regions, and commanders of the port); the ministry of industry and agriculture (inspectors of industry, of mines, and forests); postal communication, telegraphs and telephones (departmental and local administration); higher and secondary instruction (universities, schools); finance (sub-treasurers). The greater number of the local services that are under government control are administered by prefects and sub-prefects. There is a prefect, a political and administrative magistrate appointed and paid by the government, in every province. There are 69 provinces. This magistrate is assisted in the administration of the various services by other functionaries and bý various colleagues.

Above all he is assisted by counsellors of the prefecture, who individually administer some of the various branches of the service, such as the superintendence of the communes, the provinces and the charitable foundations, the public works, principally on the rivers (when there are not special companies for the purpose, called partnerships), and on the government roads, the prisons, etc. The counsellors of the Prefecture, three in number, constitute a council (the Council of the Prefecture), which gives advice to the Prefect on affairs of importance, and audits the accounts of the communes. In the superintendence of the communes and the provinces, the Prefect is assisted by the provincial administrative «Giunta,» a body presided over by the Prefect, consisting of two counsellors of the prefecture (besides a supplementary), and four other members (two supplementary) elected by the provincial council. The provincial «Giunta» is empowered to approve the most important acts of the communes and of the provinces. Five members of the «Giunta» constitute a tribunal for the consideration of various administrative questions with appeal to Division IV. and V. of the Council-of-State. There is a Provincial Benevolent Committee to superintend the charitable foundations. In the department of elementary and secondary instruction, the Prefect is assisted by a superintendent of instruction and a school provincial council. Public hygiene is under the superintendence of a provincial physician and veterinary, and a provincial sanitary council. In forestry there is a provincial council of forestry.

The police department is also under the direction of the Prefect; it has many representatives throughout the province according to the needs, police commissioners, sub-commissioners, delegates, and the regular police.

There is a sub-prefect, a functionary paid and appointed by the government, in every region or district. The regions and districts number 284. The sub-prefect has the same duties as the prefect, especially as regards the police.

The mayor of each commune acts as a government official in matters of general concern; he is dependent in this capacity on the Prefect and Ministry. In the small communes in the same way the mayor is head of the police.

The communes and provinces are independent public organizations under the administration of elected officials.

Italy is divided into 8,277 communes; some of these are large cities; others, little rural communes. All are civic corporations, organized uniformly according to the general law (Provincial and Communal Law of 4 May 1898, with various subsequent amendments). Latterly there has been manifested a tendency to establish special regulations, financial rules, according to the various character and needs of the communes (Laws for the Southern provinces and the Islands, 1 July 1906). The affairs of every commune are administered by a Communal Council, a «Giunta,» and a mayor. The Communal Council consists of a number of counsellors varying from 80 to 15, according to the population of the commune. The counsellors are elected by the electors of the commune. There are four general requisites in order to be entitled to vote: Italian citizenship; an age qualification of 21 years; capacity to read and write; and that the citizen be of the male sex. There is, besides, a special requisite, which is that the candidate citizen shall either be a political voter in the commune (and all that is necessary for that is to have passed the elementary examination of the third class), to have been a resident for one year and to have paid five lire of legal communal taxes, or to have rented real estate with an assessment in proportion to the population. The election of members of the Communal Council takes place every two years, when a third of the counsellors are elected. Each counsellor remains in office six years (Law of 11 Feb. 1904). The election is on a single ticket which is voted on throughout the commune. The representations of the minority is assured by the fact that each elector is prohibited from inscribing on the ticket more than four-fifths of the names of the candidates for lection. The vote is a secret one. All the electors are eligible for the position of Communal Counsellor except in some cases of incompatability. The Communal Council meets twice a year in ordinary session; and in extraordinary session whenever it is necessary to do so. The power of deliberating on the interests of the Commune belongs exclusively to the Communal Council. It decides on the regulation of local police, of hygiene, building permits, determines within the limits of the law the communal taxes, goes over the expense bills, approves the annual budget, nominates and licenses employes, and administers the wealth of the commune. The Communal «Giunta» is composed of a number of members, varying from ten to two (besides two to four supplementaries) according to the population of the commune. The members of the «Giunta» are elected by the council, and chosen from among the counsellors. They are all elected anew every four years. The «Giunta» prepares the matters of deliberation for the Council and itself deliberates on matters of secondary importance. It may, in case of urgency, deliberate on matters belonging to the Council; but these deliberations must be submitted to the Council for ratification at its first meeting. The mayor is elected by the Communal Council, and chosen from among its members. He takes an oath of loyalty to the constitution. He may be recalled by the Council, suspended from office by the prefect, and removed by royal decree. The mayor presides over and convokes the «Giunta» and the Council, and carries their deliberations into execution, makes stipulations for contracts, represents the commune in law, supervises the communal force of employes. In case of urgency, he may issue regulations in regard to public safety in matters of hygiene or building permits, which can be put into force at once.

In every commune there must be at least one paid administrative official, the secretary of the commune. There may be other paid officials, according to the importance of the commune (Law of 7 May 1902). The action of the communal authorities is submitted to the control of the government authorities. All the deliberations of the Communal Council and «Giunta» are submitted to the Prefect or subprefect. The prefect may annul them if they are contrary to the laws. The more important deliberations, such as regulations, deliberations in regard to taxes, mortgages, contracts binding the commune for over five years, the acquisition of real estate, and, in many cases the budget, etc., must be approved by the administrative provincial «Giunta,» which has the power to approve and make them legal. Some other special matters concerning education and public health must be approved by the Provincial School Council, or the Council on Sanitation. If the communal authorities neglect to take action, or to make provision for obligatory services, the Provincial «Giunta» (and in some cases the prefect) may take action in the matter. In grave matters of public order, or in serious disturbances in the administration, the Communal Council may be dissolved by the Central Government. The communal affairs in that case are administered by a commissioner extraordinary appointed by the government. He cannot remain in office longer than six months. At the end of this time a new council is elected. The communal services are obligatory, or optional. They are obligatory when they are established by the law; the rest are optional. The communes in which the taxes on land and buildings exceed the legal rate, of which we will speak later, cannot have optional services. The principal obligatory services are as follows: The most important is elementary education; every commune must have at least one elementary school with one teacher, and it is bound to have schools and teachers in greater number in proportion to the population, so that all may receive obligatory education (Law of 13 Nov. 1859, 15 July 1877, 21 Oct. 1903, 8 July 1904). The expenses of elementary education, 1899, were 65,000,000 lire; in 1904, 80,000,000 lire. About 10,000,000 lire was contributed by the government. The number of schools is 53,259; the number of students 2,548,583. In relation to the population the proportion is 7.79 to every 100 inhabitants. Another important service is that of public health. Every commune must have a physician and a midwife paid by it for the gratuitous care of the poor. It must, if possible, pay another physician appointed by the government (or sanitary inspector) to supervise hygienic conditions. A commune may be obliged to employ a veterinary surgeon. Every commune must be furnished with drinking water, and have a cemetery (Law of 22 Dec. 1888, 26 June 1902, 25 Feb. 1904).

The service of local police comprises lighting, prevention of fires, superintendence of street traffic, etc. The expenses of public health and police in 1899 were 92,647,975 lire. The service of roads and highways includes the communal streets, their construction and maintenance. Expenses for roads and public works in 1899 were 76,727,335 lire. The service of beneficence comprises, in the communes, the obligation to bear the expense of the sick poor taken to the hospitals; to aid, with the provinces, in the expense of caring for foundlings; and with other societies in providing for those who are unable to work. Besides this, the hospitals and other charitable foundations take a share in public beneficence (Law of 17 July 1890; 30 June 1889). The communes must also provide for the needs of private individuals by the municipal services, such as the manufacture of gas, of electricity, the distribution of drinking water to the houses, tramways, etc. The municipal plants of these industries must be approved by referendum (Law of 29 March 1903). The total expenses of the communes in 1899 were 545,037,954 lire. The total debt in 1900 was 1,237,404,808 lire.

The revenue of the communes come in great part from the rents of real estate, from capital and industry (50,734,403 lire in 1899). The rest is obtained from taxes. The principal are the following:

On funded property (land and buildings) the several communes may lay a tax as high as 50 per cent. of that owing to the State (Government tax). In exceptional instances this limit may be surpassed. (Excess of taxation in 1899 was 134,049,046 lire.) There is the indirect tax on consumption (excise tax); on food stuffs (except bread and flour); and other articles of necessity and luxury (Law of 15 April 1897; 14 July 1898; 23 Jan. 1902). The excise tax of 1899 was 158,774,488 lire. An income tax may be established on the revenue of each family, which is slightly progressive. The family income tax in 1899 was 20,944,482 lire. The personal revenues which are partially liable to this tax are assessed only in the way of two other taxes—on professional income (taxes on purchase and sale in 1899 were 6,069,466 lire), and on cattle (in 1899, 15,248,018 lire). There are a few other local taxes of minor importance. The communes have the selection between these taxes, but they must observe a certain order and a certain proportion between them; they cannot impose any other taxes. The communes may unite in associations (*consorzi*) to deal with their expenses and to provide for some branches of the services (schools, streets, physicians, industrial plants, etc.).

Every province has a provincial council, a provincial deputation and a president of the same. The provincial council is composed of a number of members varying from 60 to 20, according to the population. The counsellors are elected by the voters of the province. The voters of the separate communes are the electors of the province. All those voters who have their domicile in the province, or pay their taxes there, are eligible as provincial counsellors. The election is by separate colleges or districts. Each college nominates from one to five counsellors, according to population.

The provincial deputation consists of a number of members—from ten to six, according to the population of the province. These are elected by the council, are chosen from among the counsellors, and hold office four years. The deputation is charged with the preparatory work, the same as the Communal «Giunta.» The president of the deputation is elected by the Council from among the counsellors. The Provincial Council may also be dissolved by the government in certain important events; the provincial affairs are then administered for not more than six months by a commissioner extraordinary.

The principal obligatory services which belong to the provinces are the roads and other important public works throughout the province; the expenses of beneficence in the maintenance of lunatics and the erection of lunatic asylums (Law of 14 Feb. 1904); the contributing toward the expenses of the care of foundlings; certain services and expenses connected with Sanitation (Law of 22 Dec. 1888; 21 July 1902). The province also provides for other services connected with secondary education and agriculture.

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10. **Italy — Department of Justice.** Justice, in civil and penal matters, is administered in Italy by justices of peace, county judges (*prætors*), tribunals, appellate courts, assizes, and the supreme courts.

Special laws regulate the jurisdiction of military and naval crimes. A college of officials of the public ministry is established at every tribunal and every court. Before the county judges (*prætors*) the functions of the public ministry are administered by vice-prætors or public securities or common counsels, or by ordinary citizens who are occasionally appointed by special delegation.

To each of the above mentioned tribunals there could be applied additional magistrates and auditors. The number of magistrates and judges of the different categories, and the boundaries of the territory wherein they exercise jurisdiction, is fixed by law, and cannot be changed by executive power. This principle is important in relation to the fundamental constitution of the kingdom, that every man must be tried in the district where he is a resident.

The magistrates (except the judges of the peace) are all nominated by the king, at the proposal of the minister of justice, from among those who have the requirements prescribed by law. No one can become a magistrate who has not served his novitate as an "auditor," except the advocates and the solicitors, who may be received after a certain number of years of professional practice in the magistracy, or as judges or as officials of the public ministry.

Auditors are admitted after oral or written examination, provided they have been admitted to the bar. After 18 months' practice they may pass by examination to the rank of additional judges. This is the source of supply from which future county judges (*prætors*) or judges are selected. Every other profession or office is forbidden to the magistrate, except that of county or common counsel and of deputy in parliament, but with some restrictions concerning the place of the election and the number of judges who may be deputies. There is a strong expression of public opinion which seeks to make this office incompatible with every other. The trials are public unless the judge considers that for moral reasons a case should be tried behind closed doors.

Justices of Peace.—In every community there is a justice of the peace, nominated by the first president of the court of appeals of his district, who must be selected from a list of eligibles submitted to him by the municipal authorities. This list is formed each year. The justice of the peace has two functions; one of being a mediator and peacemaker in controversies of every kind. He is obliged (if requested by one of the quarrelling parties) to bring matters to an agreement by summoning the other party, who, however, is not obliged to appear. Further, he has the function of judge in cases not concerning property rights, as real estate, not exceeding 100 francs in value, and in cases concerning dismissals from the houses or farms, not exceeding 300 francs as reward of letting.

All suits of not more than 50 francs value are settled by the justice of the peace and cannot be appealed. The competency of the justice of the peace is regulated in this manner by the new laws of 16 June 1892, No. 261, 28 July 1895, No. 455, and 24 Dec. 1896, No. 547, because the code of the civil law entered into effect on 1 Jan. 1866 (at the time of the legislative and administrative unification of the new Kingdom of Italy after the wars of 1859 and 1860), circumscribed the competency to 30 francs. The enlargement of power did not have good results, so there is possible a return to the former restriction that the justice of the peace may be peacemaker for all kinds of controversies but can only act as judge in cases of small money value.

County Judges.— In every district there is a county judge (*prætor*) to whom, according to the pressure and importance of his work, can be assigned one or more assistants, selected from recent graduates of a law school or from the assistant judges. The assistant judge can be nominated county judge after two years' practice as assistant. The county judges pass sentence, in civil and commercial matters, in law suits of a greater value than those over which the justice of the peace presides, but which may not exceed 1,500 francs, except suits of honorary civil or political rights wherein the State is interested. Further, they pass sentence in law suits of any value concerning personal possession.

In penal matters the county judge may pass sentence upon all crimes not libellous, for these the sentence cannot exceed three months of prison, one year of exile, or 1,000 francs fine.

Law suits of executive proceedings are also tried before the county judge, provided they concern household goods. Further the county judge may preside over family councils and decide questions of guardianship for children and feeble minded people. It is not necessary that the defense before the county judge is conducted by an advocate or solicitor, but, in civil or commercial cases, it is sufficient to have a citizen who is considered capable on the authority of the judge.

Tribunals.—The members of the judicial authority, named tribunal, are called judges and county judges (*prætors*), and assistant judges can be nominated judges after several years of service. In each district there is a tribunal. The tribunal judges, in civil and penal cases, with three members, and in the largest towns, where the number of trials is great, the tribunal is divided into sections. The chief of the tribunal is called president. In the first instance the tribunals try all cases, civil, commercial and criminal, exceeding the competency of the county judge. This limit has already been indicated. They also try heavier criminal and libel cases. The tribunes appeal cases sentenced by the county judge in the first instance as well as civil, commercial and penal matters.

In civil cases the suitor is obliged to have the assistance of a solicitor. Even if the suitors wish to appear and represent their causes personally they are always assisted by a solicitor who can interfere if, according to the president's opinion, the quarrelling parties are either too inexperienced or too angry to continue their own defense.

In criminal cases the accused must be defended by a lawyer. At every tribunal there must be an attorney of the people, who is called solicitor for the king. In criminal cases this public minister represents human society which punishes the crime, and if he thinks the suspected man is guilty, he makes the accusation and requests from the judge his condemnation. If, on the contrary, he believes in the innocence of the accused or of some extenuating circumstances he can demand of the public ministry his release. The presidents of tribunals and the prosecutors for the king are magistrates of equal degree.

Appellate Courts.—Every appellate court consists of at least two sections, one for the penal cases, and one for civil cases. Where, on account of a larger population, the number of cases is greater, there are more sections. The members of the appellate court are called counsellors and are of the same rank as the president of the tribunal. At the head of each of the sections composing the court, there is a president. The latter is equal in rank to the counsellors of the court of cassation, while the first president of the appellate court is a degree higher than the counsellor of the court of cassation. Before the appellate court are brought, on appeal, all penal and civil cases judged by the tribunals in the first instance. In civil cases the court judges with five members; in penal cases, with four members. Every appellate court has an office of the public ministry represented by a general solicitor of the king and by one or more substitutes, according to necessity. Matters of ordinary jurisdiction can be appealed before the appellate court, and here is heard, also, the opinion of the public minister, and it is decided upon by the members in council.

Assizes.—These courts are exclusively for penal cases, and are distinguished from all other magistracy because there are coöperating judges, called «jurors,» who are selected by lot from a list of citizens, which is revised every year. For each session 30 jurors are selected, from these are chosen 14 for each case. Out of these 14, 12 are acting jurors and two surrogate jurors, in case one of the acting jurors should be absent during the trial.

There are one or more courts of assizes for every district of appellate court. They sit generally twice every year, in spring and in autumn. But, if necessary, there are extra sessions. The court of assizes is presided over by a magistrate who is counsellor of the appellate court or president of the tribunal. The court of assizes is competent to judge all political crimes and all of the other more serious crimes which receive the penalty of more than 10 years in the penitentiary. The jurors pronounce the sentences based upon the facts which constitute the accusation, without manifesting reasons, but merely by a yes or no given after a secret consultation. The jurors, being 12 in number, the majority decides, but in cases of equal votes, the verdict which is favorable to the accused is the one taken.

After the verdict of the jurors, if affirmative, the court may be of the opinion that the facts do not constitute a crime, according to the code. This almost never occurs. Ordinarily when the verdict is affirmative (that is with at least seven votes) the court pronounces and determines the penalty. Against a sentence of the court of assizes no appeal is possible, only a recourse to the court of cassation for violation of the law.

Supreme Court—Courts of Cassation.—There are five courts of cassation in Italy. This multiplicity is in contradiction to the function of magistracy of pure justice which characterizes one court of cassation. But Italy, formed so recently by the uniting of several states, was unable to eliminate completely from every State all their central organs. She was obliged to leave the courts of cassation, as well as several other things, at Turin, at Florence, Naples and Palermo, and was obliged to form a court of cassation at Rome when this became the capital of Italy. However, though there are apparently five courts of cassation, in substance there is only one, divided, however, into sections which instead of being all united at the capital, are distributed among several cities of the kingdom. The penal jurisdiction has been completely barred at all the other courts and entirely concentrated at Rome. To the Roman court has been exclusively consigned all cases concerning taxes and eccleciastical matters. The court of cassation in handling civil matters is composed of seven members. It examines the sentences from which an appeal has been taken, and if no error of justice appears the appeal is rejected and the case finished. But if some error of justice (in form or substance) appears, the sentence is annulled and, without judgment, is dismissed to another magistrate of equal rank to that whose decision has been cancelled. This last magistrate is free to judge according to his personal opinion, but his sentence is also subject to an appeal to the court of cassation in many cases. The court of cassation in Rome is also invested with the power of regulating questions of jurisdiction between the administrative authorities. Therefore when a sentence of appeal is denounced on account of having been unjustly judged on the question of competency there is no other recourse than to the court of cassation in Rome. Thus the court of cassation in Rome has the function of a supreme court, and as the Kingdom of Italy is governed by the parliamentary system and there is no plurality of states, there can be no question as to whether a law is or is not constitutional (as happens in the United States and in the Confederation of Switzerland); the law being an emanation of the power of the throne which judicial authority can never dispute but must always respect. Judgment on the constitution can only be passed in Italy on the decrees and acts of the government as an executive power, inasmuch as we may decide whether the law of the State has been broken, because the executive power can exercise free action over the facts which are not regulated by law. But in cases of facts which do come under the law, the executive power has to conform to them. However, the decision, provided the act of the executive power be constitutional, belongs entirely to the judicial authorities.

Military Justice.—For crimes committed by soldiers and officers of the army there are military courts which judge without possibility of appeal, but from whose decision recourse can be made to the supreme tribunal of war and navy which functions in the same way as the penal court of cassation. Analogously, there are maritime tribunals for sailors and officers of marines which have recourse to a similar supreme court.

Jurisdiction of the Court of Accounts.—The court of accounts is instituted to examine and decide all controversies which concern the accountings of the administration of the State, of the provinces and communities and further has to decide in all controversies regarding the pensions of employees of the State.

Jurisdiction of Council and State.—The council of the state is a consulting corporation divided into three sections for the various matters which must be interpellated, and passes its opinion on the affairs of the State; further, there has been added a fourth section which is charged with the jurisdiction of all affairs in which a private person or a corporation claims to have had his interests interfered with by an unjust administrative act of some local or central authority. The recourse to the fourth section is made in the same way as the recourse to the court of cassation, and a discussion between the lawyers of both parties is public.

Other Special Jurisdictions.—In every province there is an administrative corporation, to which recourse can be made in certain categories of affairs, and the decisions of which can be denounced for violation of administrative law by the fourth section of the council of state. There are special commissions for the imposts as well as for the custom houses. The power of these commissions is merely to decide the valuation of the imposts and the duties which must be paid. In the case of a question of a violation of the law where duties are demanded where they are not due, the power belongs to the judiciary authorities.

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11. Italy—The Papacy and the Government. Italy has been called upon to solve the gravest and most important problem that has agitated modern Europe—that of the abolition of the temporal power of the Pope. We cannot here dwell on the history of the rise of this power. Its *raison d'être* at the present day, from the ecclesiastical point of view, is that, with the Catholic Church organized into a monarchy, with the Pope as sovereign of the Catholic world in Rome, he would have sought to secure the independence of the Great European States, and would have acted as pacificator and umpire in settlement of their differences. Those states on their part recognizing the value of the influence of the papacy for their own purposes, would consequently take care that this great power should not fall into bondage to any one of them, but should remain independent and autonomous.

Hence it followed that the popes sought to form a temporal power of their own, in which they should rank as independent sovereigns, and since they were unable to form one strong and powerful state, they sought to keep Italy divided up into several petty states, thus preventing the formation of one preponderating power in the peninsula. For this reason every attempt towards the unification of Italy, or towards bringing it under one dominating power has always been opposed by the papacy.

Europe also opposed the unification of Italy for different reasons; but the desire to protect the temporal power of the Pope by preventing the unification of Italy was also a factor in European politics.

After the overthrow of the French domination in the 19th century, the Italian national sentiment gradually developed, and as the desire for the independence of Italy grew, the problem of the temporal power of the papacy was made a matter of serious consideration by the writers and political men of the day. But if in order to establish this federal idea and realize this beautiful ideal of Italian unity, she should despoil the Pope of his temporal power, Italy felt that she would incur the ill feeling of Europe. Hence, unification seemed impossible. Hence, the neo-Guelphism of V. Gioberti, which originated the idea of making the Pope the head, the President, of the Italian federation. But during the revolution of 1848-49, when the idea of the independence of the Piedmontese monarchy originated, it seemed necessary for the unification of Italy to abolish the temporal power of the Pope.

After the revolution of 1859 Gioberti's idea as proclaimed in his great work, 'Il Rinuovamento,' that Rome should be the Capital of Italy, and that there should be a reform in Catholicism through which it would no longer be necessary that the Pope should hold temporal power, seemed fulfilled in *Italia Unita,* and Cavour, the great statesman, proclaimed in the first Italian parliament, held in Turin, that Rome was henceforth the Capital, and declared that in Rome, Italy should proclaim the liberty of the Church, that is to say, granting to the Pope, by mutual agreement, independence in the exercise of his spiritual sovereignty over the Catholic world; and liberty to regulate the affairs of the Italian church, thus abolishing the existing concordats and laws which were in force in several of the Italian states, after the manner of the other Catholic European states.

When Cavour died, the Roman law courts objected to all agreements entered into by Cavour, and the Catholic world endeavored to prevent Italy from taking possession of Rome, and as the pontifical states in 1860 were no longer able to govern themselves, the French occupation, begun in 1849, was continued, although the Emperor Napoleon III. in 1864 pledged himself to withdraw the French troops; but he did not do so until 1866, only to send them back again in 1867, when Garibaldi attempted to take forcible possession of Rome. Italian statesmen in the years 1861 to 1870 endeavored to persuade Europe that should Italy take possession of Rome she would give ample guarantees of independence to the Pope and liberty to the Church, and thus they prepared the way for an occupation to be undertaken as soon as a favorable opportunity presented itself. And this occurred in 1870, when France, engaged in a war with Germany, was obliged to withdraw her troops, and in addition to her other disasters, came the fall of Napoleon, who had formed with Italy the agreement of 1864.

On the 20th of September Italy took possession of Rome and declared herself absolute temporal ruler, with the acquiescence, more or less cordial, of all the European governments. The latter, confiding in the promises of the Italian government, no longer interested themselves in the question of temporal power and the «Roman Question,» that is, the attitude of the Pope and of Italy in regard to the possession of Rome, was considered a purely Italian question, in which it was not permitted to foreigners to intermeddle. The Law of Guaranty was passed by parliament 19 May 1870, assuring independence to the Pope and liberty to the Church. At the time this law was criticised bitterly, even by those who, afterwards becoming ministers, scrupulously observed it themselves, and made others observe it; for they were convinced that through this law Italy would succeed in making the abolition of the Pope's temporal power an accepted fact.

The law has two clauses: the first, concerning the prerogative of the Pontiff and of the Holy See. The person of the Pope is declared sacred and inviolable; all public and personal attacks on his person, evil speaking and other offences directed against him to be punished as though they were directed against the King. But as this special protection guaranteed to the Pontiff did not diminish or prevent the liberty of conscience and of the press, it was explicitly stated that the discussion of religious matters was freely permitted. By this arrangement the law recognized in the Pope a sort of spiritual sovereignty, independent of the temporal power—with which he was invested primarily—and also gave back to him sovereign honors and recognized his precedence, as is done by other Catholic sovereigns.

Once his sovereignty was recognized, the Pope could maintain a guard of honor, divided into classes, Swiss Palatine and Noble, none of whom, however, have any recognized military rank in the national government; in fact the men who compose them, even though Italian citizens, are not subject to military duty as are ordinary troops. The number of these guards was not determined; the law reading «the usual number» was meant only to prevent the enrolling of so large a number as to be a menace to public order. The spiritual sovereignty of the Pope gave him the liberty to perform all the acts of his spiritual ministry, communicating freely with the Catholic world, planning as he saw fit the administrative policy of the Holy See, which was again called «Curia Romana.» It was therefore ordained that no political, administrative, or judicial authority should, without permission from the Pope, enter the palaces or places of his residence. It was forbidden to visit, to make a police search, or sequestration in the papal official «congregazione,» which corresponds to the cabinet of a secular government. The Pope may affix to the doors, the gates of the Basilica, and churches of Rome (a historical manner of publishing the Pope's mandates) the acts of his administration. The foreign ecclesiastics who hold positions in the «Curia Romana» enjoy the same personal privileges as citizens. They cannot be expelled, nor be prosecuted by law, or otherwise molested. The Pope corresponds freely and independently with the Catholics in Italy and abroad; he may install in the Vatican, or in the place of his residence, post-office officials, telegraph and telephone operators, these employes to be chosen by himself.

The papal post-office correspondence is transported in a closed bag to the postal officials placed on the frontier, and papal mail matter is remitted by the Italian officials gratuitously. The same rule is observed for telegrams; the papal wire is connected with the rest of the state, and the papal telegrams are in the same category as the telegrams of the Italian government and are transmitted gratuitously as if the postal or telegraphic correspondence were addressed to the King.

It is a secular custom that the institutions for ecclesiastical instruction and education in which the Holy See has the greatest number of dignitaries and functionaries, should be situated in Rome, and its six adjoining bishoprics, which are immediately subordinate to the Pope as Bishop of Rome. Now because in this the Pope is entirely free, these institutions are withdrawn from all interference from the school authorities of the state, for the Pope can nominate whom he will to the higher ecclesiastical positions, and the bishops the same for the smaller ones, without the authority of the government, giving the *exequatur* to the orders in the first instance, and the *placet* in the second, for the enjoyment of the benefices annexed to these positions as well as for others in the kingdom.

With the purpose of removing any pretext for outside interference, and moved by the necessity of providing for the economic exigencies of the Holy See, the law has ordained a species of civil list for the Pope of 3,225,000 lire (about $645,000) a year, entered in the great volume of Public Debt as a perpetual and inalienable payment free from every kind of tax. The sum was fixed according to the balance of the Roman States of 1848, the only one published. This fund must be used for the support of the Pope, for the various functions of the «Curia Romana,» for the maintenance in ordinary and extraordinary of the palaces of the Vatican—for the stipends of those employes attached to the court, to the museums, to the picture galleries, to the libraries, etc. The Pope has never demanded payment of this money, but the agreement to pay on the part of the Italian government has never been withdrawn, hence the total credit remains intact, though every five years the interest is outlawed, according to Italian State custom.

The apostolic palaces (Vatican and Lateran) the Villa of Castel Gandolfo and their dependencies according to Italian public law should have been declared part of the government domain; instead of that, this declaration, on account of political exigencies was omitted, and by Art. 5 of the law the enjoyment of them was given to the Holy See in perpetuity, but at the same time the archæological collections and the libraries adjoining are declared inalienable, which means that the Pope and the Holy See have no proprietary rights to them (as the clerics pretend) which would comprise the right to alienate, by sale, exchange, or donation.

The Pope has besides, as an adjunct to his sovereignty the right to an active and passive embassy, that is, the Italian government recognizes in all his functions the Ambassador of the Holy See (just as the King of Italy recognizes any other ambassador), and similar privileges throughout the kingdom.

As the papacy is an elective monarchy, and during an interregnum the sovereign power is vested in the College of Cardinals, which elects the Pope in conclave, the Italian Government is obliged to protect the conclave from all molestation and is hindered from placing any obstacle to the personal liberty of the cardinals. Hence the ecumenical councils throughout history are regarded as sovereign asssemblies of the Church, and receive the same consideration as do their individual members. But now, since the proclamation of the dogma of infallibility, it is very difficult for them to continue as councils, as the Pope may *ex cathedra* define and proclaim the religious truths obligatory upon the faithful (dogma).

Such is the law which, since 1871, has governed the relations between the Pope and the government. It was never fully accepted in the Holy See, but nevertheless, she enjoys all its privileges of a practical nature, which the government always observed and caused to be observed. Undoubtedly there never before was a time when the spiritual sovereignty of the Pope could be declared as openly as at present, as was proved by the two conclaves held since 1870. In spite of all this, and with all the conditions essential to this freedom, and the enjoyment of the privileges and protection of the law, the papacy has never recognized the State régime of affairs established in Rome in 1870. When the Pope and the King came to an explicit understanding it was natural to believe, in the Catholic world, that either the Pope would subordinate his spiritual acts to the interests and political advantage of Italy, or that the Italian government would subordinate its policy to the exigencies of the Pope and the Church. Official animosity, by reason of the Law of Guaranty, enabled the Pope to enjoy that independence which, for centuries could not be maintained unless by retaining the temporal power, and permits the Italian government to maintain, in fact as well as in theory, a perfectly independent position in regard to a power as morally great as the papacy. Thus, the official enmity serves both parties: it suits both that the Pope should consider the government as a usurper.

This official enmity was associated with a personal enmity, which has never prevented secret agreements with the papal authorities responsible for the safety of the Vatican and the Pope, and the political authority of the kingdom, during the pontificate of Pius IX., and at longer intervals during that of Leo XIII., who sought to isolate Italy politically, and thus to weaken, if not destroy the monarchical institution; under Pius X., the present Pope, this enmity is up to this time only official. This Pope was never a cardinal of the Curia, but during the time he was priest, pastor, and bishop he had always held a simple cure of souls, at a distance from Rome, and he saw in his youth foreigners ruling over his native country (Venice), and he exulted when he saw the Italian tricolor flag substituted for the Yellow and Black standard. As a patriarch of Venice he frequently had dealings with the sovereigns of Italy (for Venice was acquired through an international treaty, and legitimately conquered by the House of Savoy), and he assisted in putting a stop to the socialist propaganda, which at the same time attacked monarchical institutions and religion, and he opposed it at Venice, inducing the faithful in the Church to vote in accord with the liberal monarchists. When he became Pope he could not forswear his former attitude, hence, while abstaining from every action which gave assent or approval to the established conditions of 20 Sept. 1870, when the King's soldiers entered Rome, he did not continue the unyielding anti-Italian policy of Leo XIII., and evidences were soon perceived of this new line of conduct of the Holy See. Pius X. is a religious Pope, and as religion and the Church are not being persecuted, he permits frequent infractions of the law *non expedit;* that is to say: the formal prohibition of Catholics from taking part in political elections, which was promulgated by Pius IX. and confirmed by Leo XIII. But just because he will not recognize Rome, even implicitly, as the capital of the Kingdom, he has always opposed and continues to oppose, the formation of any Catholic party in Parliament. The Catholics should vote for a monarchical candidate in preference to a Republican, or a socialist. Catholics loyal to the Holy See may enter parliament and swear fealty to the King and the Constitution, but none has the right to call himself a representative of the ideas and principles approved by the Pope. And this was stipulated, because otherwise it would appear as if the Pope acknowledged the right to the possession of Rome, and the electors and parliamentary deputies faithful to the Pope, and the interpreters of his views, would be unable to deny the fundamental principle of this acknowledgment, namely: the unity of Italy with Rome as its capital. Hence it is not possible in Italy to form a party similar to the Catholic Centre in the German Reichstag.

Thus it happens that now between the Pope and the King, that is, the Italian government, there is an official enmity, a lack of friendly feeling of agreement, and there exists only a practical *modus vivendi,* founded on the Law of Guaranty which obviates all cause of controversy.

And this is the condition of affairs which best suits both parties: the Pope, because the prosecution of open hostilities would not be agreeable to the sentiment of the great majority of the clergy and of militant Catholics; whilst the open recognition of Rome as the capital would clash with prejudices, not yet removed, and would diminish the reputation of the independence of the Holy See in the Catholic world. It suits the King's government because it removes the necessity of regarding the Pope, his faithful clergy, and the more zealous of the flock, as enemies, and allows him to enjoy the indirect aid of the first, and the direct assistance of the others in combatting the subversive parties without assuming any obligation to make legislative concessions which might change the secular character of the Italian government, and also without incurring any kind of responsibility towards foreign governments through the international policy of the Holy See. Will this condition of things be permanent? No one can say; but it is certain that no Pope will again assume the unyielding attitude of Pius IX. and Leo XIII., and also that as long as the present organization of the Catholic Church exists no Pope will ever arrive at a perfect agreement, or sincere friendship with Italy, namely, at what is called *councilia zione.*

But the necessary condition for the consolidation of this state of things is the maintenance of the «Law of Guaranty.» By this means the Holy See and the Church will avoid in Rome serious trouble, and Italy will not see the birth of civil dissensions which would be a menace to her prosperity. Everyone in Italy is agreed on this point, and no statesman, no matter how anti-clerical, would think of changing it. Although it does not form a part of the national constitution, it is nevertheless looked upon as a law of constitutional importance, and as such cannot be changed without radically changing the order of fundamentally Italian institutions. It has not, in truth, the character and importance of an international law, *i. e.* a law which implies a strict contract with other governments, but for all that the Italians are convinced that it cannot be disregarded without interfering with the position that Italy occupies in the international society and producing a serious and perhaps ruinous change in her position in the political world.

Therefore everyone in Italy is agreed on the maintenance of this law, although they recognize its defects. This is a compromise truly worthy of the character and political traditions of the Italians. And hence, this law expresses the nature, the character of the people, which is averse to exaggeration and to all kinds of excess; it agrees with its tendency to compromise and to surmount difficulties by strategy rather than force. Besides all this it is a historical necessity which Italy could not disregard after having abolished the temporal power of the Pope. Not in vain were Nicolo Machiavelli and Francesco Guicciardini, those founders of the art and science of diplomacy, born in Italy.

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12. **Italy—Political Parties.** In order to understand the origin of the political parties which asserted themselves in the first Italian Parliament we must remember that the unity of Italy was obtained by the combined forces of the constitutional monarchy of Savoy, which governed the ancient kingdom of Sardinia, and the ancient revolutionary and Republican Party which from 1832 had had as its master and inspirer Mazzini, and as a leader, during the events of 1859-60, Garibaldi.

In 1861, the Kingdom of Italy being established but not fully organized, the Right, which was more numerous, and was composed of all those who having followed the impulse given by Count Cavour admitted unconditionally the monarchical constitutional form of government, because they saw that monarchy was indispensable not only to complete it, but also in order to the continuance of the unity of Italy. On the contrary the old Mazzini conspirators and the most active and enthusiastic followers of Garibaldi sat generally on the Left.

But very shortly a large fraction of these, accepting the formula of Crispi which affirmed at that time that monarchy would unite Italy and a republic would disintegrate it, gave in their adhesion more or less conditionally to the monarchy, and constituted the Constitutional Left, which thus little by little became distinct from the Extreme Left, to which belonged all those who remained more firmly attached to the traditions and to the doctrines of Republicanism.

Until 1870 the question which chiefly divided the Constitutional Left from the Right was that relating to the method to be followed in completing the unity of Italy. The members of the Left, in accordance with their principles, had the greatest confidence in conspiracy and popular movements, while those of the Right, who had always been lovers of law and order, or had connected themselves entirely with those principles, placed their confidence above all in the action of government, of diplomacy, and of the regular army. But the difference in the platform of the two parties was not as great as that of their origin and political education which caused them each to remain well disciplined and compact, so that the Right always remained in favor of the government, and the Left always opposed to it. Both one and the other, however, had a pronounced anti-clerical tendency; for at that time the temporal power of the popes was an obstacle in the way of the perfecting of Italian unity, and the Pope had prohibited all those in whom the religious sentiment predominated over patriotic feelings from having a seat in the Chamber of Deputies, and participating in political elections.

The unity of Italy being an accomplished fact with the taking of Rome in 1870, the ranks of the Left were gradually increased by all the malcontents which the new régime had created owing to the superfluous concentration of bureaucracy, and on account of the heavy burden of taxation, so that in 1876 they were able to obtain a majority in the Chamber of Deputies and get control of the government. But the superfluous outside elements which had crept into the party; the inherent lack of discipline of the ancient revolutionary elements which yet lingered in their composition, and, above all, the lack of a definite programme, which, after 1860, should distinguish the Left from the Right, caused disorganization and disorder to enter the ranks of both the old parties. In consequence of this Depretis, who, with a few interruptions, was Prime Minister from 1876 to 1887, governed with the support of a majority composed of elements of the Left and of the Right. A small group of «intransigeants» from the Right did not join the majority, also a few groups of the Constitutional Left who adhered to the other parliamentary leaders, among whom was Crispi; and, lastly, the Extreme Left, who at that time was very numerous and very tenaciously attached to the revolutionary and Mazzini traditions. The situation was not notably modified when, in 1887, Crispi came into power; nor under the successive ministries presided over by Rudini, Giolitti, Zanardelli, and other parliamentary leaders. From that day to this, the only new events of importance which occurred in the composition of the representative parties in the Italian Chamber of Deputies, were the disappearance of the little group of «intransigeants» of the Right wing on the one hand, and the entrance and establishment of the Socialist Party, and of another of more recent date, composed of a small number of deputies, calling itself the Catholic or Clerical Party.

It has already been mentioned that until the end of the pontificate of Leo XIII, the Clericals as those are called in Italy, in whom the religious sentiment prevails, and who obey the injunctions of the ecclesiastical authority, took no part in the political elections. But now the constitutional candidates are frequently supported by Clericals in opposition to the Socialist candidates, and sometimes even to the Republicans. It, therefore, not infrequently happens that when two candidates are in the field—one constitutional, and the other clerical—they vote for whichever candidate shows himself best disposed and less hostile towards the interests of the Church. In five or six colleges the success of those candidates was assured who openly declared themselves the defenders of those interests. Although united in this one platform they yet act independently and all vote as they please on all questions that do not pertain to principles of religion, and hence do not form the nucleus of a true political party.

At present more than four-fifths of the Italian deputies (about 420), openly adhere to the present monarchial institution under the house of Savoy. They are divided into the Right, the Constitutional Centre, and the Constitutional Left; but these names have at the present time a signification which is largely topographical, *i. e.* having a relation to the position that each deputy occupies in the Chamber, or, at most, they serve to distinguish the adherents of the different parliamentary leaders. Thus, the followers of Rudini prefer to remain on the Right, those of Sonnino are all found in the Centre, while on the Left are seated the most faithful constitutents of Giolitti, and all those who were previously attached to the fortunes of Zanardelli.

With much reserve and many exceptions, in the Constitutional Left may be found the greatest sympathy for a popular programme, and above all, among the deputies who are the Extreme Left. There undoubtedly belong to the Constitutional Left many deputies who have positive anti-clerical sympathies, and many others who show no marked political preference and are always ready to vote in favor of any government.

The deputies of the Extreme Left, who now number about 90 and are subdivided into Radicals, Republicans, and Socialists, have more pronounced political sympathies. The first group (Radicals) is the most numerous; the second (Republicans) the smallest. Nevertheless, among the Radicals are some old Republicans, who with the lapse of time have come to admit that even a constitutional government may become a legitimate government, that temporarily, at least, it may be of benefit to the country. The Republicans, on the other hand, remain strictly faithful to the old platform of Mazzini, but with some of them this fidelity is rather the result of attachment to their own political past than of a lasting conviction and choice. The Socialists, finally, are subdivided into reformers and revolutionaries; but these two factions are determined rather by personal rivalry between the leaders of the party than by substantial differences in their platform. Although both adhere to the humanist doctrine, for the time being they confine themselves to supporting laws and provisions that favor government, or municipal ownership of public institutions, and strengthen the hand of the labor unions.

The parliamentary system in Italy being as it is, the Ministry should naturally control the majority of the Chamber. This majority is ordinarily composed of deputies from the Right, the Constitutional Centre and the Constitutional Left, with this distinction—that sometimes the one wing predominates, sometimes the other. It is not infrequent that the radicals, and even the Republicans and the Socialists vote for a time for a certain Minister on the promise of a certain law or provision in which they are interested. There is always, however, in the Chamber, a more or less numerous party of the opposition formed by two groups of constitutional deputies whose leaders do not form a part of the Ministry, and these are joined by some independent deputies and those who, for personal reasons, are dissatisfied with the government. In the long run the opposition can also always count on the support of the Extreme Left, or at least of the greater portion of it.

This almost anarchial condition of Italian political parties may well astonish those who are accustomed to the more severe discipline of parties in the United States of America, in England, and even in Belgium. But we must take into consideration that in Italy political parties exist rather in the Chamber of Deputies than in the whole country. In fact, outside of the Chamber, only the Socialists and the Clericals have truly organized parties. The truth is that the great majority of Italian candidates count primarily on personal friendship, loyalty, and influence for their success rather than on the support of a political party; and although there are a certain number of persons, particularly in large cities, who vote according to their political convictions, there are more who cast their vote purely and simply for the man they know and respect, or from whom they hope to gain some advantage.

The consequence of this is that one finds some colleges in which there are no Republican electors, electing a Republican deputy, and a college, which yesterday elected a man of the Right Wing, the next day—without any change having taken place in the political opinions of the electors—electing a man of the Left Wing, and even a Radical. Primarily, therefore, in the majority of cases it is the deputy who gives the political trend to the college, not the college that influences the deputy. The deputies, therefore, entering the Chamber not through the means of a party, but almost free from all party obligations, usually place themselves at the disposal of the parliamentary leader who inspires them with the most confidence, or the greatest sympathy. And if the new deputy should hold himself aloof and independent he seldom does it from noble and worthy motives, but more frequently in order to be better able to give his vote to the whole Ministry in exchange for some local advantage for his own college, or for some personal gain for himself or his friends who have been most active in the elections.

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13. **Italy—Italian Socialism.** It has often been remarked that Italy during the 19th century, and especially during the period immediately preceding the establishment of United Italy, contributed very little to the universal progress of Science, Letters, and Arts. The intellectual activity of the nation was engrossed in the long struggle for national independence. It was the overwhelming absorption in this same conflict which so long retarded the progress of Socialism in Italy. Sixty years ago Italy had produced no Lassalles, no Engel, no De Poepe, no Fourrier, no Owen, no Henry George.

After the accomplishment of Italian independence and union Milan became one of the great commercial cities and Genoa one of the most flourishing seaports in Europe; then the nation witnessed the first efforts of Italian workmen and peasants to secure something more than the expulsion of the oppressive foreigner from her soil, and the unification of their country. In other countries the *Internationale* exhausted its power in the contentions between Bakounine and Marx, *le petit* Thiers crushed the Paris Commune before the Italian working classes began their struggle against capitalism. Of «socialism»—so called—Italians had previously heard only the denunciations and theistic sermons of Giuseppe Mazzini, which, however humanitarian, are religious and individualist, and not socialist.

Morover the Italian fight for freedom retarded the growth of Italian Socialism in a way which has passed almost unobserved and which in the absence of documentary proof is vigorously denied by Italian Conservatives. It is, however, true that the enthusiasm which prompted Italians to conspiracy and rebellion and high martial valor on fields of battle, to secure the liberty and unity of their country, was not inspired solely by patriotism. Many Italians anticipated that with union and independence certain great and radical reforms would be obtained. For some of these warriors the patriotic strife implied socialistic ideals, it certainly admitted of a socialistic mirage. Evidence of this is to be found in many popular sayings and songs current during the early half of the century, and in expressions scattered through many printed and written documents.

From the very beginning the National party was divided into a right and a left faction. The satirical Tuscan poet and patriot, Giuseppe Giusti, in his letters often qualifies as communists, or adepts in communism, several of the men who afterward fought for Italy. The epithet becomes significant in view of the terror which Giusti, and every other loyal *Conservatore,* felt when he detected even a taint of unconscious socialism in this preeminently patriotic struggle.

Again! After Giuseppe Garibaldi had gloriously guided his army of a thousand heroes in the conquest of Sicily, and it was necessary for him to assume the statesman's part, and as *Dittatore* of Sicily, to establish a new and adequate government in the conquered land; by the advice of Francesco Crispi and his other councilors of experience and wisdom, Garibaldi, in an almost forgotten proclamation, offered to let the islanders divide among themselves the State domain, thus clearly indicating how largely these patriots were imbued with the ideals of socialism. As long as this patriotic enthusiasm continued, there remained a vague hope that economic reform would grow out of political reform. Hence the political revolution checked socialism; both by engrossing intellectual forces that might otherwise have prepared public opinion for socialistic ideas, and by promising to achieve that economic redemption of the working classes, which in other countries socialism promised to accomplish.

But the echo of the last battle for liberty had scarce died away when many Italians realized that so far as the economic redemption of the lower classes was concerned, the Italian revolution was eloquently described in Dante's line,

> "Lunga promessa coll' attender corto."
> (An abundant promise and a meagre fulfilment.)

Some of the very men who with lofty patriotism had fought for the political freedom of Italy, were among the first who perceived that these expectations had not been realized. They were men trained to plan and successfully execute a political revolution, and believed that the same violent means would be equally successful in the field of social revolution. They believed that an emulator of Garibaldi, strong of will and of dauntless courage, could stand on the field of economic conflict, as he had stood on the martial field, and with equal facility achieve not less wonderful victories. Such men were prepared to listen to Bakounine's propaganda of violence, but they were not ripe for a socialism which taught respect for existing laws.

Everything pointed the same way. The prevalent sympathy was for France. Victor Emanuele wished Italy to join in the war against Prussia. Garibaldi and his volunteers were fighting in the ranks of the French armies, public opinion followed fascinated, the tragedy of the Paris Commune. Moreover the taxes and customs duties, often on articles of necessity, pressed heavily, and a wind of rebellion blew from all quarters, against these imposts, against the men who devised them, and against the institutions for whose benefit they were levied. Poverty in the country districts was great. Italian government bonds were 40 per cent. below par, the rate of exchange was 15 per cent. against Italy, trade was depressed and industry arrested. Unpopular taxes are a strong inciter to rebellion, and the recent examples of successful revolt suggested a means of speedy and practical relief for the impoverished nation.

In the year 1872 Rome was released from the temporal power of the Church; that same year saw the completion of the patriotic era and the birth of avowed socialism. The internationalist doctrine, as then professed by the *Internationale*, spread over all the land. In Bologna, in March, 1872, and in Rimini in August of the same year, were held the first meetings of the Italian sections of the *Internationale*. The second of these meetings proposed the international socialist congress that was held at Saint Imier in Switzerland, 15 Sept. 1872. At this same congress the deputies of five national federations—followers of Bakounine—repudiated the *autoritario* movement begun by Marx, which was the actual origin of Italian socialism.

This Internationalist movement—or militant socialism—though begun so late in Italy, spread rapidly. It soon numbered more than fifty federated sections, and possessed more than twenty periodicals. Soon there were Internationalist uprisings. The year 1873 was one of great suffering both in the farming communities and in the cities; and in the first months of 1874 strikes and tumult arose in nine cities. In the single month of July there were commotions in 16 different places in Central Italy. In August there was a widespread Internationalist movement in Romagna, and it also lasted long in Tuscany, and in Puglia there were uprisings instigated by the notorious Enrico Malatesta.

A pitiless struggle now began between the Italian police and the Internationalists. Indeed the police organization was the only real opponent, since juries were always willing to acquit. Yet so powerful is the Italian police system—it was even more powerful then—that the newborn party endured terrible ordeals. Meetings were dispersed, associations forbidden, newspapers suppressed, the liberty of some individuals abridged, forbidding them to go to certain places or to meet certain persons, or to be found out of doors after a certain hour. *Ammonizione* and *domicilio coatto* were very real political weapons 30 years ago. But public and private meetings were held, circulars and periodicals secretly printed, and the proletarian movement was not entirely suppressed until after the final insurrectionary rising at Benevento in South Italy marked the death of Internationalism.

Lacking all intellectual preparation, the product of temporary economic conditions, the dream of disordered imaginations, unable to perceive the true ideals and purposes of Italian socialism, and unable to devise a practical way of obtaining them; these anarchists and pseudo-anarchist strivings failed. Yet in the same sense as the pathological temperament of an epileptic is in harmony with his convulsions, so were these convulsive movements of the *Internationale* in harmony with the actual conditions of Italy at that time. Indeed they were the only movements that could be in accordance with those unhealthy conditions.

In Lombardy the different ethnical character of the people and a better education, suggested that the amelioration of social conditions could best be obtained through lawful political agitation, hence it presented collectivism, and not communism as its goal. These two characteristic features of what has been called the *Milanese* dogma, gave it the name of *legalitario*, or *autoritorio*. The leaders of this movement were Enrico Bignami and Osvaldo Gnocchi-Vianni, who wrote in the periodical *La Plebe*, first published in Lodi and afterward in Milan. Except in Lombardy, Italy did not support this movement for legalized socialism. Its methods were too modern, too scientific, too conservative, to appeal to a people ignorant, exasperated, and with little political experience. Better rebellion and anarchy, than the slow political and social preparations councilled by the law-abiding collectivists of the Milanese group.

After the failure of the Internationalist outbreaks, disputes arose between them and the *Legalitarians*, and many of the working classes abandoned Internationalism. The capitalistic party waged war indiscriminately against Milanese Legalitarians and Internationalists. The leaders of these opposing extremes of socialism, involved in one common persecution and exile, soon realized that although divided on matters of minor importance, they could agree on many fundamentals, and that their only chance of success was in a union against the common enemy, capitalism and reaction.

One of the first results of this reconciliation was the adhesion to socialism, of the former leader of Italian Internationalism, Andrea Costa, who, on leaving prison thus addressed his friends:—«Hitherto we Internationalists have been self-centered, engrossed by the logic of ideas and by the preparation of revolutionary plans, which we deemed immediately realizable, and we have neglected the study of the economic and moral conditions of the people and their immediate and bitterly felt wants. We have accordingly disregarded many of the activities of life, we have not sufficiently mingled with the masses and when, with generous impulse, we have attempted to raise the banner of revolution we have been misunderstood and deserted..... Internationalism has been heretofore the representative principle of a temporary historic moment in the life of our people, it cannot stand for the whole of this life. We do not mean to discard the name «International,» but we want it to *become something more than a scarecrow, we want it to embrace all the socialist parties found in other countries.*»

These authoritative words were the epilogue of the dead Internationalist socialism and the prologue of the new socialism; and the year 1882 marks the dividing line between the old and the new. Now for the first time did the Italian working classes clearly perceive their objective, and the means by which it could be achieved. This passing of Internationalism and the birth of the new Italian Socialism was neither accidental nor was it due to the propaganda of certain enlightened leaders. Rather was it the result of a betterment in political and economic conditions. The petty and antagonistic states, duchies and kingdoms subject to the influence of foreign powers, had become Italy, free and independent. During the ten years succeeding 1871, the products of Italian mines, many principal industries (as silk and cotton) nearly or quite doubled in the value of their output. And this progress, with some exceptions, has continued. The political change and industrial progress as surely provided the environment and opportunities for the new socialism as the former political unrest and economic depression created Internationalism.

From the wreck of Internationalism arose two parties. One had its chief strength in Tuscany and Romagna, under the leadership of Andrea Costa, who sought to persuade the people that the time for conspiracies was past and that they should claim their rights through legal agitations. The other, in central and southern Italy where industry was languishing, and agricultural laborers desperately poor, found support from a people who maintained their reputation for impulsiveness, and the sentiment of rebellion which they had inherited from Internationalism. In northern Italy where there was industrial activity and comparative agricultural prosperity, the stern Marxist socialism also divided into two distinct movements—the rigidly political party of the intellectual socialists, and the so-called «workingmen's party,» which was socialistic in intention, but which in practice adopted coöperative methods.

These four different manners of interpreting the socialist doctrine differed rather in the practical methods they advocated than on matters of fundamental importance. But all four being newly-adopted were passionately sustained by their neophyte following. Then also all over Italy socialism aroused the opposition of those Democrats and Republicans that belonged to the great middle class; and as in some places socialists opposed and in other places made alliances with these parties, a new cause of dissension arose. It is hardly possible to find a clew out of this tangled maze. History here turns gossip. It is incoherent and—petty. Of these four divisions the most insignificant was that which nearest resembled the defunct Internationalism. The party of legalitarian socialism as taught by Andrea Costa, and which was somewhat imbued with Internationalism, was more important. It was the Labor Party (*partito operario*) which originated in the coöperative group, and the strictly Marxist party which at first comprised only a few intellectual men, both parties originating in Milan, that combined to produce the present Socialist party. The Labor party was formed by actual working men—Lazzari, Croce, Sacco, and others who are still prominent Socialists. Fierce struggles were waged and the first victories won; struggles and victories sometimes against those Republicans and Democrats who sought to compel the Labor party to accept their leadership and protection.

In the beginning the Milan socialists accepted the leadership of the Laborites, and candidates of both parties were found on the same electoral tickets. But at the Congress of Mantua, 1885—the date which records the most prosperous moment for the Labor Party—it was resolved that they would henceforth make no alliance with the socialist or any other political party. Yet in fact at the next political meeting in Milan such agreements were made. At this time men like Felippo Turati, the Italian Juarés; Camillo Prampolini, the apostle of Reggio Emilia, Agnini and Berenini, joined the socialist party, and directed it toward a purely Marxist conception. A few electoral victories confirmed the wisdom of this program and as the Labor party lost influence many of its best members passed into the Socialist party, which now sought to unite all interests, in one compact organization.

In the next Congress, held in Milan in 1891, the anarchists and the Mazzinians were routed by the Marxist socialists, who immediately began to receive large accessions from all over Italy, and the election of 1892 added to the socialist victories. Encouraged also by the colossal growth of socialism in Germany the propagandists labored unweariedly, and harmony and strength came to the party, and in the memorable Congress in Genoa in 1892, after repelling all reliances with anarchists and coöperativists, the socialists proclaimed the Constitution of the Socialist Italian Labor party. A party which though officially dating from 5 Aug. 1892, did in fact originate in the blending of the Milanese Labor party—an enlightened trade unionism—with the socialist movement in Milan, led by Turati, Gnocchi, Viani, Prampolini and others, and in Central Italy led by Andrea Costa.

It is important to remember that in 1892 capitalism offered no organized opposition to socialism, although socialistic doctrines had been preached all over Italy for twenty years. A weak *bourgeoisie* and a strong *proletariat,* ardent in its new faith, were the best guarantees for the success of socialism. For two years this state of affairs continued, and Italy witnessed the novel spectacle of a vast political association held together by discipline, free from the bonds of secrecy or conspiracy. Out of the ranks of the *bourgeoisie* came many brave men who raised the banner of revolt against existing conditions. Cesare Lombroso, the great pathologist, Enrico Ferri, the eloquent orator and famous jurisconsult of the new positivist school of criminology, joined the socialists. They were followed by philosophers, poets, scientists, and economists, in large numbers.

The Congress held in Reggio Emilia in 1893 was an apotheosis of the socialism that had vindicated the rights of the agricultural classes of North Italy, but—it was also the last action of the socialist party which was not opposed by the *bourgeoisie.* Before the end of this year there were famine riots in Sicily, echoed also in Continental Italy. They were the inevitable consequences of the hunger of the people and the oppressive taxes. But the rioters were led by Socialists, and often socialist cries were used, hence repression took the form of war on socialism; the Statuto (Constitution) was violated and administrative deportations instituted and freely applied to political agitators, liberty of the press was abolished, and by means of seizure of documents, and lists of members, and imprisonments, the party was for the time suppressed. But because this extreme violence was instigated by the unpopular *bourgeoisie* and carried out by a Ministry already discredited by the Bank Scandals, the Socialist party was not vitally injured. In January 1895, at a secret Congress held in Parma, the party altered its constitution and assumed the name «Italian Socialist Party,» and in the ensuing general election polled 80,000 votes, secured additional parliamentary seats, and compelled the passing of amnesty laws which brought security and tranquillity. At the next Congress, held in Florence, the direction was transferred from Milan to Rome, the seat of government and the place most suitable for political propaganda, and it was also decided to publish a daily paper, *L'Avanti,* which could carry on the propaganda in a field not reached by the 40 or 50 existing weekly socialist papers. In the general election of 1897 the socialist vote increased to 130,000 and in the congress of this year held at Bologna the intransigeant policy was definitely rejected and it was agreed to ally themselves with other democratic parties in opposition to the common enemy—the Conservatives. The party seemed on the highroad to prosperity. But,—there was a but.

Never has the desire either for personal, civil, or religious liberty sufficed to rouse Italians to rebellion. Liberty has either come peacefully or else as the result of conflicts for other ideals, such as the conflict for Italian unity and independence of foreign control. Public opinion naturally favors liberty—it is there and it is convenient. But because of a racial scepticism and excess of philosophic resignation, when this liberty is lost the sacrifice is endured. Italians are easily aroused, they no less easily forget, or desire to be left in repose. Hence the socialistic party, which in public meetings lifted its voice, in strident propaganda and noisy warfare, was a disturber of the peace, a mischief-maker to the *bourgeoisie,* who welcomed an opportunity to destroy it. This opportunity came in 1898. For several months previously the socialists had been speaking against the customs duty on foreign wheat and flour which enabled the incompetent farmers of south and central Italy to pay starvation wages to the oppressed peasants, but which intolerably raised the cost of bread to the poorly paid industrial workers in the cities. This price of bread was still further increased in 1898 by the previous year's scanty harvest. Street tumults ensued which might have been avoided by the temporary reduction of the duty on foreign wheat. Martial law was almost everywhere proclaimed, and penal servitude was the frequent sentence pronounced by military judges. Members of parliament and journalists were condemned to prison and exile, archives of socialist associations were destroyed and the funds of coöperative societies seized. The blow to socialism seemed mortal.

The government soon realized that this severity was not approved by public opinion and martial law was revoked; administrative deportation for political offenses ceased, and amnesty was granted. But though the government, repenting its leniency, asked from Parliament laws restricting the right of association and liberty of the press, the socialist leaders on leaving prison and returning from exile renewed their agitation and inaugurated the first obstructive tactics ever attempted in an Italian Parliament, compelling a dissolution. This Parliamentary revolution marks a historic event.

In the general elections of 1900 the Ministerial candidates received only 611,425 votes. Of the different opposition parties, the Monarchists received 303,891, Radicals 110,208, Republicans 119,645 and Socialists 251,841 votes. The Socialist vote had doubled in less than three years and the Socialist members of Parliament had increased to thirty. As soon as Parliament met the Conservative Ministry fell, and was succeeded by the Zanardelli-Giolitti coalition cabinet under which the Socialist party had such triumph, such influence and. . . such dissention. Together with the Republicans and Radicals they formed the *Estrema Sinistra,* whose support was indispensable to the Ministry. But though when in the minority these components of the *Estrema Sinistra* showed ability and power in harassing the Government; when, as a part of the majority supporting the new Ministry they attempted to pass from destructive criticism to constructive legislation, they showed pitiful inaptitude and quickly developed dissentions. Thus originated that crisis under which the Socialist party is still laboring.

The intense individualism and impatience of restraint inherent in the Italian nature must always be reckoned with in Italian political parties. No sooner is an Italian Cabinet formed, no sooner does an Italian political party become powerful, than distrust and jealousy enter in, and the process of disintegration begins. Though the strike in the mine districts in 1901 was largely successful and greatly increased wages and though the railway employes in 1902 by threatening strike, obtained their demands, and though every dictate of prudence suggested that the socialist party should unite in support of the Zanardelli-Giolitti cabinet, they quarreled among themselves. Enrico Ferri became the leader of the Socialist malcontents. The dissenting faction refused financial support to the socialist newspaper *Avanti* because it supported the Ministry, and the director of that paper, Leonida Bissolati, resigned. Enrico Ferri immediately took his place. This division within the party was really a personal rivalry between leaders. The moderate socialists were defeated in the Bologna Congress of 1904. In vain did they point out that the *bourgeoisie* had recovered from panic and could now fight their battles without government support. In vain did the moderates urge that the party rest content with a program of gradual reform. But the revolutionaries would have none of this. Bloody conflicts with the police broke out in South Italy followed by a general strike all over the country, which soon degenerated into deplorable excesses. As a consequence, at the next general election the Socialists lost several parliamentary seats, and in the strike of railway employes in 1905, promoted by the revolutionary group, the strikers were entirely defeated.

In consequence of the agitation resulting in this defeat of the railway strikers, the more belligerent faction of the Socialist party adopted the latest conception of French socialism as presented by Sorel, known as «Sindicalism.» Such conception implies that subordinating the purely political agitation, the proletarian movement should become a vast association exclusively confined to workingmen and rejecting assistance from «the classes.» Sindicalism expects the working class to actively oppose both capitalism and all government favorable to capitalism. This sentiment of Sindicalism became stronger because it was a protest within the party against the alliance of Enrico Ferri, and the Ferrists with the Sonino Ministry which rose and fell in March and April 1906. The situation became intolerable and a national socialist Congress was called in September 1906, to discuss the situation. In this Congress it was discovered that the Reformists and the new section of socialism, calling itself «Integralists» were equally averse to the revolutionary policy of trades unionism advocated by the Sindicalists. The newspaper published in Rome by the Sindicalists (*L'Azione*) violently attacked the party organ (*L'Avanti*), while the Integralists and Reformists in combination defeated the Sindicalist policy of trades-unionism. As this active opposition to Sindicalism by the leaders in control of the Socialist party continues, the official separation of the Sindicalists from the Socialists cannot be long delayed. The present flourishing condition of Italian industry and commerce undoubtedly hinders the spread of socialism, and soothes the asperity between capital and labor. It will also be difficult for the Socialists to make political headway against the present Ministry, at the head of which is one of the most clever statesmen which Italy has ever produced, Signor Giolitti.

But this very amelioration of the condition of the Italian working classes, tends to enlarge the range of their necessities and accustoms them to a higher standard of living. This results in the institution of coöperative associations and leagues for mutual assistance. The Italian proletariat will never consent to a return to former conditions of privation, but will insist on still greater material comfort and less labor, and a larger share in the nation's wealth. The struggle to secure these things will probably be led by the Socialist party, and in the coming conflict, the opposing capitalism and conservatism will probably continue to be less compactly organized and less capable of strenuous resistance than in England and Germany. Probably the first contest will be against that latest Italian party, which calls itself Catholic or Clerical. At the present time (1908) socialism in Italy possesses seven daily papers, one hundred weekly, and thirty professional periodicals. The number fluctuates and the circulation of some of them is extremely small.

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Author of 'Italian Romance Writers,' etc.

14. Italy—The Italian Army. The Italian army follows the political movement of the nation. As the various regions of Italy were united in a short space of time to Piedmont, so all the military forces of the other States of the Peninsula united themselves with the military legions of this little kingdom.

It was necessary, however, to combine in one organization all the various little armies with their diverse systems and laws, and we have an instance of this in the action of the illustrious General Fanti who adapted the French troops to the needs of Italy.

The basis of Fanti's system was compulsory military service by which all citizens between 20 and 39 years of age were compelled to serve in the army—in the line for the first few years and later on in the militia.

Another characteristic of this regulation was that each regiment should be drafted not from one special region, but from various parts of Italy. In this manner the provinces of the kingdom would not feel that they were being matched one against the other, and the provincial spirit would make way for a greater national spirit.

Fanti's system remained in force for many years, but it is now deemed advisable that each regiment should recruit its forces from the citizens who reside in the neighborhood of the army at the commencement of hostilities. The examples of the War of 1870 indicated the need of important changes in the military systems, and General Bicotto provided for these by modelling the army, as much as possible, on the Prussian system, reorganizing special departments of the army, requiring greater education in the officers, and facilitating mobilization and creating the bold Alpine regiments which are to be stationed on confines of the kingdom to defend its borders.

Subsequently, through the efforts of Generals Mezzacapo, Bavel, Marselli, Milon, Cosenz, and above all, General Luigi Pelloux, the government saw that imitating foreign military systems would not suffice for the defence of a nation, but that every nation should have some military characteristics peculiar to itself. Hence arose the present military organization of Italy, by which the principal strength of the army is in the infantry, to which are subsidiary a great number of cannon and a well disciplined cavalry.

The Italian army, therefore, is composed of 12 army corps, each of which has military jurisdiction over a limited territory.

Seven Alpine regiments are stationed in the Alpine Valleys. Two regiments of grenadiers are stationed in Rome, 94 regiments of infantry of the line are scattered throughout the whole kingdom. There are 12 regiments of sharpshooters, who form a special infantry with purely Italian characteristics; their record is world-wide; in them live the traditions of the Crimean War, and it is to the credit of General Lamarmora that he gave to Italy such a noble contingent. And as for its sturdy soldiers, speeding like arrows, their plumes flying in the wind, they pass in review before the people, who feel that their hearts beat in union with their strong defenders.

All the regiment of the line have either at headquarters, or as near as possible to where they are stationed, a base of supplies. Each regiment has 12 companies, with three battalions of four companies each.

The artillery is composed of 24 regiments, part of them stationed through the country, part of them in the fortresses. There is a regiment of mounted artillery, and one of light artillery. The introduction of rapid fire cannon will probably change the artillery organization. Besides the five regiments who furnish shoemakers, miners, machinists, and bridge builders, the engineer corps, supplies, officers, and soldiers for the telegraph and telephone service, for the setting free of carrier pigeons, for the management of balloons, and for every special mechanical and chemical need required by a well-organized army. The 24 regiments of cavalry that the Italian army now possesses have each special and distinctive stripes, the headgear (Colbacco) special to the light cavalry, the helmet for the lancers.

The instruction of the cavalry is with a view of making it an active factor in an unexpected attack or in routing the enemy already scattered by the fire of the soldiery, and to detach the reconnoitering service to the van of the army.

The problem of horse supply for the cavalry is a difficult one for Italy, hence she is obliged to limit the number of her cavalry. The cavalry officers are excellent horsemen. At the head of small bands of soldiers, they traverse the most rugged portions of the country, climbing its mountains and dismounting promptly ready to attack in places which seemed inaccessible.

It is owing especially to Inspector General Majnoni (who was Minister of War during the administration of the Honorable Sidney Sonnino), that such a practical direction was given to the instruction of the Italian cavalry. All the professions are represented by the army; thus they have physicians, veterinarians, commissaries, accountants, all invested with a certain military rank, of varying degrees.

The 12 legions of Royal *Carabiniere* are an important factor in the strength of the army. These besides being the most perfect body of police known to Europe, rendered eminent service in the national defence and took an honorable part in all the wars of Italian independence.

As we have seen the regiments of the line consist of 12 army corps, which may be augmented if necessary by other corps recruited from the military reserves.

There is a regulation that in time of war the 12 corps shall be subdivided into several divisions.

Every army corps consists of two divisions of infantry, and has besides a proportionate number of cavalry, artillery, and engineers, a commissariat department, a department of health, hygiene, munitions, etc.

These divisions consist of two brigades of infantry, provided with cannon, balloons, and the departments that are strictly necessary for the troops. There are also some independent divisions of cavalry. Each infantry brigade is commanded by a major-general, and is composed of two regiments.

The work of the levy, or annual conscription is entrusted partly to the civil authorities (mayors and prefects) partly to military districts.

The military district is, in fact, the bond of union between the people and the army. It holds the register of all enlisted men and soldiers on unlimited furlough. It notifies them by police proclamation of the call to arms, subjects them to medical examination, and distributes them in the various corps.

The annual contingent of recruits amounts to about 500,000, from which must be deducted those that are disabled by physical ailments, by various objections, and by family reasons, and this leaves only about 100,000 enlisted men a year. The enforced military service, that is the time during which a citizen, in time of peace, must serve in the army, varies from a minimum of 10 to a maximum of 34 months, and taking into account the loss by sickness or other causes, we see that the average strength of the Italian army in time of peace is 215,000 men.

A cause for exemption from military service, other than a specific malady or reason for unfitness specified by the law, is the fact of a man being an only son, of having had brothers who have borne arms, of being the support of his own family or of his nearest relatives. Thus it is seen that the flower of the nation is called to defend the country, for they require in the ranks a number of men of robust constitution and good morals.

There is at present before the parliament the draft of a law that has for its object a diminishing of the time of the enforced military service, and to increase the annual conscription to 120,000 men. In time of war it may be estimated that the regular army can place more than half a million men in the field, in addition to 200,000 militia (*milizia mobile*), whilst the Territorial Militia and the Communal Militia defend certain portions of territory and maintain public order. With the view of making Italy a military nation and diminishing the burdens of the army, the *Tiro a segno Nazionale* was instituted, so that young men could practice sharpshooting (firing at a mark), and other important warlike exercises.

The government contributed 600,000 lire to initiate this patriotic institution, which was so warmly advocated by Garibaldi, and which is destined to develop greatly in the future. As it is evident that every war in Italy will be carried on most bitterly in the northern regions, the chains of the Alps, Ligurian Apennines, and the Riviera of Genoa and Venetia were covered with fortifications, which have been extended from year to year. It is estimated that in a very short time the whole army of the line can be ready for war, and the railroads, which are now under government control, with improved transportation, will render mobilization more easy than it has been in the past.

The rifles of the infantry (1890-91 model), are of small calibre, with long, rapid discharge, and are one of the best weapons known. There are in process of construction steel cannon of 75 millimetres calibre; these cannon, which can be dismounted, are considered the best in the world, even superior to those in use in France.

The baggage of the soldiery is still somewhat heavy and cumbersome, and an endeavor is being made to modernize it. Generally speaking all the munitions of war are constructed in the arsenals, laboratories, and foundries of the State with military organization.

The officers are trained in appropriate military schools—the infantry and cavalry in that of Modena, the artillery and the engineers in the military academy of Turin, and in order to enter these institutions one must pass a special examination and have obtained a high school (Lyceum) certificate.

The complementary officers, *i. e.* those young men who serve only in time of war in subaltern capacities, are taken from the one-year volunteers, or those recruits who belong to the professional class and being devoted to serious studies are permitted to serve 12 months only, in time of peace.

The cavalry, before taking service in a regiment, are obliged to take up a special course in the Pinerolo School; the artillery and engineers must pursue their studies in the Technical School at Turin. There is, besides, at Parma, a school where the infantry officers perfect themselves in the study of their profession.

As it was extremely difficult to diffuse military instruction in the art of command, there was established in Turin the «School of War» that has a large attendance, as its students have special advantages for the pursuit of an army career, and many even aspire to a position in the *Etat Majour.*

The general expenses of war comprise those of the Royal Carabineers, and of the military pensions, amounting to about 180,000,000 lire, and added to this the extra expenses, and it may be estimated that within a few years this will amount to about 300,000,000 lire.

The Italian army which we have thus broadly described has not yet tried its strength in a great European war, for in 1866 it had only initiated its present organization, in 1870 only a small portion of it undertook the occupation of Rome, and in the Colonial Campaigns its strength was not proved as a whole, but it was represented by a small portion of the army, hastily mobilized.

But if on these particular occasions it had no way of putting all its machinery to the test, that did not prevent the special attribute of its officers—bravery—and the excellence of its soldiery from being recognized. In the unfortunate battle of Adua a few thousand soldiers knew how to resist an innumerable horde of Sciyans and Abyssinians, and the acts of valor they performed excited the admiration of Europe, and the death of so many heroes, a Toselli, a Galliano, an Arimondi, and a Dabormida gave Italy the right to raise her head proudly on the field of defeat.

The people are proud of their army, for they behold it ever ready to march into danger, ever ready to come to their assistance; in the cholera year in Naples; in the serious inundations of the Veneto; in the earthquake of Liguria and Calabria; in the disaster of the volcanic eruptions, always and ever the Italian soldiery fraternized with the people, and endeavored to the best of their ability to aid them in their misfortunes, thus demonstrating that not alone in war may an army filled with noble sentiments be of benefit to its country.

In 1906 the war strength of the Italian army was: Officers, 43,632; non-commissioned officers and men, 1,942,560; guns, 2,660. The peace strength was: Non-commissioned officers and men, 258,632; guns, 1,460, exclusive of reserves of active army, first and second reserves and fortress guns.

General Fortunato Marazzi,
Member of Parliament, Formerly Secretary of State for War.

15. **Italy—The Naval Marine.** The confirmation of the Italian Unity as an accomplished fact is coincident with the feverish anxiety that manifested itself in all the European countries in the great transformation that occurred in the Marine Service through the change from sailing vessels to steamships. At that time there was going on in Italy a complete reconstruction and reorganization, not only of the materiel, but also in the personnel—especially of the officers.

Officials.—In 1859-60 there existed in Italy only the Sardinian and Neapolitan Marine, for the other states of Italy had no marine. The great diversity in the general management of these two navies, the difference in ability and culture in the superior officers—who were conspicuously superior in the Sardinian Navy—caused a decided lack of that harmony which is one of the essential factors in union. It was deemed necessary to combine the two naval schools of Genoa and Naples; and Leghorn was selected, in a region that might be called neutral, as the site of the new Naval Academy. The highest results were obtained in every respect in this institute, for thanks to a critical and careful selection of students, it produces today officers who will bear comparison with those of any navy in the world.

Equipment.—Until a few years ago Italy possessed a flourishing Merchant Marine of sailing vessels, from which were taken a number of the best officers for the Naval Service. The excellent seamanship of the Ligurian sailors was so well known that they were sought by foreign navies. But after the change from sail to steam, and the consequent diminution of sailing vessels, the large number of sailors on all the Italian coasts, and especially on that of Liguria, gradually diminished.

The great dockyards for construction, steel works, and industrial establishments of all kinds, arose in the course of a few years, as if by enchantment, on the two sea coasts of Genoa, and they have caused a fruitful and vigorous awakening of the energies and economic resources of the country. But they have absorbed for the most part the better elements, which, according to ancient tradition, were owing to the marine life.

At the present day, the supply of seamen is not equal to the demand, and the State supplies the deficiency by voluntary enlistment, until the next levy in six years' time. The personnel thus enlisted consists mainly of the special branches of the service, and particularly gunners and torpedo men.

The Italian sailors are not given by nature or custom to the indulgence in wine and liquors, and they have the well deserved reputation of being well disciplined, sturdy, and of being able to endure an exceptional amount of fatigue. The descendants of the old Greeks, who colonized the coasts of Calabria and of Sicily, are to-day the best element in the manning of the Italian Navy.

The inhabitants of the Coast of Calabro-Ticula have been fishermen from their infancy. Accustomed to all kinds of fatigue, and to every sort of weather, sober as anchorites, they pass their lives with an oar in their hands, thus tempering the muscles of their arms and chest, as the steel is tempered in the fire. And it is this valuable element which accounts for the brilliant victories constantly gained by the Italian seamen in the international regattas over a long course, as in the regatta at Shanghi in 1905 between a vessel of the Italian Navy, *Marco Polo,* and one of the so-called strongest vessels of the American Navy.

Unfortunately, owing to the demands on the naval exchequer, the pay of the men is wretchedly small, and for that reason very few remain in the service after their obligatory term expires. This is a very serious inconvenience, especially where gunners and torpedo personnel are concerned, for they require a long and expensive course of instruction. Consequently, there is at the present time under consideration and in the process of application, a movement to improve the condition of subordinate officers and the specialized personnel, to induce them to continue in the service. Special attention has been given to the instruction and selection of gunners, and the splendid results in firing cannon evidenced in the naval exercises that took place October 1906 go to prove the remarkable progress that has been made along that line.

Armament.—At the time of making the change from sailing vessles to steamships, the industrial production of Italy was so limited that she was obliged to have recourse to foreign industry, and to France in particular, both for the building of ships and for the manufacture of armor. But a few years of active work were sufficient for the shipwrights to transform themselves into the best kind of iron workers, and the government arsenals obviated the need of recourse to foreign manufacture, and they were able to build and equip through their own efforts the present day armored men-of-war. Flourishing private dockyards were established to compete with the government manufacture, and in the last ten years the naval industry of Italy has been able to sell to foreign countries a considerable number of armored vessels, and to take orders for several others.

Steel Works.—Government production is for obvious reasons more costly than private production, and in order to expedite Italian emancipation from foreign industries, also in armored vessels, the Italian Government has made provisions favoring the establishment and development of the large steel plant in Terni, which is now in such a condition of efficiency as to produce on a large scale the highest grade of armor. Unfortunately, this private concern is the only one in Italy, and secure of its monopoly it has sought to raise its prices to the highest mark. This has determined the Government to give their latest orders for armor-plate to foreign shipbuilders, the Italians being outbid by foreign firms. There is also a plan to establish government steel works to check private avarice.

Present Conditions of the Italian Navy.—About 20 years ago the Italian Navy held the third rank as a naval power among the principal nations of the world, but heavy financial responsibilities had diminished the exchequer considerably just at a time when the other continental nations were awakening to the necessity of increasing their maritime power and directing all their efforts to the development of the navy. And thus it happened that in the course of a few years the Italian Navy retrograded to the seventh rank. But the marvelous progress in industrial commercial activity gives hope that before long there will be an improvement in this respect.

The period of economy in the war department added to a policy of retrenchment on the part of the government have not failed to bear fruit, for at present the national budget shows a period of increased prosperity and the naval exchequer including the special departments has attained the considerable figure of one hundred and forty millions of lire. It is true nevertheless that with this annual expenditure Italy might hope for a greater condition of efficiency in the navy, than exists at present; for the Austrian Navy with an expenditure which is to that of the Italian Navy as one to three, has at its disposal a naval force in the proportion of 1 to 1.15. This disproportion is, however, partly owing to the enormous number of government arsenals existing in Italy, the products of which are very costly. For territorial reasons it has been impossible hitherto to close some of these arsenals, but it is probable that in the near future some provision will be made towards this end.

The Italian Navy in 1906 consisted of: First-class battleships, 9; second and third-class battleships, 11; coast defense ships, 4; armored cruisers, 7; other cruisers, 32; torpedo boat destroyers, 19; torpedo boats, 141. Officers, 1,560; men, 25,800.

Thanks to the enormous amount of one hundred and fifty million of lire ($30,000,000) appropriated in 1905, the Italian Navy will have at its disposal in a few years 24 ships of the line (battleships and armored cruisers), and about 80 modern torpedo boats; and the wholesome awakening which in the latter time has come to the whole of Italy, in regard to the vital importance for her of a powerful navy, gives assurance that she will not spare attention and sacrifices in order to attain a naval efficiency, which shall be equal to the exigencies and the just political and commercial aspirations of the nation.

COUNT CANDIANI,
Admiral of the Royal Italian Navy.

16. Italy—Religion in Italy. To represent the present state and condition of religious life in Italy is a difficult matter on account of historical and ethnological considerations, and those who have tried to explain this religious life have given expression to the most varied and opposite opinions on the subject. There are some who say that in Italy there is not now and never has been a true religious spirit, but on the contrary a constant and universal indifference; that the official religion and the rites of the Roman Catholic Church are nothing but a travesty of pagan ceremonies; that everything in worship is external and superficial and is a reflection of the sentiment of classic art, and of the political traditions of the Latin races. They say that the Church is a Christian embodiment of the Roman Empire, and of that instinct of government and of domination which Virgil immortalized in a memorable verse.

On the other hand, some maintain that there has always been a current of mystical inspiration through the ages of Italian history, together with the official religion; that evolutionary Catholicism has in Italy as large a following as elsewhere. This is evidenced by the interest aroused by the condemnation of Loisy, Bonomelli, and Fogazzaro; and that Christian Democracy, notwithstanding its recent condemnation by the Pope, still retains the same vitality as was shown during the pontificate of Leo XIII.

The famous formula of Cavour seems to necessitate the absolute divorce of Chuch and State; and the indifference of the State to all that concerns the religious conscience of the Italian people is undoubted.

In France the rupture of the concordat and the subsequent anti-religious proceedings of the government threatened to lead to an open conflict between the Church, jealous of her prerogative, and a government which was not only secular but even hostile to religion. In Italy, on the other hand, the secular sentiment of the government is indifference to all that concerns religion. Religious neutrality has been converted into religious annihilation.

This attitude of careless indifference induces political weakness, and is the cause of serious difficulties for the government, as well as for the Italian people.

The problem of divorce is one of many questions in regard to which the instability of our ecclesiastical polity is a source of danger to the country. There are also serious difficulties in Italy's international relations, especially with the heads of Catholic governments. Notwithstanding the Law of Guaranty the relations between Church and State still remain indefinite on many points. The responsibility of the ecclesiastical authorities for the care and protection of the works of art which everywhere adorn the churches has never been defined by law; religious instruction is imparted in the schools in some communities, while in others it is excluded. This confusion will result in obliging the State to take charge of the primary schools, owing to the fact that the government never took a firm stand on this problem.

The danger to public morals and to the family life of the citizens is still greater, on account of the uncertain relationship between civil and ecclesiastical marriages; and although there was a discussion in the senate a few years ago about the draft of a law advocating the precedence of civil marriages, matters remained as they were before, the senate relying on the old maxim, «Let sleeping dogs lie.» But in this case there can be no rest. As the clergy frequently perform the religious ceremony of marriage when there are previous obligations and liaisons, cases of civil concubinage are frequent, and there is no way of preventing eventual desertion. This deplorable state of affairs, equally lamented by both parties, can only be remedied by conquering the hostility to civil marriage; an unjustifiable hostility because in its religious aspect the sacrament with its solemn character would give the final sanction to a contract founded chiefly on personal interest.

For the Italians who have the artistic instinct and a taste for external display, ceremonials are living and substantial things, and not mere superficialties, as the Catholic Church knows well.

The difficulties created by this state of affairs is also felt by the Church itself. The Italian government has never shown by its actions that it understands the benefit that modern Italy would derive from having the support of the inferior clergy, particularly the clergy of the rural parishes.

Against the inflexible hostility of the higher ranks of the priesthood the government would have found a powerful ally among the inferior clergy for the reason that they are closer to the people and could attract them to their side in a thousand ways, thus resolving in a simple and practical manner the problem of elementary instruction—at least in the rural districts. The county parish priests and the curates in small cities are in a painful position as regards the civil authority, and more than one «Don Abbondio» would consider it a blessing to see the King and the Pope at peace, and the throne and the altar reconciled.

As the separation of the two authorities may explain, if it does not justify the indifference of the Italian government to all questions pertaining to religious and ecclesiastical polity, so the heated political discord after the occupation of Rome, confounding politics with a question of faith, gave a seeming excuse to the irreligion of many political men, and under the guise of a kind of patriotism condoned their frequent attacks on the interests of the Church, and at the same time constrained the great majority of Catholics, even to this day, to refrain from participation in political life, thus robbing parliamentary life of that rich interchange of ideas which would doubtless have restored its prestige which had sunk so low in the estimation of the public.

There was in truth a party widely diffused throughout Italy who sought to adjust the painful breach; and at one time—in 1887—it appeared as if a reconciliation would take place through the action of a number of persons whose representative was Father Tosti, and who believed it possible to be good citizens as well as good Catholics, to love and serve their country and yet to be devoted to the Church. But although there was no doubt of the advantages that the Italian government would derive from the new order of things, especially as civil liberty and the unity of Italy had always been an intangible possession, it was just as manifest that the Vatican could never officially withdraw its solemn and repeated declarations. Nevertheless experience has shown that a *modus vivendi* is not only possible, but that a silent renunciation has already taken place. It was so manifest that the fall of the temporal power had no evil effect on the spiritual power of the

Church; and the impossibility of a *restitutio in integrum* was so evident that the younger and more cultured clergy felt that there was a renunciation, and an implied understanding. The fact that the younger Catholic party, in accord with the encyclical of Leo XIII. *Rerum Novarum,* had entered into economic and social action as the *Christian-Democratic party,* signifies that a larger field was opened to their activity, and that the policy of revenge was abandoned.

It is true that the new pontiff hastened to restrain the impetuosity and curb the ardor of the young Christian Democracy; but while not revoking the *il non expedit* he himself agrees that the Italian Catholics shall take part, wherever it seems advisable to the local ecclesiastical authorities, in all political elections, and shall sit in the parliament at Rome. This attitude is a tacit recognition of Rome as the capital.

Thus it is that to-day the political question cannot excuse indifference on the part of sincere Italian patriots to the Church and to religion, as it could 30 years ago when the Roman question arose, and continued and violent protests were heard from the Vatican. With the deprivation of its temporal power, the pontificate, even in the eyes of Protestants and Freethinkers, has gained in spiritual authority and acquired a certain dignity. For that reason today the conditions are more propitious for a religious revival than it was ten years ago. The «Bank Scandals,» the corruption in many branches of Italian public life, and the more recent acts of violence, such, as in Florence when the iconoclasts of the extremist party induced a feeling in the minds of many that Italy needed, if not religion, at least a moral regeneration. Many public men of the new generation believe that it is not incompatible with their patriotism to give a religious education to their sons, and feel that the worship of patriotism and of liberty alone cannot satisfy all the needs of the soul and of modern life.

Thus there originated a moral union, which was initiated in Rome in 1894 by a group of chosen men as a result of the lectures of Paul Dejardins and in imitation of the Societies of Ethical Culture started in America, Germany, and other countries by Adler, and which are still active. Notwithstanding their noble efforts, the work of this Italian society was not a success, and the journal *L'Ora presente* («The Present Hour»), which was the organ of this praiseworthy society, although well conceived and edited in a liberal and enlightened spirit, did not succeed in revivifying and renewing the public spirit of the country, and was shortlived.

On the other hand, every attempt to reconcile the Catholic Church to the modern movement of ideas seemed to be futile. As regards its relations with international culture, whether in the line of thought, or of social life, it has that tendency to fortify itself behind the rigid inflexibility of dogma of authority and discipline at the least breath of modern thought, more especially in the land where it has its historical seat and centre of power.

The Roman Catholic Church, for long centuries marched with the times, and it had that marvellous power of adaptation which enabled it to survive the wreck of many empires, to hold its own amid varying events, and to issue victorious from the treachery of foes within and the persecution of enemies without its fold. In its apparent immobility, it progressed in doctrine and in action. The *nil immutetur in ecclesia* was rather a rule of internal discipline than a precept of its active life.

She welcomed the culture of ancient Rome and the political traditions of the empire. With that good sense that characterizes the Latin race and which was her strength, she knew how to gain advantage from the uprising of the orders of mendicant friars in the 13th century. Of the teachings of Aristotle she made the foundation of her philosophy, and in the humanitarian period welcomed Platonism. Under the name of culture she knew how to make use of the classical Renaissance through the *fine arts,* raising them to the magnificence of the Vatican chamber, and to the Sistine Chapel. This regeneration culminated in the Council of Trent.

It seemed as though its power of adaptation and assimiliation had been exhausted in that effort and the secular evolutionary tradition lost. The Church from this time smothered every live movement of free thought, although consenting to the work of literary and historical learning and—where they did not touch on dogma—the physical sciences. She would not affiliate with the three great movements of the 19th century—that of Italian national liberty, the socialistic movement, and the modern scientific movement. After the vain hopes of 1848, the Church contrasted the Unification with the Freedom of Italy, and if Leo XIII. in his encyclical *Rerum Novarum* appeared to arouse the Church to new social action, his succeeding encyclicals, and those of Pius X., discourage the Christian Democracy, thus extinguishing all socialistic vitality in the younger clergy and the Catholic laity. It was the same with the sciences.

It was certainly a great benefit to the students of history when Leo XIII. opened the archives of the Vatican, and that the Italian clergy have taken a notable place in the work of scientific laboratories. But as the Holy See and the doctrine of papal infallibility closed the door on all independence of thought, it was natural that philosophy should also be officially proscribed by the Church, and thus, by the act of Leo XIII. the scholastic became the only true and sane philosopher. We hope that it will not be the same with biblical criticism, and that the commission selected by Leo XIII. (in many respects liberal-minded men) will not risk the suppression of enlightened biblical study, of which the younger Vatican clergy have given praiseworthy examples.

However, the news that they have found a dogmatic confirmation of the Mosaic origin of the Pentateuch makes one fear that even in this respect she desires to close every channel to modern criticism, as was done in the condemnation of Loisy, in the retraction imposed on Mgr. Hulst and other liberal, energetic Catholics. Just so in the recent condemnation of Bonomelli, of Fogazzaro, and his novel 'The Saint,' and of Christian Democracy it is seen that the restrictive and irreconcilable attitude still obtains in the bosom of Roman Catholicism towards every movement for freedom of thought.

Notwithstanding all these signs of rigid adherence to the central traditions of the Catholic Church, there is a noteworthy revival of religious life if not in the Church, at least all around it, in Italy. For this reason what Harnack wrote some years ago is not exactly true to-day—that Italians were two extreme poles, Papistry and Atheism. He did not know that there would be many Italians who would consent that Italy should to-day be at the head of the movement of religious reform in the Catholic Church, as Harrier Reid affirmed in reviewing Fogazzaro's ideal works (*Monthly Review,* Sept. 1906). It is not a question, if it ever was, in Italy, of a vague and unorganized aspiration. This is something more, and if the *Will to Believe* is not quite religious, it is nevertheless, as Nietzsche declares, not a negation; and there are not wanting among us signs of the need of a renewal of faith, or at least of a greater regard for religious matters.

Little or nothing can be hoped for from the government in this respect, as long as the political relations between it and the Church continue to be strained, and as long as the traditional policy lasts of abstention from all that concerns religion. The State could never be favorable to religious instruction in the schools by the clergy, who might educate subjects as rebels, or traitors. On the other hand, the general lack of theological culture among a cultured laity, especially after the abolition of the theological faculty in the university, may lead to a consideration of a serious and effectual form of instruction. The *bourgeoisie,* of which the government is only a reflection, is saturated with Jacobinism; and Italian liberalism is not only legitimately anti-clerical, but also anti-religious. The government, liberal and non-religious as it is, and should be, has never appeared to be aware of the social and political value of the religious life among the people that it governs, and of the great truth taught by history—that religion is the strength and the beginning of all national life.

In addition to all this we must remember that what was called the Popular Party in Italy, and more especially the Radicals and the Socialists, were at least the indirect supporters of each ministry, which, without them could not have long remained in power, and that they brought into Italian public life the most determined opposition not alone to the Church, but also to all religious matters; and their words were assiduously propagated among the people as the words that would free them from that religion which they looked upon as the traditional stronghold of authority and of the ruling classes. We notice, besides, that in science—official science, so to speak—in Italy, positivist theories and tendencies still generally prevail, whilst in more cultivated countries they have lost ground, as might be seen at the Congress of free thought held in Rome three years ago.

There is not much to be hoped for from the action of other religious bodies in Italy. In spite of the multiplication of evangelical centres and literature, especially the Waldensian, they remain only isolated instances, and the entrance of Protestanism into Italy meets with the same opposition to-day it encountered in the time of Luther. The nature of the Italian race which demands in addition to the religious sentiment the satisfaction of its vivid imagination and of the classic sense of beauty and of ceremonial form, is foreign to the inner spiritual individuality of the religious life, peculiar to northern races; it loves the association and social union of souls united in a common worship and solemn and magnificent rites. The enthusiastic words of Mortimer in Schiller's 'Marie Stuart' represent better than anything else can the Catholic sentiment for the arts, and the conservative value of external rites, as also do the words of the Catholic queen, herself, in the prayer she offered before her last confession:

> "Es hasst die Kirche, die mich auferzog;
> Der Sinne Reiz, kein Abbild duldet sie,
> Allein das koerperlose Wort verehrend.

* * * * * * * * * * * * * * *

> Die Allgemeine, die Kathoi'sche heisst sie,
> Denn nur der Glaube aller staerkt den Glauben
> Wo Tausende anbeten und verehren,
> Da wird die Gluth zur Flamme, und befluegelt
> Schwingt sich der Gelst in alle Himmel auf."

Nevertheless, whoever should deny that there is a breath of religious life in modern Italy would be greatly mistaken. The discussions raised by Fogazzaro's book, especially since his condemnation by the Church, were not owing to the literary value of the work, which is but slight, nor to his acknowledgment that he had not the courage to retract, but to the idea formulated in the book of a reform of the Church. It is true that the promulgation of these ideas are limited to a group of cultured persons, and it is not to be expected that a successful move for religious regeneration can extend to the people from that source. Then again, the sympathy for «Francescanism,» whence arose the society of Saint Francis d'Assise, founded by Sabatier, is more historical, erudite, and artistic than religious. The true religious movements always originate in the minds of the common people.

We must distinguish between the operative masses of the cities, agitated by the irreligious propaganda of socialism, and the rural population among whom the religious spirit is a living reality. In the southern part of the peninsula and in Sicily, particularly in the rural districts, religious belief often becomes dense superstition. An idolatry of saints and images, a belief in signs, omens and fetichism rules the life of the people, sometimes accompanied by vicious customs, and personal violence. Centuries of poverty, illiteracy and oppression account for this in part; but the oriental character of these mixed races chiefly accounts for the frank sensualism, vivid imagination, intense emotionalism, impulsivity, semi-pagan worship of beauty and gorgeous ceremonial, and blind belief in Fate, which characterize their religion. Increasing education and better economic conditions will gradually alter all this; and even now those who look beneath the surface will discover much ignorance and simple virtue sustained and comforted by faith, by acts of abnegation and by admirable self-sacrifice. These are, of course, less *en évidence* than the more numerous social crimes and acts of violence; but they are there, as a source of inspiration and a guiding influence. In truth, this popular religious influence, especially enduring in the rural districts, is like a groundwork formed by the old current mysticisms which, in times past, created in Italy an original form of sentiment and of religious consciousness.

Italy gave to Christianity Saint Benedict, and Saint James of Fiori, Francis Assisi, and Catherine of Siena, Savonarola and Saint Bernardino, Philip Neri and Carlo Borromeo. And from religion was drawn the inspiration that prompted the works of those «Spiriti Magni.» Dante and Giotto, Fra Angelico, and Petrarch, Brunellesci and Columbus, Michelangelo and Tasso, down to Rosmini and Manzoni. Now the popular form of Christianity—that of Francesco d'Assisi—is a purely original and national form, characterized by a serene and exalted temperance, far removed from all extremes of penance or ascetic discipline, as from all forms of doctrinal dogmatism and intolerance.

And one cannot better estimate the truly Italian character of this form of Christianity than by comparing the character of Saint Francesco with that of Saint Domenico, Catherine of Siena, or Ignatius Loyola.

It is noteworthy that in these saints, who were purely Italian, mystical virtue and religious inspiration were always combined with remarkable power of action in social matters. For that reason they were able to work in accord with the Church, which was able and knew how to make use of their influence in moments of grave peril. The Roman pontificate by its wonderful faculty of adapting itself to the moral, social, artistic character of the Latin races, and more particularly the Italian people, was truly for long centuries an Italian institution. But those who to-day claim that among the peoples of mediæval Europe the Italians were those whom Christianity found, and left the most pagan of all, speak truly of the past, but at present and possibly in the future an international industrialism is preparing for a great modification of the historical heredity of the race. They are equally extreme in asserting that the papacy will always be a *dictator to the consciences,* as it certainly has been in the past; a necessity in governing a people in whom the religious sentiment was never associated with a deep knowledge and liberty of inspiration and of investigation which gives such a diversified character to the Christianity of the northern races. It is well to remember that the papacy, though it had in history a national and official character, and though the Italian people by a species of historical instinct, felt that the Latin, and national spirit and traditions were really represented, not by the Empire, but by the Church, and it was therefore by nature Guelph, and anti-imperial, that is anti-Germanic. The Church was and it is still universal as an institution, and hence the Central Roman authority always accepts suggestions and ideas from the extremest limits of international Catholicism. The residue of this national spirit in the papacy, the last manifestation of which was in 1848, perished in 1870 when the Catholic Church was separated from what Dante calls «soma i gravame.»

For this reason and under the new conditions she can no longer respond to the exigencies and requests of a people who have the deepest inner religion. I do not think it prudent to affirm, as others have done, that «nothing living or new, can ever again arise through the spontaneity of the popular faith,» or that the Catholic Church is absolutely incapable of reviving in itself the religious spirit. Indifference characterizes the *bourgeoisie* who are not the truly representative Italian masses, who may yet prepare some surprises and an unexpected outbreak of faith inspired by that need of religion that Mazzini, himself one of the most deeply religious spirits of our age, called «the universal breadth of humanity.» Should a man of the ideal greatness of a Francesco d'Assisi, or of a Savonarolo, rise up not in the name of a dogma, but in virtue of active love and social charity towards its fellow creatures and speak words of freedom, the Italian mind might yet follow new phases of Christian idealism and civil greatness which would be incompatible with modern liberty.

The Italian Catholic is not lacking in religious ideality and spiritual potentiality. It is good to recall the romantic and spiritual Catholicism of Manzoni, Pellico, Rosmini, if only to convince ourselves that the Italian genius and the Christian spirit may unite to form a kind of intellectual greatness, and that the Christian conscience—in its Catholic ideal—may well be compatible with a certain spiritual liberty. It is doubtless true that among the Italian Catholics the performance of external acts such as are required by the Church too often goes hand in hand with intellectual incredulity or indifference, and sometimes as in the case of the rough, illiterate peasants, especially in the south, also with crime. The type of *Ser Ciappelletto* is ever alive and real; and of this union of outward religious observance with immorality of life, the history of the Renaissance gives us enough examples without quoting others.

There is no doubt that the profound sentiment of individual responsibility and of sin presented to the conscience by continual introspection, makes it less possible for those nations who have embraced Protestantism to understand this compromise with immorality. But we must bear in mind that that very imaginative faculty that prevails in the Italian mind may aid in keeping alive the sentiment of the divine, and in discovering it in every natural object (you recall the Canticle of the Sun by Saint Francis); and that in a Catholic family of good life, the purity of religious and Christian sentiment is not inferior to that in a religious evangelical family, notwithstanding that the latter is provided with more religious instruction. If in one there is more spiritual life, in the other there is a sense of authority and of discipline, and coefficient of moral greatness. However, if one considers the present conflict between Church and State in France, that kind of «Serrata» to which the French clergy lend themselves in obedience to the command of Rome, it shows a noble example of discipline and solidarity.

A phenomenon worthy of attention and a possible index of an internal Catholic regeneration in Italy is the importance that the laity are gaining in the life of the Church, as was pointed out to Germany in a notable book by Professor Ehrard. The Catholic activity of the last few years is owing greatly to this fact, and even today, although disapproved by the Pope, the «Lega Democratica Nazionale» is declared publicly to be independent of the Church party, and thus assumes liberty of action in its economic and social programme. The motive of all this certainly was not a religious one, but it doubtless will exercise a salutary reaction on the religious life. Thus the laity may be the means by which the Church may unite with modern culture. By its means the central authority of the Church may contribute indirectly to reawaken the religious sentiment in Italy, as she is still in principle, if not in fact, the greatest spiritual power in the world. And in this the personal character and initiative of the Pontiff play an important part. Now while Leo XIII. was a diplomatic Pope and a politician, Pius X. is an essentially religious Pope. His main object is to strengthen the internal discipline of the church, or *instaurare omnia in Christo,* as he expressed himself. Meanwhile the history of the Church teaches us that popes of that temperament make many difficulties for the Church, for they look neither to the right nor the left but follow out their own idea. Leo XIII., a more liberal and more subtle spirit, who understood how to unite the Church with the States of Europe by *lenti giri e con maestri passi,* to quote Ariosto, would probably have succeeded in avoiding the present conflict with France. But from the simple and direct mind an impulse may be communicated to the religious conscience of Italy.

The condemnation of democratic Christianity although perhaps dangerous to Catholic interests and to the social organization of the Italian Catholic party is induced by fear that the younger Italian Catholic element, in its social and political action may lose sight of the true religious scope of the Church.

We cannot eliminate religion from our life. And as the State cannot but acknowledge the great power of social and political action, it belongs to the Church to contribute to the renewal of spiritual vitality, instead of yielding to worldly and political aims as she formerly did. The Catholic Church could also purify and simplify the ritual, bringing the liturgy closer to the intelligence of the people by the use of the vulgar tongue, limiting and rendering more intelligent the worship of saints, elevating Church music (as the present Pope has done by restoring the Gregorian music), instructing the clergy in the culture of the arts, and in this way the clergy and then the people would restore to the sacred images the dignity of religious art, in the place of all the paltry and unattractive ornaments that now disfigure it. External nature may lend its aid to the religious sentiment in a people born to art and beauty; and the crosses raised on the summits of the Alps and Apennines may prove to be symbols of this regenerated religious spirit.

But above all things the popular reading of the Bible and instruction in the New Testament should be diffused in order to destroy that indifference which is the greatest enemy of religion in Italy; and the people should be made to feel that the mediation of the priest cannot suffice for the needs of the soul, even of a Catholic; and religious truth should be presented in a manner to display more vividly than is now done the incompatibility of immoral life with a Christian conscience, and the inefficacy of religious rites alone to reform a sinful life.

But it happens also that the Christian Church, and more particularly the Roman Catholic Church, recognizes two fundamental necessities of the modern spirit; one that regards the system of faith, and the other that refers more especially to the Church organization as a social institution, which alone can bring it in touch with the life and culture of our day. The doctrine of the immobility of dogma, not alone in substance, but also in formula, and still more the papal infallibility, preclude all possible doctrinal development in religion. Now religious knowledge, like every other form of knowledge, should be open and capable of perfection in interpreting doctrines of faith; and the same concept of revelation for whosoever looks upon history as a divine education of humanity does not exclude, but rather implies a gradual progress. Whatever lives must develop and perfect itself; immutability means death; and if the doctrinal system of the Church is a living organism it must also submit to the general law of evolution. And this is necessary for the social equilibrium. Religion is the custodian of tradition and is tenacious of what Schiller, in Wallenstein, calls «the eternal yesterday»; while science and history woo the future of humanity. But as both powers are necessary to the economy of life, so science on the one hand profits by the continuity of the work which unites the present and the future with the past. On the other hand religion must seek in the past the germ of the future, and the strength of regeneration.

The Church must also be convinced religious life should reflect in itself spiritual liberty, the essential form and conditions of modern social life in all its manifestations. If it be true that where the spirit is, there is liberty, it is none the less true that where liberty exists there lives also the spirit. The institutional and confessional character of religion is what chiefly repels modern thought. In Italian society in which the individual is no longer a member of an organization or institution, but acts freely with the consciousness of his rights, no religion is possible but one that is founded on intellectual liberty and individual initiative. The Socialists also recognize religion as a *privat Sache,* and that is certainly what it should be, a personal and intangible right. Again, if religion as a universal fact would have the value of a social function and for that reason be always represented by an institution, the secret of its strength and the pivot on which it must turn in the future must ever be liberty of individual conscience. It is only by reconciling the cure of souls and the inherent spiritual need of the Italian race, with the profound and necessary exactions of modern civilization, that the Roman Catholic Church can exercise a beneficial social power according to the forms permitted by civil liberty and by the progress of human culture.

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17. Italy—Education. In the movement of modern culture, Italy has for many centuries maintained characteristics peculiar to herself. She forecasts and prophesies, but her work is restricted to the few and has not the power of assimilation to the masses; it is a nursery of budding genius, which brings forth few flowers, or fruit in its garden. It is in Italy that new thought expands; that the world of intellect is quickened. But this new thought which she has always produced she has never enjoyed. Humanism and the Renaissance began at a distance from Italy with the reformation of the practical energies of life; in Italy, literary culture, the Belles Lettres, were the possession of the few. The philosophic trend of thought introduced by the Renaissance put an end in Italy to mediæval mysticism, discovered new relations between nature and society, affirmed with Bruno the Infinity of Nature (*L'infinita natura*), and with Campanella *Il senso come sapere.* But elsewhere Spinoza, Schilling and Hegel explained the philosophy of immanence; and elsewhere Cartesio, Locke and Kant propounded the new theory of subjectivity. In Italy, Galileo introduced the new experimental philosophy; but it was elsewhere, with Bacon, that it became a system of logic and was generally diffused. It was in Italy, some years later, that Vico discovered many of the fundamental laws which govern society, but it was elsewhere that Vico's ideas were developed to their fullest extent. For many centuries the whole history of Italian culture is the history of initiative genius, but it is also the history of prodigious energies that were made of practical value elsewhere, and that exercised little or no influence in Italy.

What causes progress, what transforms and regenerates the education of a people comes from above, from its ideals; from its conscience, from its intellect and its culture; from the permeating of its social life and its activities with the modern ideas.

But all this could not come to pass in Italy. Here, even as regards education, we have ideas and movements for regeneration without the power to carry them out, and make them general. Italy, even in the educative field, heralded the better part of Humanism, through Vittorino da Feltre; but the scholasticism inaugurated by him was of little benefit to the majority, and, besides, it was narrowed and spoiled by the meaningless verbalism of the Jesuits and the other monastic orders.

With the improved political conditions in Italy in the 18th century, and the new aspirations in regard to civil life, the educative idea acquired gained bolder recognition among Italian men of letters and philosophers, particularly with Genovesi and Filangieri; just as the effect of the French Revolution was felt at a distance, there were also signs in Italy of some new idea.

As Italy now found herself face to face with new educational needs, it was necessary that she should have the Revolution of 1860, the true national re-birth.

The political revolution of 1860 required a great popular educational reform, in order to make the life of the new nation and the new State orderly, strong and secure. And such a reform was all the more urgently needed inasmuch as all knew that the revolution, which gave Italy its independence and made it a united kingdom, was the work of a cultured few; the effort and the aspiration of the best part of the *bourgeoisie,* who knew how to harmonize their ideas with those of the people.

The revolution of 1860 thus affected philosophic thought, the arts, literature; but it did not affect the conscience of the common people. Nevertheless, the revolution represented one of the greatest crises of history, inasmuch as it was to give new scope to the moral consciousness of Italy, and of the world, since it was not possible to overturn the papacy and reconstruct the nation as a unity without touching the deepest life of the Italian consciousness. There was, and is still going on, a moral conflict: the laic government, destined to develope on liberal lines still finds itself in Italy, in the midst of an ignorant and superstitious population. The formula of Cavour «A free Church in a free State,» requires the education of the people on lines of moral, civil and political liberty in order to have concrete value, or historical efficacy. There still exists, a political conflict in the mind of the nation. For while the new States called the people to public life, they had been for centuries degraded and neglected, and were unprepared by special education to value either civil or political liberty. And this is the true reason for the apathy, the conflicts, the confusion and the anomalies of modern Italian life; and this is the true cause of the lack of good administration in Italian parliamentary life. How is it possible that political convictions should be formed; that there should be an interest in public affairs; purity and integrity in the exercise of electoral privileges, in a country where education is lacking in regard to the institutions by which it is governed?

There is also a serious economic conflict in the life of the nation. Italy is fertile; she abounds in natural wealth, and has, moreover, an abundance of the best kind of wealth: soundness of moral fibre and genius. But this does not suffice. For it is not possible, amid the economic competition of the civilized world, that an uncultivated, uneducated people should produce as much as those nations that are cultured and educated; or that their products should bear comparison with those of their competitors.

We do not wish it to be understood that Italy of to-day has done nothing for the education of the masses. She has done something, but ought to do a great deal more. It is true that Italy had to face an enormous task, complex and arduous. She had to found the nation and reconstruct every part of her administration. She had to give an impulse to the puny economic life of the country. She had to supply all the urgent needs of defence. She had to modernize an entire people; to reorganize the culture of the higher and middle grade institutes, and with all this to reconstruct the scholastic and educational life of the masses, without any precedents in liberal thought, or educational institutions. Thus the task of the United Kingdom was more and more arduous, and necessarily so on account of the preponderance in every society of the material over the moral life; on account of the traditional custom that the ruling classes should first provide for their own welfare, instead of providing for the culture of the masses. For these and other reasons, the reform in the education of the masses could not be radical, complete, effective; and therefore it could not have the impetus, the coherence, that it has elsewhere.

But if Italy has not done all that she should do, the example of other nations who have already achieved will incite the nation to do better. But satisfactory progress is impossible unless the government take charge of the common school education, instead of leaving it to Communal and local authorities.

In the last statistics, out of every hundred recruits an average of forty were found to be illiterate. Nevertheless there is progress and even to-day there is a rich field of primary moral instruction in the various regions. In the social order the importance acquired by higher culture and common schools necessitates a better education of infants and younger children. The deep moral crises which perturb the conscience of the masses, make an early cultivation of the heart indispensable; and democratic life renders necessary the provision at an early age of an education of equality and of reciprocal respect. But these elementary institutions are not in proportion to the social needs.

And progress has also been made in the education of the people for professions. There is a form of professional instruction, which makes part of popular education, for without it popular culture would not be effective, such as the learned professions, the arts, or the trades necessary to all. Modern Italy in this respect, has a legacy of institutions. There are industrial schools, art and trade schools, schools of applied art for industry and industrial design, professional and commercial schools for women, schools for viticulture and enology, field courses in agriculture. But although there is progress even here, these schools are not adequate to the needs of the people. The alumni of these schools number only about 60,000.

When we think of the great popular educational revolution, which required the political revolution of 1860, we must acknowledge that what has already been done is insufficient for the needs of the masses. Italy as regards popular pedagogy is a nation *in fieri*; a nation without harmony and equilibrium between its political institutions, its obligations, and the education of the masses. The agitation by the best element in the kingdom, and by the democratic party in parliament, shows that the nation feels the need of a more intense and more comprehensive popular culture.

The progress of modern Italy in the so-called «middle schools» and in the universities, and in the higher colleges has been very marked. After the beneficient law of Gianturco in the normal schools, these seminaries of the nation have acquired a great importance, both on account of the culture which they impart, and also on account of the attention given to the preparation of future teachers. The lyceums and the technical institutes continue to improve their teaching force; the universities also grow from year to year in the number of students and improve in scholarship and science.

And here we must turn our attention to Pedagogics.

Italian thought, philosophical, sociological and pedagogical, in the second half of the 18th century, owing to the political effects of the Revolution, approximated more and more to the French thought. At the dawn of the century Realism (Sensismo) prevailed with Borelli, Soave, Gioia; and even our pedagogical learning under Cuoco, Delfico, Capecelatro, and others, felt the influence of French thought.

As the century advanced, new life came into the thought and a new turn was given to pedagogy, and, as in Germany, France and England, so in Italy we find pedagogics and philosophy allied.

It was Pasquale Galluppi who showed Europe that there existed in Italy a new movement in philosophic thought; but it was the Romagnosi, the Rosmini, and the Gioberti who made it evident to Italians through their researches in philosophy and pedagogy.

Romagnosi (1761-1835) represents the greatest and most extensive results in civic philosophy and civic education. In his work 'Dell' indole e dei fattori dell' Incivilimento,' he gives a sociologic significance to education, considering it as one of the prime factors of civilization.

Romagnosi founded his pedagogical doctrines on social psychology, and not on the individual psychology, and all the minute and subjected analyses of the philosophers of his day. According to Romagnosi the mind while yet in its individual formation passes through three distinct phases: that of *sensation*, of *imagination*, and of *reason*. Romagnosi saw all the importance of spontaneity in the scholar, but he also knew when the mind should be permitted to function unaided, and when it should be directed by human art. He desired that educational culture should unfold from the exterior domain of sensation to the inner man; he considered literary and scientific culture necessary in the scholastic field and thinks that the State should take care of the education of the people. Romagnosi wrote argumentative treatises on education, and was also interested in special pedagogic-scholastic questions. Cattanes followed in his footsteps, as did Ferrari, Giuseppe Sacchi, and the famous writers of Crepuscolo, who from 1849 to 1859 reconstructed the consciousness of Lombardy. Romagnosi represents the laic professor of the universities in the Italian cities in the first half of the 19th century.

Even Antonio Rosmini Serbati, 1797 to 1855, did not dissever philosophy from pedagogical thought, but his mind had other motives, other scopes, other directions. 'Il Nuovo saggio sull' origine delle idee' (1835) lays the foundation of his whole system of philosophy, a system which he developed more fully in successive works, in which there are frequently considerations relating to education, or dissertations bearing directly on the subject. While Rosmini inculcated an idealistic philosophy, which should be modern, catholic, and patriotic, he represented the neo-guelphian idea,—the idea which was to reorganize Italy with the papacy. He left incompleted his work on higher pedagogy, 'Del principio supremo della Metodica.'

Rosmini had an interpreter of his ideas in pedagogics in Giambattista Antonio Rayneri.

The philosophy of Vincenzo Gioberti, 1801 to 1852, is this same idealistic philosophy—a catholic philosophy which seeks to regenerate catholicism. 'Il Primato morale e politico degli Italiani' (1843), and 'Il Gesuita Moderno' (1845), may be considered as veritable treatises on national pedagogy. But Gioberti in the course of politics and pedagogics, after the misfortunes of the war of 1848-49, reconstructed his political convictions and in 'Rinnovamento civile d'Italia' (1851) he prophesied a new Italy and the end of Guelphism. He had an interpreter of many of his doctrines pertaining to scholastics in Vito Fornari. Meanwhile, it is remarkable that Gioberti and Rosmini, two philosophers who wished to found a catholic philosophy, were both opposed and condemned by the Church. They both combated Pantheism and both were considered pantheistic by the Church. The Church condemned the patriotism of both. Among the great and liberal army of thinkers, of heroes, and of martyrs of *La Giovane Italia* Mazzini was a genius and a hero. He was not a philosopher in the sense of belonging to a school, or of being limited to a school of philosophy. He was the most exalted soul, mind and conscience, and most laborious patriot of Italy. Are not philosophy and pedagogy included in these words of his? «Without national education there exists morally no nation. The national conscience cannot be awakened except by its aid. Without national education, common to all citizens, the equality of civic duties, and rights is an empty formula. The consciousness of duties; the possibility of rights of citizenship are left to chance or to the arbitrary choice of whoever may select the educator.»

La Giovane Italia educated the nation more than all the treatises on pedagogy of the day; more than all the professors. It coöperated in Italy's political reorganization more than all the neo-guelphian initiatives.

Italy had, nevertheless, treatises on pedagogy in the years preceding the national reconstruction and these were written in order to hasten and prepare the way for this reconstruction.

Niccolo Tommaseo, a man of liberal, universal mind, in his work 'Dell' Educazione-osservazioni saggi pratici,' published for the first time in 1826, had a wide conception of pedagogy. Tommaseo saw in education the root of all good. He felt the importance of the new methods and of schools for the masses.

Among the treatises on General Pedagogy, we may consider the 'Pensieri sulla educazione,' by G. Capponi (1792-1875), published for the first time in 1845. In this treatise, small in bulk, but full of ideas, Capponi considered under a new aspect the pedagogical reform, initiated by Rousseau's 'Emile,' and determined what there was of truth and value in it. Capponi combated educational superficialism, and pointed out the multiplicity of causes that might make the work of education effective.

Raffaele Lambruschini had a veritable worship for education, which he, like Capponi and Tommaseo, combined with a great love for Italy. His work as a pedagogist and educator was important, not alone in Tuscany, but in other parts of Italy. His 'Trattato dell' educazione' was published in 1850, together with his complete works, subsequent to the reconstruction of Italy.

Other treatises on pedagogy were published by Vitale Rossi di Spello (1782-1851) in his 'Manuale di scuola preparatoria'; by Luigi Alessandro Parravicini (1800-1880) in his 'Manuale di pedagogia'; by Domenico Berti (1820-1897) in his book 'Del metodo applicato all' insegnamento elementare,' published in 1849. But the most systematic and best arranged work on pedagogy is that of Giambattista Antonio Rayneri, 'Primi principi di metodica,' published in 1850. Rayneri (1810-1867) was one of those who took the most prominent position in the diffusion of pedagogical culture among teachers, and it was not long before his books became almost a gospel for teachers.

Those who compared foreign treatises on pedagogy with our own found that our pedagogical culture was too local and not sufficiently universal; that Italy needed a psychological revival so as to be able to place the science of education on a broader foundation; that there was a predominance of theological-metaphysical ideas; that the lack of the spirit of political liberty restricted to a great extent the action of social ideas of any kind, and even of the pedagogical idea; that the lack of scholastic life made pedagogy almost entirely formalistic.

And in this first half of the 19th century, with its new pedagogical ideas, and its new scholastic movement, we must note the literary revival in the schools through the works of Giannetto; of Luigi Alessandro Parravicini; of the 'Letture per fanciulli' by Lambruschini; of the 'Letture graduate' by Thouar; and of the many books of Cesare Canú, by Antonio Fontana, and by Vincenzo Troya. In all these new books for school reading there breathed a popular spirit, and it made one feel the need of harmonizing the school with the actual life of the people, and of adapting the life and teaching of the school to the life and thought of the masses.

The Institutions of Ferrante Aporti (1792-1857) brought into brotherhood men of various beliefs, and were also patriotic institutions. If these institutions were not new they at least derived benefit from the new Italian sentiment; and the asylums were coöperative in the Nation's reconstruction, and made it evident to the masses that Italy would arise with new and higher ideals.

Pedagogical literature was also represented by women in Italy at this period by Caterina Franceschi Ferrucci (1803-1867), whose chief work was entitled 'L'educazione morale della donna italiana.' Her work was highly praised, as it deserved to be. Giulia Molino-Colombini (1812-1879) also wrote on pedagogy, and her work is entitled, 'Sulla educazione della donna.'

But after 1860, when the greater part of Italy became unified, there arose a new life, the life of the nation; and with the new life of the nation, a new philosophy, a new pedagogy.

The philosophy which before the revolution had been mainly neo-guelphian, now became wider in its scope, more Hegelian through the work of Ansonio Franchi Giuseppi; more positive in the writings of Andrea Angivari. The older schools continued, it is true, on the same lines, but the new life in the thought of the day made itself felt even here. The need of forsaking old traditions and placing the higher Italian intelligence on a par with the rest of the world; the need of making philosophy a free interpretation of the mind; the need of making the reconstruction of Italian speculative thought correspond to the reconstruction of the whole Italian life. Whilst before the revolution philosophy and pedagogy were strongly tinctured with Church doctrines, though perhaps ignorantly, there now arose a philosophy independent of all religious beliefs, a philosophy which sought nothing but the truth, and the interests of humanity.

But even after the revolution pedagogical teaching allied itself closely to philosophical doctrines. Fusco, Siciliani, Angiulli, Latino, Gabelli and Veniali were very prominent in the pedagogy of the day. Eduardo Fusco (1824-1872), professor of Anthropology and Pedagogy in the University of Naples, in his lectures, edited by his wife after his death, gives evidence of a high and varied degree of culture, and profoundly liberal sentiments. He had a profound belief in education for refashioning Italian life and consciousness. Pietro Siciliani (1835-1885) combined more broadly than Fusco philosophic speculation with pedagogics. He sought in philosophy a certain *middle way*, which should merge into an eclecticism influenced by the positivist traditions of Galileo and Vico. He became, in fact, after his manner a solitary positivist. He wrote a great many works on philosophy. His pedagogical works were the 'Storia critica delle teoria pedagogiche in relazione colle scienze sociali'; 'La Scienza nell' educazione secondo i principi della sociologia moderna.' His writings on pedagogy had a great influence on teachers.

Andrea Angiulla (1837-1890) was constantly occupied with the thought of a regeneration of philosophy and pedagogy. Three of his works are 'La filosofia alla ricerca positiva'; 'La pedagogia, lo Stato e la famiglia'; 'La filosofia e la scuola.' These works are an honor to Italy. In no country has there been a higher conception of pedagogy than that of Angiulli. He was a great student of scientific philosophy and maintained his independence of thought in opposition to the greatest thinkers of the age. To all that he wrote, Angiulli gave the imprint of his personality, and even the things said by others acquired a new value when spoken by him.

Emanuele Latino (1845-1890) wrote 'Dell' educazione letter-aria'; 'Il lavoro manuale e il problema educativo'; 'Della pedagogia nelle sue armonie ed antinomie'; 'L'ultima mostra universale e i nuovi bisogni della vita scolastica (Le Malattie della scuola e la riforma igienica net rispetto igienico, pedagogico e sociale'; degli arredi scolastici'; 'Frammenti pedagogici.' Latino had not the philosophic and universal mind of Siciliani and Angiulli. He dealt with the most prominent questions of pedagogy, but he treated them from a critical scientific standpoint.

Aristida Gabelli (1830-1891) was the author of 'L'nono e le scienze morali'; 'Il metodo di insegnamento'; 'L'Istruzione della donna in Italia' 'Pensieri'; 'L'Istruzione in Italia'; 'Il mio e il tuo'; 'La nuova scuola di diritto penale in Italia'; 'Gli scettici.' Gabelli had a great insight in regard to schools, and promoted the regeneration of their methods. His works, 'Il metodo di insegnamento,' had a great share in the regeneration of the Italian schools. Whilst among the teachers of the period preceding 1860 the Pestalozzian reform reached in through the interpretation of Girard, with Gabelli the system of Pestalozzi entered the schools stripped of all unimportant elements, and in its living and vigorous substance.

The teachers of this system, the schools and the scope of pedagogics were very effectively influenced by Francesco Veniali. The questions in regard to the importance of the common school, and the social standing of the teachers in new Italy was considered by him. By him, also, the new didactic method was discussed in a practical manner; and he was the first to lay bare the defects in the existing school administration, which left the common schools to the commune, upholding, according to Italian tradition, the direct action of the government. Francesco Veniali had the affection and esteem of all the educators of his day. It was he who placed the various systems on a practical basis; it was he who promoted the improvement in normal schools, and who contributed very largely to the higher culture of teachers.

Adolph Pick established in Italy the Froebel Kindergartens, which met with favor. Thus we find the Asylums of Aporti and the Kindergartens which Giuseppe Sacchi established and sought to improve.

Italy boasts to-day living pedagogists of great ability who honor her. We may cite Allievo, Colollа, Credaro, Fornelli, and Sergi.

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18. Italy—Schools and Universities. Public instruction in the kingdom of Italy is essentially of three grades: (1) Primary and popular; (2) intermediate and secondary; (3) high school grade. The fundamental laws which govern it are in force to-day, in spite of the modifications that have been brought to bear through later laws and regulations, and the observance of special local laws, such as the Sardinian law of 13 Nov. 1859, No. 3725, commonly called the Casati Law, from the name of the Minister of Instruction under whom it was passed.

1. Primary and Popular Instruction.—Primary instruction is given, in general, in the elementary schools, and the course, under the care of men and women teachers under the direct superintendence of school inspectors and directors of instruction, lasts five, or even six years, under government control which determines the syllabus, the examinations and every other *modus operandi*. The elementary schools are supported by the communes.

Compulsory elementary instruction, prescribed by the law of 15 July 1877, No. 3961, for all those who were not under private instruction, was through a later law of 8 July 1904, No. 407, extended to the 12th year of age; this is restricted to the primary elementary course (the first three years) in those communes where the compulsory higher elementary course is lacking, and in other communes is extended to all the compulsory classes of the high schools that may exist there. The same law of 8 July 1904, ordained, besides, that illiterate youths under military levy, of the third category, whether fit or unfit for service, should attend the night, or vacation schools (reading, writing, arithmetic, and the elements of the metric system); of which, of course, all other illiterate adults could also take advantage.

The subsidiary branches of the elementary schools are: the *Patronali;* the *Educatori* and the *Recreatori,* the kindergartens, and the professional schools, all of which are very little under legislative control or regulation. The government, for the most part, does little but exercise the right of instruction and supervision of institutions founded by local enterprise, or by the bequests of private citizens. The kindergartens, for instance, have for the most part been established by public or private beneficence; hence, as works of charity they are dependent, to a certain extent, on the Ministry of the Interior. These kindergartens number more than 2,000 public institutions, with 140,000 boys and 132,000 girls; and more than 1,300 private institutions with 42,000 boys and 43,000 girls.

A new institution of a free popular school lately established in Italy through private initiative is the People's University, the scope of which is to diffuse scientific, literary and artistic culture among the people. The new people's universities date from 1900. That of Turin, which may be called the original one, gave the key-note to what was to be the Italian type of the institution, having as its scope: (1) To popularize the most reliable conclusions of science, making them accessible to those who had not received a special scholastic training; (2) to impart in a simple and lucid manner instruction in the literature and history of the arts, with a view of accustoming the students to the conception of the noblest ideals of life. Rome and Bologna took up this movement almost contemporaneously. At present the institution is more or less general throughout the kingdom. There are in upper Italy about four universities in Piedmont and Liguria, seven in Lombardy, five in Venetia, eight in Emilia, one in Rome, one in Naples, three in the rest of southern Italy, three in Sicily; and many others are being established in various parts of Italy. They are also to be found beyond its confines. Italian people's universities have been founded in Innspruck, at Trieste, Trent and Zurich.

2. *Intermediate or Second-grade Instruction.*—Intermediate or second-grade instruction is of three kinds: (1) classical; (2) technical; (3) normal, or pedagogical.

1. Classical instruction is carried on for five years in the gymnasium, and for three years in the lyceum, and comprises the following subjects. In the gymnasium: Italian, Latin, Greek, French, history and geography, descriptive geography, mathematics, natural history, gymnastics. In the lyceum: Italian, Latin, Greek, history and historical geography, philosophy, mathematics, natural history, physics and chemistry, gymnastics. According to the data furnished by the «Annuario del Ministero della pubblica istruzione,» there were altogether in Italy in March 1906, 215 royal, or government institutions of this order, of which 117 were lyceum-gymnasiums, 7 lyceums and 91 gymnasiums; and 86 pareggiati, *i. e.* institutions maintained at the expense of local communities, but of the same grade as the government schools as regards the course of study, 26 of which are lyceum-gymnasiums, 9 lyceums, and 51 gymnasiums.

2. Technical instruction is imparted: (a) In the technical schools; (b) In the technical institutes; (c) In the nautical institutes.

(a) The technical schools aim to give technical instruction of the highest grade; that is, to complete and extend the knowledge acquired in the elementary schools in such a manner that the students may succeed in conducting a business, and in minor administrative offices, and may be enabled to pass the examination for admission to the first class of the Technical Institute. The years of study are three, and cover 10 branches of study: Italian language, French language, Italian history, geography, instruction on the duties and rights of citizens, elementary mathematics, instruction in the natural sciences, accounting, designing, caligraphy, besides gymnastics.

(b) The technical institutes have as their scope to impart technical instruction of the second grade, that is, to furnish the instruction necessary to prepare the student for higher studies, to qualify him for certain professions and for positions in the government, in industry, commerce and agriculture. The course of study is, therefore, divided into several sections: a physico-mathematical course; surveying; a commercial and bookkeeping course; a course in agriculture; an industrial course. Each of these is adapted to some special end, and for that reason differs from the rest in the character of the instructions imparted. The course of study in each branch lasts four years.

(c) The nautical institutes have as their object to give intermediate technical instruction to those who intend to dedicate their lives to navigation, and maritime arts and industry. The nautical institutes include three branches: one for captains; another, machinists; and another, for shipbuilding. Each branch comprises two courses; one of two years for sea-captains on larger coasting vessels; one for machinists, and for naval instruction of the second grade; another of three years for deep-sea captains, for high grade machinists, and for naval construction of the highest grade. A preparatory course of two years, to which the elementary school certificate gives admission, precedes each of these courses.

There are in operation in the current school year 192 technical government, and 105 technical pareggiati schools; 18 nautical government schools, and one nautical pareggiati school.

3. Normal, or pedagogic instruction, is imparted in the normal boys' schools, and in the normal and complementary girls' schools. Of the former, 29 are under government control and three are pareggiati; of the latter, 78 are

government schools, and 22 normal and six complementary pareggiati. There are besides three Regie Scuole normali di ginnastica in Rome (boys), at Turin and Naples (girls). The normal boys' and girls' schools are of two grades, elementary and high school. In the lower grade the studies are with a view to obtaining the certificate of teacher of the first three elementary classes; in the higher grade the studies are carried on with a view to obtaining a certificate as teacher of all of the five or six classes, and in the female department also a certificate as teacher or directoress of a kindergarten. The course lasts three years for each grade. The complementary school course is also three years for each grade.

Other institutions of minor importance under government control are: (a) The Convitti Nazionali, the aim of which is to give to young boys a moral, intellectual and physical education to make them worthy citizens. There are 43 such schools for boys, with over 4,000 boarders.

(b) Female institutes or female asylums. These may be divided into three categories: (1) Shelters to provide temporary assistance for poor children, orphans, deserted children, etc.; (2) Educandati, for children (girls) of refined and wealthy families; (3) Misti (mixed schools) which partake to a certain extent of the nature of both.

Special institutions of the second class dependent on the Ministry of Agriculture, Industry and Commerce are: 34 schools of practical agriculture (especially for viticulture and enology); about 260 industrial and commercial schools; two schools of mines (at Iglesias and Caltanissetta); three intermediate schools (at Bologna, Genoa, and Rome).

3. *Higher Instruction.—Universities.* Higher instruction is imparted in the universities properly so-called, and in other special institutes equipped similarly to the universities in the character of their instruction. The Italian university consists fundamentally of the Faculty. The Faculty comprises four chairs: (J) Jurisprudence; (M) Medicine and Surgery; (S) Science—Physics, Mathematics and Natural Sciences; (L) Literature and Philosophy.

Certain schools may form an integral part of the university, or be annexed to it, as the following: (E) Applied Engineering; (A) Agriculture; (P) Pharmacy; (V) Veterinary Medicine; (O) Obstetrics.

There are, properly speaking, 21 universities, of which 17 are royal or governmental, and four free universities, numbering in all an attendance of 24,038 students in the scholastic year 1905-1906. These are enumerated in alphabetical order, according to the name of the city in which they are situated. There are given also, according to epochs, the faculty and the schools that belong to each respectively, and the number of students enrolled in each university (in the given school year).

Royal Universities.—(1) Bologna.—J. M. S. L.; E. A. P. V. O.* Students enrolled, 1,616; not including E., 113. (2) Cagliari.—J. M. S. P. O.; enrollment, 243. (3) Catania.—J. M. S. L.; P. O.; enrollment, 832. (4) Genoa.—J. M. S. L.; E. (1st year) P. O.; enrollment, 1,193. (5) Macerata—J.; enrollment, 357. (6) Messina—J. M. S. L.—P. O.; enrollment, 570. (7) Modena—J. M. S.—P. V. O.; enrollment, 474. (8) Naples—J. M. S. L.—P. O.; enrollment, 5,740. (9) Padua—J. M. S. L.—E. P. O.; enrollment, 1,385. (10) Palermo—J. M. S. L.—E. P. O.; enrollment, 1,094. (11) Parma—J. M. S.—P. V. O.; enrollment, 695. (12) Pavia—J. M. S. L.— E. (1st year) P. O.; enrollment, 1,514. (13) Pisa—J. M. S. L.—E. (1st year A. P. V. O.; enrollment, 1,083. (14) Rome—J. M. S. L.; P. O.; enrollment, 2,660. (15) Sassari—J. M.; P. O.; enrollment, 199. (16) Siena—J. M.; P. O.; enrollment, 225. (17) Turin—J. M. S. L.; P. O.; enrollment, 2,892.

Free Universities.—(1) Camerino—J. M. (1st four years); P. O.; enrollment, 355. (2) Ferrara—J. M. (1st four years); S. (Mathematics alone) P. O.; enrollment, 226. (3) Perugia—J. M. (1st four years); P. O. V.; enrollment, 305. (4) Urbino—J.; P. O.; enrollment, 267.

The scholastic year begins in the universities on 16 October and ends on 31 July. Each university publishes an 'Annual,' in which, in addition to the list of names of professors and students, the statistics, calendar and hours of study, are inscribed the inaugural discourse of the academic year, and a catalogue of the works published during the year by the professors and assistant professors.

The government of the university with its varying duties, and always under the supervision of the Minister of the Interior, is in the hands of the following authorities: (1) The Rector; (2) The Academic Council; (3) The Presidents of Faculties and Directors of Schools; (4) The Council of the Faculty; (5) The General Assembly of the Professors.

There are three distinct classes of instructors: (1) Official instructors (in ordinary and extraordinary); (2) Teachers in charge; (3) Unattached, or private teachers.

In conformity with the law of 12 June 1904, No. 253, the nomination of professors in ordinary and extraordinary is, with two unimportant exceptions, by competitive examination.

The appointment of those professors who give instruction in certain higher branches is only for one scholastic year, but the appointment may be renewed.

The official teachers (in ordinary or extraordinary) may hold private or outside classes; also the associate doctors and those who have qualified as unattached teachers. The courses in private instruction may be : (1) Pareggiati, and for the students have the same value according to law, both in the number of hours of study and the course of study pursued as the corresponding government or official courses; (2) Incomplete courses of study and not pareggiati correspond to a portion of the official course; (3) Supplementary courses of study which serve as subsidiary or as the complement of obligatory studies.

The official courses in instruction are public, except the practical exercises and the experimental demonstrations which the teachers may limit to those alone who are enrolled in their courses.

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*Note: For explanation of letters see above, e. g. "J" stands for chair of jurisprudence; "M" for medicine, etc.

A distinction is made between students and those who attend the lectures (*uditori*). The students, at the close of their studies, have the privilege of obtaining the academic degrees, conferred by the faculty or school to which they belong; the studies pursued by the *uditori,* on the other hand, are of no value in obtaining an academic degree. In order to matriculate, students must have obtained the diploma of graduation granted by a lyceum, or some other equally valuable certificate according to the general regulations, or the special regulations of the faculty or school, concerning admission to the various courses of study. Under specific conditions laid down by Art. 12 of the General Regulations (relating to the disposition of Art. 140 of the Casati law) both foreigners and Italians may matriculate, or continue their studies in the Italian universities, even though not natives or sons of Italian citizens, having or having had their usual domicile in foreign countries.

In the various faculties, or schools, there are held special examinations and examinations for certificates, for bachelor's degrees, and for diplomas according to the special regulations. The special examinations and the examinations for certificates are held in two sessions; the first, begins on 16 June; the second, on 16 October. The examinations for the degree of Bachelor and for diplomas are held during the scholastic year at certain times appointed by the Council of the Faculty. All the examinations are public.

Every scholastic year a competition is opened between the young Bachelors of the various universities and the institutes for higher instruction dependent on the Ministry of Public Instruction for a sum of money (scholarship) intended to place them in a position to perfect themselves in their studies at a national or foreign university, or to undertake a course of travel for the sake of study.

The following rules must be observed in the various Faculties:

Faculty of Jurisprudence.—The complete course of study lasts four years: a lyceum certificate is necessary before enrollment. The obligatory studies in each of which it is necessary to pass special examination in order to gain entrance to the examination for the degree of Bachelor, are 18.

At the suggestion of the Council of the Faculty, there may be in addition to these established courses—other courses. The course for aspirants for the diploma of notary lasts two years, with examinations in seven subjects. The course for aspirants for the diploma of procurator (attorney or solicitor) lasts about two years, with special examination in five studies.

Faculty of Medicine and Surgery.—The entire course is completed in six years. A lyceum certificate is necessary for enrollment. The essential studies which are obligatory before entering for examination for a Bachelor's degree are 20 in number. At the suggestion of the Council of the Faculty, acted on by the Superior Council of P. I., other complementary studies may be added. All the instruction is accompanied by demonstration and practical examples. «Institutes» or «Schools for Proficiency» may be established where various studies may be grouped together, according to their affinity, and even instruction in other branches may be associated with them.

Faculty of Physical Sciences, Mathematical and Natural.—The complete course of study (for every Bachelor degree in the Faculty) lasts four years. All those may be enrolled who have the lyceum certificate, as well as those who have a certificate of the physico-mathematical course from the technical institutes, and others who fulfil certain specified conditions established by Art. 9-11 of the General Regulations. The studies that constitute this course are 20 in number. Two degrees are conferred in this Faculty; that of Licentiate (Graduate), and that of Bachelor. Two years of study are required for the degree of Licentiate, and two years in addition for the degree of Bachelor after obtaining the degree of Licentiate. There are four certificates: two for physico-mathematical sciences, and one for natural sciences, and one for chemistry. Of the two certificates for physico-mathematical science, one leads to the degree of Bachelor in the university; the other to the school of applied engineering. The Bachelor's degrees are four in number: (a) In mathematics; (b) In physics; (c) In chemistry; (d) In natural science. The special rules of the Faculty determine the examination, and the Council of the Faculty indicate the studies that are required for the attainment of each degree.

Faculty of Philosophy and Literature (Belles Lettres).—The complete course of study covers four years. A lyceum certificate is required before enrollment. The course of instruction comprises 14 branches. At the suggestion of the Council of the Faculty, acted on by the Superior Council of P. I., complementary studies may be introduced. In this Faculty two degrees are also conferred, the degree of Graduate and that of Bachelor. For the former two years of study are requisite, and for the latter two additional years after obtaining the first degree. There are two Bachelor's degrees, one for philosophy, and the other for belles lettres. The students must have passed 15 special examinations, 10 of which are in fundamental studies indicated by the Faculty, and five in allied and complementary studies selected from the course, or from allied or complementary studies in the course of philosophy and belles lettres, and from other university courses. To gain admission to the examination for Licentiate (Graduate), the students must have passed at least seven of the 15 examinations obligatory for the degree of Bachelor of letters or for that of philosophy. The study of allied branches may be ordained in institutes, schools and seminaries of philosophy, pedagogics, history, philology, archæology, and art; and it may be made an integral part of the instruction with other branches, according to the special programme approved by the Ministry, and acted on by the Superior Council of P. S.

Schools of Teachers.—To the faculty of philosophy and belles lettres, physical science, and of mathematical and natural science are annexed schools of teachers, whose object is to perfect the alumni in the art of teaching philosophic, literary and scientific discipline in the lyceums, in the gymnasiums, in the technical and normal schools and in the technical institutes. These are presided over by a director nominated by the Ministry for three years. The lectures they hold are private. The school of teachers annexed to the faculty of philosophy and belles lettres includes four departments, and requires a two year attendance of each student who is enrolled in it.

Royal Normal High School of Pisa.—The Royal High School of Pisa deserves particular mention whether on account of its special discipline, or on account of its importance. «Its object is to prepare and equip for the position of professor or teacher of Intermediate Schools.» It was established in Pisa motu proprio, by the Grand Duke, 28 Nov. 1846; or, to speak more correctly, re-established. For already at the end of 1813, by a Napoleonic decree (29 January) there was established in this city an ancillary of that Normal School of Paris which was rebuilt by the same Napoleonic government in 1808 on the site of the ancient French Normal School, founded in 1795 under the supervision of the Convention. The government of the school is entrusted to a council of managers presided over by the rector of the University of Pisa. The director of the school is chosen by the Minister of Instruction from among the professors in ordinary of the faculty of philosophy and belles lettres and from that of mathematics, physics and natural science of the same university. The school consists of two departments.

Schools of Pedagogics.—By a royal decree of 1 Feb. 1906, No. 30 (intended to correct and modify the Royal Decree of 19 Jan. 1905, No. 9) there was established near the Royal University of the Kingdom (in the faculty of belles lettres and philosophy) a course of higher studies (in proficiency) (*perfezionamento*) for the licentiates (graduates) of the government, or pareggiate, normal schools, with the view of preparing them for the position of school inspector, and school principal. The course covers two years, but may be completed in one year by anyone who, in addition to the requirements of the enrollment, has also obtained a Bachelor's degree or a diploma in Italian literature, history, pedagogics, conferred by the Royal Higher Female Institutes in Rome and Florence.

University Institutes.—There may be named in this category: (a) The Royal Institute in Florence for higher practical study and proficiency. This comprises three departments:—(1) Philosophy and Philology; (2) Medicine and Surgery; (3) Physical and Natural Science, and two schools, a school of pharmacy and a school of obstetrics. The administrative government of the Institute is entrusted to a council of managers consisting of five members, two of whom represent the municipality of Florence, and three the Royal Government; and the department of instruction to an academic council composed of five members—the president of the council of managers, the presidents of the three departments, and the director of the school of pharmacy.

(b) The Royal Scientific-Literary Academy of Milan. This has a University Faculty of Philosophy and Literature. By a Royal Decree of 18 Aug. 1880, there was added to the school of teachers annexed to this academy a department for qualifying students to teach modern languages and literature in the intermediate schools of the kingdom, to which are also admitted students who are not enrolled in the branches of philosophy and literature.

(c) The Royal Higher Institute of Technology of Milan. The obligations and government of this Institute, maintained by the State with the aid of the province and commune of Milan, are determined by the Royal Decrees of 13 Nov. 1862, 5 March 1863, 3 Sept. 1865, 5 Nov. 1875, 24 Jan. 1897. The institute comprises eight departments. The course in the preparatory school covers two years; that in the special schools, three years, and that in the Normal department, four years.

(d) The Royal Polytechnic High School of Naples. This school was established by Royal Decree of 30 July 1863, which at the same time abolished the pre-existing school of hydraulic and field engineering. It comprises courses in civil engineering, mechanical engineering, and architecture; and in addition a special course in electro-technics, and a course in hygiene as applied to engineering. Each course covers three years.

(e) The Royal Schools of Applied Engineering (not dependent on their respective universities) of Bologna, Rome and Turin.

(f) The Royal Naval High School of Genoa (hitherto dependent on the Ministry of Marine).

(g) The Royal Schools of Veterinary Medicine of Milan; of Naples and of Turin.

Institutes and Special Schools.—(a) The Royal Higher Institutes for Female Instructors in Florence and Rome. These were founded by the law of 25 June 1882, and their object is to provide for and to augment the literary and scientific culture of women, on the one hand, and on the other, to qualify them for teachers and instructors of special branches in the female normal schools, in schools of the highest grade, and in all the other intermediate girls' schools throughout the kingdom. The course covers four years.

(b) The University Schools annexed to the Lyceum Gymnasiums of Acquila, Bari, and Catanzaro.

(c) The Royal Institute of Social Science «Cesare Alfieri» in Florence with the annexed provincial School for Notaries. The course covers three years.

(d) The Royal Schools of Theoretical and Practical Obstetrics of Milan, Novara, Venice and Vercelli.

(e) The R. Oriental Institute of Naples. Here they have courses in Hindoostani, Arabic, Amaric, Turkish, Modern Greek, Albanian, Chinese, Japanese; in the Geography, Religion, Legislation of Oriental nations, and their commercial relations with Italy; and complementary instruction in English and Russian.

(f) The Business University, Luigi Bocconi of Milan. This was founded at the pious suggestion of the Milanese merchant, Ferdinand Bocconi, the elder, in honor of the memory of his son, Luigi, who lost his life in the disastrous battle of Adua,—an Institution that should take its name from him and should be an ornament as well as a work of utility to the city and country at large. It was built as a public institution by Royal Decree of 29 Sept. 1902, and inaugurated on 10 Nov. of the same year. A regulation approved by ministerial decree 21 March 1905, made provision for the management of the institute.

(g) The Institutes (or Schools) of Fine Arts, maintained by the government, of Bologna, Carrara, Florence, Lucca, Massa, Milan, Modena, Naples, Palermo, Parma, Rome, Turin and Venice; and those not supported by the government, of Bergamo, Ferrara, Genoa, Novara, Pavia, Perugia, Piacenza, Pietrosanta, Ravenna, Tiena, Urbino, Vercelli and Verona.

(h) The Musical Institutes and Conservatories, under government control, of Florence, Milan, Naples, Palermo and Parma; and those not supported by the government of Bologna, Pesaro, Rome, Turin and Venice.

(i) There are some higher institutes dependent on the Ministry of Agriculture, Industry and Commerce, such as: (1) the three commercial high schools of Bari, Genoa, and Venice; (2) the two high schools of agriculture of Milan and Portici; (3) the higher Agrarian experimental institute of Perugia; (4) the institute of forestry of Vallombrosa.

Military Institutes.—Those dependent on the Ministry of War are: (1) The War School of Turin; (2) The Military Academy of Turin; (3) The School of Artillery and Applied Engineering, of Turin; (4) The Military School of Modena; (5) The School of Applied Military Hygiene, of Florence; (6) The Military Colleges of Naples and Rome; (7) The Central School of Infantry in Parma; (8) The Cavalry School of Pinerole; (9) The Central School of Artillery on the Poligono del Nettuno near Rome; (10) The Military School of Instruction in the Use of Arms, in Rome. Those dependent on the Ministry of Marine are (1) The Naval Academy of Leghorn; (2) The School for Apprentice-machinists in Venice.

VITTORIO PUNTONI,
Rector of the Royal University of Bologna.

19. Italy—The Education and Social Status of Women. One of the most remarkable features of progress in Italy is the advance made in the education of women. Formerly there were a few highly cultivated women, some even distinguished as writers or artists, especially as musicians and actresses, but until 1860 the great majority of Italian women were purposely condemned to ignorance, especially in the southern provinces. Women were not even taught to read and write; married or single, they were expected to take a subordinate position in their own families and in society. The ancient Roman law was still observed, which made the man the absolute master of the household, the *pater-familias,* whom even adult children obeyed as their supreme head. To-day education is compulsory and elementary education is given free to all children of all classes and of both sexes; the expenses are borne by the local authorities, assisted by the national Government, which exercises a general supervision over elementary culture. A movement is at present in progress for the entrusting of elementary education entirely to the State, and to secularize all schools for the lower classes. Elementary education is also imparted in private schools, authorized by the Government, and these are under the direction of lay or clerical teachers, duly qualified.

Educational institutions for women are divided into colleges and day schools; some of these are supported by the communes, some by the Government. Girls can pass from elementary to normal schools, these being usually the highest grade passed by women. This enables them, like men, to obtain positions of teachers in elementary schools. Women, however, have an advantage over men, as after their Normal degree, they may enter for four years' higher training in the Institutes of Superior Studies, where in addition to advanced literature, they are trained in several branches of science and in foreign languages, French being compulsory and a part of the programme, and either German or English, according to choice. The degree taken in these Superior Institutes enables the young women to teach in the Normal and Technical Schools. Education may be either technical and commercial, or classical. Women are admitted to all educational Institutes and can follow the same courses of study as men; they may take a University degree, and may profess and practice medicine, chemistry, arts, and philosophy, but a legal career is not open to women, even when duly qualified. About 25 years ago, the first student in law, Lydia Poet, obtained her degree, but was forbidden to make use of it. The Tribunals, which are a part of the Government Department of Justice, object to women-pleaders; hence legal training is of use only in a lawyer's office, not in Courts of Justice. Recently a woman-lawyer, Teresa Labriola, obtained permission to lecture in the University of Rome, where another very learned and brilliant young woman, Maria Montessori, M. D., has a chair of anthropology. In the University of Naples, Professor Ogliarolo is helped in his work and teaching of chemistry by his wife.

Technical, commercial, and professional schools prepare girls either for teaching in such departments or for becoming bookkeepers, cashiers, dressmakers, lace-workers, etc. It has at last been recognized that woman should undertake her share of work and contribute to the support of herself and her family. In Italy the woman question is much nearer solution on the economic than on the moral side; it is not usual to prepare for a profession a girl who has or will have private means sufficient to relieve her from the necessity for work; hence woman's education is not the same for all classes of society. Young girls of aristocracy of birth or wealth leave the convents or colleges where they have been educated with a fair equipment of general information: many of them acquire an equivalent education at home by private tuition; but such an education being uncontrolled by any sort of examination, and conferring no degree, does not enable its recipients to follow any career, should she some day need to work.

The Institutes of Fine Arts have also been thrown open to women during the last 16 years, and many girls take their degree as teachers of drawing; some, very few, become painters or sculptors; many more work in the field of decorative art. The industrial arts have made much progress of late in Italy; there are three excellent Industrial Museums, the one in Naples being renowned for its important production of delft-ware. But where women excel to-day in such industries is lacework. It is scarcely 20 years ago that a Venetian Countess, Adriana Zon Marcello, a Lady of Honor to Queen Margherita, conceived the idea of reviving the lost art of lacemaking, for which Italy had once been so famous. Encouraged by the Queen, the work was revived, at first, in Venice, and has since so much interested the Italian ladies of the upper classes that the production of all kinds of hand-made laces and embroideries has been established in different provinces, reviving in each the special characteristic designs. A few years since the ladies conducting the work established an incorporated Association of Italian Feminine Industries, having its headquarters in Rome. The work exhibited is of exquisite character. Literature and journalism offer a large field of labor to women, but these professions are in Italy scantily remunerated.

No one who has not lived in Italy during the last 20 years can realize the wonderful advance made in every department of woman's life. Women's associations have been started, women's papers circulate, women work in new fields of labor, and they are fully recognized as able to take care of themselves. Such a remarkable advance surprises one most of all in Rome where it seemed well-nigh impossible that modern ideas could ever take root.

Twenty years ago Countess Salozai started in Rome the first review in Italy devoted to woman's interests. Though encouraged and supported by the Queen and by members of the highest circles of society, the time was not yet ripe; Italian women generally took little interest in the undertaking, which was finally renounced.

When Lady Aberdeen was president of the International Council of Women in 1898, she asked Mrs. Sanford, who was then coming from Canada to Italy, to invite Italian women to the great International Congress which was to be held in London in 1899. Mrs. Julia Ward Howe, who was then in Rome, greatly helped Mrs. Sanford in her mission. A meeting was held in Rome in 1898 and the Italian ladies present were deeply touched by the interest in Italy evinced by American women. They promised to draw up a programme that (adapted to the circumstances, habits and needs of their country) should make it possible to do something practical towards starting a National Council of Women in Italy. It was decided to federate in one large association the principal co-operative societies of woman's activity; and the aims of the General Federation of Woman's Work were defined as follows: To create a current of mutual understanding and kind feeling amongst women interested in this or other good works; to make widely known to the various existing enterprises of women; to bring about, by the force and influence of the union of Women's associations, the most desirable reforms.

Since the Congress in London, the first programme has been greatly enlarged, but it contained the central idea, around which the delegates of different associations grouped themselves. Countess Lavinia Taverna, a Lady of Honor of H. M. Queen Margherita, was unanimously named president and received the valuable help of Miss Dora Melegari, who was the first General Secretary of the Federation; she is one of the strongest of modern writers and a woman of very superior character.

When 60 different organizations, created and supported by women, had joined the Roman Federation, it was decided to begin with them a National Council of Women. Three years after the first Federation of Woman's Work was organized there were 60 different institutions, whilst in the same number of years American women organized only 11.

Italian women carry their aspirations further than philanthropic schemes; they aim at a social activity in the fullest meaning of the word, but avoid every sort of political action. They study the condition of woman, comparing it with her condition in other countries, taking into account the rare virtues of Italian woman, virtues that often, by the force of circumstances, reveal themselves in silent self-sacrifice more than in positive and efficient action. They acknowledge that woman in Italy has in all social spheres much to learn economically, morally, intellectually. The Italian woman is only now beginning to recognize and develop her moral sense and her social personality; and every effort is made to further this aim. By lectures, many of which treat of the different aspects of the woman question,—her culture, her social, judicial and even political rights,—through books, papers, reviews,* etc., Italian women are led to recognize that a high standard of social duties is necessary.

The majority of women do not believe that their active co-operation can be of any use in politics and are not desirous of the right to vote, for they know well how efficacious their indirect action can be, through their influence over the men of their own family and their friends. The influence of woman in the family is so strong in Italy, that the woman question in Italy is of the utmost importance and has to be solved in a manner essentially different from that of other countries. The Italian woman understands that she cannot and must not remain inactive in the fervor of the moral resurrection of her country, and if at times she seems inert and uninterested, it is because she works in silence, without pomp or parade.

It may be safely asserted that when properly educated the Italian woman is inferior to none. She differs only in temperament and its manifestations in daily life. Averse from participation in public affairs, she is yet an important factor in them owing to her personal influence, and there is no doubt that woman in Italy is becoming an important social power. Freed from many prejudices and misconceptions

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A very good one *Vita Femminile* "Womanly Life" was started in Rome, January, 1907. It is edited by Sofia Bisi Al Bini, who edits also *Rivista Delle Signorine*, an excellent periodical for young girls.

which have kept her far from the vital interests of the nation, she is now advancing in the full promise of a brilliant future.

COUNTESS FANNY ZAMPINI SALAZER,
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20. **Italy—Language.** *I.—The Literary Language.*—The Italian literary language has for a foundation the Florentine dialect, with which, more than with any other, it has in common not alone phonetics and morphology, but also syntax and vocabulary. In regard to its phonetics, which in this matter is of the greatest importance, it will be enough to say that Siena, which has had a certain desire to dispute the first place with Florence, has, as characteristics of its dialect, the examples,—*conseglio, gionto, cavallaria,* etc., which resemble the other Italian dialects and remove it from the Florentine (and literary) types:—*consiglio, giunto, cavalleria.*

It was proper (because of Dante, and also of Boccaccio and of Petrarch) that the Florentine dialect should become the language of Italy; and of these three great names, Petrarch deserves a place quite by himself, because the language of his 'Canzoniere' (Book of Songs) is generally much less idiomatic, and hence more largely Italian.

The literary tongue of Italy is founded, then, upon that Florentine dialect, a trifle archaic, of the 14th century, and has changed but little, partly from the respect for tradition, but more because the Florentine himself has not changed. The language of Dante is, without any serious differences, the language of today: there is no such thing as an old-fashioned Italian and a modern Italian.

Italian literature was the last to emerge among all the great Romance literatures, and its cradle was not in Tuscany. The cause for this tardiness can be found in part in the greater attachment which the Italians had for Latin. But probably certain negative conditions had more importance, namely, that in Italy there had not survived political and social conditions necessary for the development of the poetry of the laymen, or popular epic poetry. At all events, the language of the first school of poetry, of the time of Frederick II., which contains the southern elements and also to a certain extent the language of the later schools, of Arezzo and Bologna, left also evident traces in the language of the Florentine school of the *dolce stil nuovo* (soft new style), which quickly seized the sceptre of poetry, and these traces, although they are hardly discernible, have never entirely disappeared from our own poetic tongue.

The first document in that dialect, which from about 1290 down predominated in Italian arts, appeared in 1211, and naturally is not at all a literary document, being «Fragments of a Book of Florentine Bankers.» But after Dante, the Florentine had no serious adversaries. The linguistic unification proceeded slowly at first, so that Ariosto, not only after Boccaccio and Petrarch, but also after Poliziano and Pulci, by following in the steps of Boiardo, was able to write 'Orlando Furioso' in a hybrid tongue, which though seeking to be purely Italian, yet preserved phonetically and morphologically a great many Emilian elements.

However, now arrived the time when it acquired its rich vocabulary, its clarity, and so to speak, its theory, and that the language of the people (as used by Dante, by Boccaccio and by Petrarch) should become the new language of Italy, capable and worthy of a grammatical system as regular and as rigid as Latin. These three great Tuscan poets are Italian classics and are accessible to all Italians. And a kind of grammar of the popular tongue, founded upon their example, is the 'Prose' by Bembo in 1525. Ariosto, following the movement, changed the 'Orlando' written in the dialect of Emilia in the editions of 1516 and 1521, into the 'Orlando' of 1532, which was written in the Tuscan dialect and above all tried to be grammatically correct. The period of hybridism was finished, although some traces of it, not only morphologically, but also phonetically (*fameglia, gionto per giunto,* etc.), are continually found in writers who were not Florentines, and above all not Tuscans, during the whole of the 16th and also the 17th centuries.

It was then a question of vocabulary and particularly of style, and has so continued until our time. In discussing the name to be given to the language, whether Florentine, Tuscan, or Italian, etc., the earliest 16th century writers naturally did not distinguish in a particularly clear manner between phonetic hybridism and the rest; neither the Sanesi, who, against the exclusiveness of the Florentines, defended the customs of the whole of Tuscany and especially of Siena (and this continued rather late even to the time of Girolama Gigli, a writer of the 17th or the 18th century), nor Giorgio Trissino of Vicenza who desired to do his share in everything Italian. In the beginning of the 19th century, as a reaction against the ultra simple and colorless language of the 18th century, there arose a most strict school of the purest 14th century—a revival, which, although it was contested by Monti and by others in the name of a greater breadth and modernity in the choice of models, yet, having some merit, it helped to strengthen the weak and artificial academic quality of Italian prose.

Alessandro Manzoni, in his 'Promessi Sposi,' first issued in 1827, succeeded partially in restoring the model set by Ariosto; but so much the more for Manzoni was it a question not of phonetics but of style, and of vocabulary so far as it is necessarily connected with style. In place of a language which had become too literary, he wished to substitute a language which, like the French, should be fresh, natural, precise. Thus he became the most enthusiastic and convincing, and altogether the most logical and coherent of the advocates of living usage and consequently of Florentine speech. He thought that all the Italians, in order to possess a language not only alive and copious but free to all and by all equally understood, no matter how delicate or slight the meaning, and in all its more specialized usage—just as the French have done—should follow the usage of cultivated persons of Florence. Thus there came, before all, a renewal of the vocabulary; but following on this were added naturally some phonetic modifications, such as the substitution of *o*, which to-day the Tuscans pronounce, for *uo*, an archaic survival from the literary language. From this resulted (due to the work of the followers of Manzoni) a frenzy, so to speak, of Florentinism. But of all the noise made about it, there remains to-day only an echo in some recent books. Without any doubt, through his work and his example, even more than by his theories, Manzoni has assisted tremendously in reviving and infusing with new blood the ancient tongue, or—to speak more accurately—the ancient academic Italian prose; although it may be that their traditions have not entirely disappeared, and that the vocabulary of the members of the Florentine Academy of Letters (the Crusca) is too loyal to these traditions. And no one can doubt for a moment that he who wishes to speak or write well should pass a longer or shorter period at Florence or at least in Tuscany, because the language used in Italian conversation, being meagre or inexact in almost all the provinces, it happens frequently that even cultured people lack the habit of thinking with energetic spontaneity in Italian, whatever may be the subject of their thought. On the contrary, it is well understood to-day that a language is not renovated by those mnemonic exercises which were so dear to the followers of Manzoni, but only by copying and following beautiful and powerful examples. An entire nation, which lives in the present, can never entirely forget its past; and the unification of the language cannot be brought about by artificial means but only by the progressive and ever ascending blending of Italian spirit and Italian culture.

From the standpoint of philology, Italian is one of the Romance languages, which are a continuation of the Latin, of which they are, so to speak, the present phases; and, for certain qualities, for example, the loss of the final *s*, it could unite itself with the dialects of Rumeno and of Dalmatico (or the Roman language of Dalmatia now almost entirely disappeared), forming an eastern group to oppose the western group, composed of Latin, French, and Spanish.

Literary Italian, which belongs to Central Italy, is one of the Romance tongues which has preserved more abundantly and with fewer alterations the traits of the Latin as regards phonetics and the dictionary. One or another of the sister languages may have some partial advantage over this one; for example, the tongue of Sardinia, opposed not only to Italian but to all the dialects derived from the Roman, has preserved in its Tonic vowels a phase of Latin vocalism more archaic, we might say the phase of the time of the Republic, as opposed to that of the Sardinian Empire; and the preservation of the final *a*, which set to the French and to the Provençal the fashion of preserving more at length the traces of the Latin declension. But this and other similar observations cannot change appreciably the result of judgment as a whole; it must be remembered that Italian has preserved faithfully almost all the internal consonants, so that it can present an almost unchanged series such as *amate*, amatis, *mutare, credo, vidi, fedele, ripa, nipote, amico* (as opposed for instance to *segare*, etc.), *legare*. For the rest, the dropping of the final *s*, which undoubtedly once had a place in Latin vulgate, is not of special importance except as a part of a general phenomenon, *i. e.* the loss of all the final consonants; and this phenomenon, combined with the preservation of all the final vowels (to say nothing of the weak vowels in the middle of a word), has given to the Italian language its new and special character.

As to the dictionary, the Italian certainly comprises a goodly number of German derivatives, but incomparably less than the French, and furthermore, has no other ancient or foreign roots, in the way that Arabic is found in Spanish.

Among the preëminent qualities of Italian must be put that inner power of preservation which we have already mentioned. Whatever may be the cause—and only in certain parts can it be attributed to the power of literary tradition, that is to say, because its greatest masterpiece, the 'Divine Comedy,' was written originally in that tongue, and afterwards the 'Decameron' and the 'Canzoniere,'—but this among all the known tongues is the most tenaciously conservative, which is undoubtedly a great advantage, both morally and practically.

Italian is the literary language of the entire kingdom of Italy (with some restrictions among the Valdesi and the French-Provençal of Val d'Aosta), and also of some Italian subjects in Austria, some in Switzerland and some in Malta. Corsica alone prefers French for its literary productions.

The Dialects.—Italy is, in regard to its language, one of the countries most compact and homogeneous. According to the last census (1901) there were 32,413,647 subjects in the kingdom, of which only 261,500 were considered as speaking other languages; and they were 10,500 Germans (5,000 in Piedmont, 5,500 in Veneto); 34,500 Slavs (30,000 Friuli, 4,500 Molise); 96,000 Albanians and 30,700 Greeks; besides 80,000 of French-Provençals altogether; and 9,800 Catalanians in Alghero (Sardinia). There remains then 32,152,147 speaking Italian.

To these should be added, according to the computations of the best official reports, 702,173 in Austro-Hungary; 138,638 in Switzerland; 460,000 in France and England (Malta); a total of 1,300,000. The number of Italian subjects outside the kingdom may be roughly calculated as about 3,500,000.

Not all the heterogeneous population of the kingdom of Italy, can be considered as «colonies» or as «islands.» The following may be considered as «colonies» linguistically: (a) Germans of Veneto, of Tyrol origin (in the 13th century there was an emigration), who reformed themselves into the Thirteen Communes of Verona (reduced, it seems, now to two) and to the Seven Communes of Vicenza (now five at the most) and of Piedmont, around Monte Rosa and at the Simplon (12th and 13th centuries); (b) The Albanians, who form the most important group of foreign languages, not romance, in Sicily, in Calabria, in the southern provinces upon the Adriatic (from about half of the 15th century excepted); the last colony was Badessa in Abruzzo Teramano (1744); (c) The Slavs in Molise (but the Slavs in the Province of Udine continue to the Austrians); (d) The Greeks, from Otranto (9th and 10th centuries); and reduced to very few in Bova in Calabria (11th century). In Corsica, at Cargese, 650 Greeks settled in 1675.

Roman Colonies: The Catalanians of Alghero, of Barcelona origin (1353–72); the few French-Provençals of Faeto and Celle (of the time of Carlo d'Angio) near Foggia (see following text for the Provençals of Guardia Piedmontese in Calabria, for the Lombards in Sicily, etc.); and finally about 3,000 Rumeni in eastern Istrie, now strongly Slavic in its language.

But to pass over the Semitics in Malta, we cannot call colonies the Provençales and the French-Provençales of the Alps, who keep up the idioms of the other slope. The boundary between the Ligurian and the Provençale is to be found at the Roja: Mentone, and around there, is more Provençal than Ligurian. They may become Provençals—or they may continue many of the Provençal expressions, mixing with them Piedmontese and local words — the dialects under the Maritime Alps and the Cozie, down to the Monviso—to the right of which are the Valli Valdesi (Pral, etc.), with a dialect allied to that of Delfinato more to the east,— and also more south toward the high course of the Clusone and to the sources of the Dora Riparia. A colony of Valdesi (about 1,400), is Guardia Piedmontese in the province of Cosenza.

From the district so influenced by the Provençal, we pass by some intermediate grades, to that which is plainly French-Provençal, above all in the valleys of the southern Stura, of Orco (Val Soana), of the Dora Baltea (Val d'Aosta). In the Val d'Aosta the French-Provençal has its stronghold, so that the language of culture is French. Then follows the Valsesia, plainly Piedmontese or Piedmontese-Lombardian, which forms a sort of dividing wedge between them and the successive Alpine districts of various linguistic types. It is the Ladin dialect which is found in these parts, and the mountain inclines to the Ladin dialect more or less from Mount Rosa farther. From these Lombardy valleys, and especially from the more western, from Toce and from Maggia, alike, come the so-called Lombards of Sicily, of Sanfratello, etc. (11th to 13th centuries).

The Ladini of the southern slope of the Alps are to-day reduced to very few in number (40,000 Grigioni), losing touch with the Ladini of Italy. To these belong entirely the small central zone, or Tridentine-Bellunese, and that which is incomparably the most considerable, the eastern, that is the Friuli. In official documents the Ladini are considered to be among those who «speak Italian.» Here, in fact, there is no sign of that literary language which the Ladini of Switzerland have; and on the other part nearly half a million Friulani (with about 11,000 in the central zone), form up in the southern part of the Alps a so strong, flourishing, linguistic union, opposed to the few Grigioni, that man could well consider the Ladin an Italian language. At a time not so far distant there was a Friulano dialect as well as a Trieste dialect and a Muggian, now Veneto; at Trieste they still spoke Ladino in the first half of the 19th century; and at Muggia also in the second half.

We now come to the dialects which are accustomed to be considered as Italian.

Dante, in his division of Italian dialects ('De Vulgari Eloquentia,' I, x fg.), which is perhaps the first attempt at any classification of dialects, divides them according to the two slopes of the Apennines, the Tirrenian and the Adriatic, and counts them off into 14 principal types, seven for each slope. It was without doubt a happy thought, and almost everywhere throughout southern Italy the division of Dante's is similar to our own. We will commence with a general division into four groups: Northern, central, southern and Sicilian, and finally, by itself, Sardinia.

A. *Northern Italy.*—1. The group so-called Gallo-Italiano, that is, (a) Ligure, (b) Piedmontese, (c) Lombard, (d) Emiliano (including the Romagnolo dialect). The most «Gallic» is naturally the Piedmont; the nearest to the Tuscan is the Ligure, but Liguria, Piedmont and Lombardy form the territory of the *ü* and the *ö* continuing the French type. Emilia in turn is the true home of the *e* for the Latin or Tuscan *a*. This peculiarity appears until we reach Metauro, and pass into Tuscany, into the Aretino dialect. Let us not forget the Genoese colony of Carloforte in Sardinia, and those Emilian colonies in Lucchese, of Gombitelli and Sillano.

2. Eastern Dialects: (a) Istriano, little better preserved at Rovigno and Dignano. It is a very characteristic dialect, with features which recall the Veglioto or Dalmatian dialect, and the dialects of the southern shore of the Adriatic. (b) Veneto, or better Venetian. And among all the dialects, none that arose has had more conspicuous fortune, following upon the arms and the commerce of the great Republic; here certainly its progress followed its family resemblance with the Tuscan, for the most part original but to a certain extent borrowed. To say nothing of its fortunes in the Levant, we must make mention that it conquered territory everywhere, in all the cities of the country that surrounded Venice, in Friulano and Istriano. In Venetian, which in its oldest documents shows a trace of Ladino, neither *ü* nor *ö* ever appears; nevertheless there is a strong tendency to drop out the weak vowels; they have the diphthongs *ie*, *uo*, etc. Very characteristic of this dialect is the aversion to double consonants, that is to say that there, as in Rumeno, the vowel is as long again as before the simple ones.

B. *Central Italy.*—1. Tuscan, with the dialects of Florence and those to the west, Pisa, Lucca and Pistoia; a little aside the southern Senese and then Aretino, of which we have spoken. The western dialects have, for example, *giunto*, like the Florentine, but especially at Pisa and Lucca is the use of *s* for *z* very noticeable, and at Lucca *r* for *rr*, which recalls the Ligurian dialect, etc. For the rest, the cities are all strongly under the influence of Florence. The quite prevalent opinion that at Siena they speak an Italian better than that of Florence, comes perhaps from an arbitrary interpretation of the old saying, already common in the 17th century, «Tuscan tongue in a Siennian mouth.» The characteristics of the Florentine and Tuscan language of to-day which most strike one accustomed to the Italian of the other provinces, are perhaps the substitution of the simple *o* for the diphthong *uo*, as *bono* for *buono;* the aspiration of the guttural *c* among the vowels, *baho,* for *baco, la hasa;* and, we may add, also the pronunciation of the palatal *c* between two vowels, *fece, la cena,* which differs from the explosive *c* following a consonant, as *calce,* etc. But if the Tuscans themselves freely recognize the aspiration of the guttural *c,* as pertaining to a dialect, they will with difficulty arrive at a recognition of the same thing in the Fricativo *c,* and it displeases them that the latter substitute the explosive *c.* We must also mention the doubling in syntax, as *a ccasa, a rRoma.*

2. Umbro, Marchigiano, Sabino, Aquilano, Roman. This is a group somewhat roughly formed. Dante distinguished, besides the Tuscan, the dialects of Ducato, namely the Spoletano, and those of Rome on the right slope; Marca Arconitane (between Calabria on the south and the Romagnolo toward the north). Especially, the Romagnolo (as they appropriately term the Tuscan-Umbro), descends much further down the southern marches, and though it loses its more pronounced characteristics, like the *é* for *á,* it joints with its latest offshoots at the Ésino, at Jesi, (*amigo, pagado*) and also at Ancona (*poga,* poca, *fighi; sonéto,* sonetto, etc. Perhaps the Spoletano appeared to Dante characteristically for its final *u,* which is usual from the Umbria of the southeast to the edges of Tirreno, and also belongs to Sabino and Aquilano, but not to the western zone of Orvieto, Viterbo, Rome, Velletri. Certain southern characteristics, such as *nn* for *nd, mm* for *nv, mb,* etc., may be said to be common to all of central Italy, except Tossana.

3. Corso.—If it were not for its geographical position, it would be better to place it in this group between 1 and 2, but it has also very close relations with the Ligurian dialect, and naturally as we go further south it comes closer to the Sardinian tongues.

C. *Southern Continental Italy.*— Tirreno Group, or Neapolitan, which extends to the other slope with Molise. The final vowel determines the accented vowel, but this final vowel which at one time had to be *u* or *o, i* and *e,* is now restricted uniformly to an *e,* which we will call mute, according to the French custom: *ome* from *omo,* man, *uomene* from *uomeni; parente,* plural *pariente; porte* from *porto,* I carry, but *puorte* for ports; *negra* but *nigre,* black and blacks, *sposa* but *spuse,* bridegroom and bridegrooms. We pass over the fact that it has besides *nn* from *nd,* etc., and also *nd* from *nt, mb, ng* from *mp, nc,* but everyone knows nevertheless the characteristic types *chiane* and *sciure* for the Italian *piano, fiore,* which continue in Sicilian, *chianu, sciuri* (also in Genoa, *cian, sciu*) ; and finally that splendid example of synetical phonetics, *ne vasce,* un bacio (a kiss), or *a bbasciá,* etc.

2. Adriatic Groups.—Types of the Abruzzi, which comprehend the Capitanata. The foundation is the Neapolitan type, but the examples of the modification of the vowels are more than ever varied and complicated, and the accented vowels disguise themselves and become diphthongs in the most singular manner. Here, as in Sicily, the accenting of the period plays an important part, so that the tonic vowel is treated as being weak, if the accent of the entire phrase is not placed upon it.

D. *Sicily,* with which we will unite Calabria: some of their peculiar traits extend to Terra d'Otranto. The consonants are often treated as in Neapolitan, but nevertheless display their own peculiarities. But the Sicilian type has its own peculiar forms for the vowels especially; for instance, in place of the closed *e* or closed *o* of the Italian and the Romance tongues it employs an *i* or a *u: pilu,* pelo, *suli,* sole. As for the diphthongs *ie, uo,* they depend rather upon the accent of the period rather than that of the words. (See C, 2.)

E. *Sardinia.*—The language of Sardinia can be considered as a type by itself, at least as much as the Ladino. Here Dante expressed the truth very delightfully: «(Sardi) qui non Latini (=Italiani) sunt, sed Latinis adsociandi videntur.» («The Sardinians are not Latins but are seen to be associates of the Latins.») The most unmixed type of Sardinian, and hence the furthest removed from the Italian, is that of Logudorese or the dialect of the central part, to which nevertheless the southern or Campidanese dialect joins itself very closely; on the contrary, we are far removed with the Gallurese which forms an intermediate passage from Sardinian to Corso, and hence to Italian; and it is a most excellent example of the rapidity with which, in so short a geographical space, one linguistical type can be joined to another absolutely different, and also of the uncertain and arbitrary character of each classification. Characteristics fundamentally Sardinian, which distinguish it from all the other Romance tongues; it preserves intact the quality of the Latin tonic vowels, that is, each *e, i, o, u,* is here preserved as *e, i, o, u; fide,* instead of *fede, ruge, croce;* no fusion, therefore, of the long *e* and the short *i,* of the long *o* and the short *u;* and, moreover, no diphthongs. In the consonants, it is most noteworthy that the Logudorese preserve intact the guttural pronunciation of the Latin *ke, ki, kelu,* cielo (sky) ; although probably the course is only that like the Sardinian dialect, after having inherited from the Latin vulgate, like all the other Romance tongues, a *ke ki* somewhat influenced by the palate, did not go any further in that direction; and, in short, at a relatively late date, that is, toward about the 13th century, the Sardinian tongue lost also the above mentioned traces of the palatal pronunciation of the Latin vulgate. As an instance which connects the Sardinian district with the Iberico, which has the effect of giving it a certain right to be considered as common ground of transition between the eastern Roman group (Rumeno, Dalmatico, Italian), and the western (Ladino, French, Spanish), and especially of the transition from Italian to Spanish; the Sardinian preserves intact, in the very same way as the Spanish, the final *s* of the Latin; for instance, *fizu, figlio* (son), *fizos figli* (sons), that is *filios.* As an article the Sardinian has adopted *su,* from *ipse,* rather than a derivative from *ille.*

The dialects, of which we have finished the catalogue, are all, except the Tuscan, sufficiently alive and important from the standpoint of culture, because in Italy even well educated people usually speak the general dialect with their companions; but not particularly the local dialect, because each of the many small states into which the Peninsula was divided for so many centuries, or at least each of the principal states, developed to a certain extent a language particularly for conversation, which is at the bottom the dialect of the capital city; thus the cultured Piedmontese usually speak the language of Turin, the inhabitants of Veneto, Venetian dialect, etc. And many of these dialects have had a rich poetical literature; although the writers in these dialects were almost always conscious of having produced works purely local in character, and considered their own writings, in opposition to those in the literary tongue, almost like a joke, so that generally they wrote only in a facetious tone. None the less it should be for us to make some distinctions; for instance, the Venetian, which was also the official language of the Republic, was certainly in the mind of Carlo Goldoni, something more important than a simple local dialect, since in this he wrote some of his best comedies; Sardinia and Sicily also show special conditions. On the other hand, the tone and playful intention take away nothing from the artistic seriousness of a true poet; and Carlo Porta of Milan and the Roman Gioacchino Belli were certainly poets of the first rank, marvellously representing with cunning satire, the life of their time in Milan and in Rome. To-day the flowery dialect continues; but the Venetian theatre has an importance more than local, and to-day is supported, both from the excellence of the dialect itself, easily intelligible to all, and because of the happy continuation of Goldoni's comedies, as Gallina was above all, and also because of the splendid acting. Little is heard of the Piedmontese theatre, which enjoyed much favor at the time of the formation of the Kingdom—and the theatres of Milan likewise depend upon a Milanese actor. The Neapolitan dialect is carried throughout Italy by the charm of its melodies and its voluptuous but sad little songs, but Roman poetry has acquired great popularity everywhere, and this is partly due to the ease of the dialect of to-day, and partly to the Roman poets, especially Belli, but above all to that great and noble artist, as rich in epic and lyrical powers, as in popular and pleasing comedy—Cesare Pascarella.

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21. Italy—Italian Literature. This article deals with (1) The beginnings of Italian Literature; (2) The age of Dante, Petrarch and Boccaccio; (3) The Renaissance and Humanism; (4) Classicism and Decadence; (5) Arcadia and Rennovamento; (6) Contemporary period, the *Terza Italia.*

FIRST PERIOD.—FROM THE «ORIGINS» TO THE 14TH CENTURY.

Italian literature was late in its beginning, although manners were more refined and the intellectual level higher in the Italian Courts and *Communi* than in the feudal castles of France of the same period. And the League of the Northern Cities against Barbarossa's invasion, the *Vesperi Siciliani,* the organization of *Communi,* the struggle against the encroachments of the Roman Church, the commercial activity of Italian seaports, the establishment of Tribunals of Justice and City Councils, all testify to a comparative maturity of the national spirit. In France 'La Chanson de Roland' was familiar to the Norman invaders of England in 1060; while the first original piece of Italian poetry, 'Il Contrasto di Ciulo d'Alcamois,' is approximately dated 1231.

This late development of Italian literature is chiefly due to the persistence of Roman civilization, and the general use of Latin as the written language. For in spite of the many invasions of the Peninsula, the Italian stock is not a recent blend. It is the permanent Roman nationality, and the permanent Roman character. That the tradition of intellectual culture was never interrupted, is evidenced by the number of Latin writings even in the darkest periods of the Dark Ages, showing that the Peninsula has never been without some intellectual light. The Empire and the Church, those two supreme powers of the Middle Ages, encouraged respect for the Latin, by using it as the official language, and thus contributed to the contempt in which was held the spoken language,—*Volgare.* Even after the noble compositions in Italian, of *Trecento* (14th century), both Dante and Petrarch used Latin in their scholarly writings. This Middle Age Latin literature and the gradual change from *Latino Rustico* to *Volgare Rustico* are considered in the article on the Italian Language. Though the *Volgare* was the latest of the Neolatin idioms and was everywhere used, even by the learned in familiar conversation, it was not until 1231 in the *Contrasto* that it found its way into literature. Yet so rapidly was it perfected by Dante, Petrarch and Boccaccio, that in Dante's *Commedia* (1300) Italian attained its splendor and perfection earlier than any other European language.

The feudal ideal of chivalry, imported from France and Germany and unsympathetic to Italian tradition, also retarded the development of a national literature. The *trouvères* of *langue d'oel* and the *troubadours* of *langue d'oc* poured across the Alps and were welcomed by princes and common people. Everywhere these invaders scattered the ideas of their country, and the ideals of their legends. So numerous, noisy and popular were they that the city of Bologna in 1288 passed a law forbidding *quod Cantores francigenarum* from dwelling near the Town Hall and disturbing the Council. Imitators of the French *gaie science* flourished everywhere, as Albertino Malaspina, Rambertino Buvalelli and the Mantuan Sordello whom Dante mentions. After the bloody *croisade des Albigeois* many troubadours sought the protection of the Emperor Frederick II. of Sicily. Many other intellectual forces sought the support of that enlightened prince who welcomed *Gli uomini che avevan bontade giucoliere, sonatore, e trovatori.* On account of the learning and culture that came pouring in from all parts of Italy, the *volgare* used at the Court of Frederick was more refined than that used in Naples or in the northern part of Italy, and more free from Latin than the Florentine dialect. And here in Sicily arose the first school of Italian poetry.

There was little originality and less genuine sentiment in these first productions of that school variously named *Provençal, Sicilian,* or *Aulico cortigiana.* It was an imitation in both matter and form from the French model. The sonnet alone where two *strambotte* are joined, is original; otherwise the forms are the *ballade,* the *pastourelle* and the *sirvente* of the troubadours. Probably anterior to these is the much discussed *Ciulo d'Alcamo,* or *Cieto Dalcamo,* with its charming dialogue between an eager lover and a reluctant but finally yielding sweetheart. The first entreating lines *Rosa fresca aulentissima C'a pari in ver l'estate* are better remembered than the realistic and more sincere conclusion. The name *Scuola Siciliana* survived the quickly vanished magnificence of the Court that fostered it. The Tuscans who had lived in Frederick's Court, or corresponded in *Tenzoni,* were known as «Sicilians.» Folcacchiero dei Folcacchieri in Siena and Monte Andrea are remembered as «Sicilians» of the second period. To Guido Guinicelli (1240—?) Dante allows the merit of opening a new field of poetry and of giving in the celebrated *canzone Al cor gentile ripara sempre amor* a new ideal afterwards called *Il dolce stil nuovo.* Guinicelli, whom Dante calls *Padre mio e dei miei migliori,* went from Bologna to Florence, and inspired poets who introduced the *spiritelli* (impersonations of love), in which there is some psychological analysis and much mannerism. The *Canzone* ‘Donna miprega’ of Cavalcante (1260—?) is the most perfect of these. It is a complete scholastic treatise on love's psychology.

The asseveration that the Italian mind is never deeply religious is disproved by the mystic religious poetry which blossomed during the Middle Ages. It was almost localized in Umbria and was chiefly inspired by that gentle apostle of poverty and love, Saint Francis of Assisi, and his followers. Like manna to the hungry were the verses of the *Cantico del Sole,* and many a humble soul was inspired to imitate the *Laudi* of which every religious Brotherhood had its own sacred stock. Jacopo Benedetti, known as Jacopone da Todi, is the best known of these religious poets. His ‘Laudi’ which he called *sacra pazzia* (holy madness) consist of endless exclamations and repetitions of tender worship of the Madonna and supplications that God should severely punish his sins.

The prose works of this period were mostly written in Latin or French and do not form a part of «Italian» literature. ‘Tristano’ is perhaps the earliest Italian version of those *Chansons de Geste* usually written in poor French. The ‘Buovo d'Antona’ and the ‘Storietta di Troia’ are mere translations and adaptations. There is more originality in the ‘Novellino,’ where, though the Bible and French *Fableaux* furnish most of the material, there is also mingled a certain amount of local color. ‘Il Libro dei Sette Savi,’ the Italian version of the Seven Wise Men, first told in India, and repeated in all the literatures of Europe, is an interesting example of the common source of all literature, and the intimate relations of migratory peoples. The few *Croniche* are historical works where imagination frequently supplies the place of fact. The *Fiori* are confused and pretentious aggregations of information about many things. Guittone d'Arezzo's ‘Epistles’ are the first example of that pompous Latin elegance and correctness so often affected by later writers of Italian prose.

IL TRECENTO, 14TH CENTURY.

If the 12th century was the early springtime of Italian literature, a time of seed-sowing and germination; followed in the 13th century by the first fruits of the harvest; then the 14th century may be considered the glorious summer of fruition. Before the opening of *Trecento* the foreign forms and ideas had been assimilated, transformed by Italian genius. Epic and lyric poetry, romantic and historic prose, were now Italian in character. Guido Guinicelli and Guido Cavalcanti had initiated the *Dolce stil nuovo;* Guittoni d'Arezzo had written the first pure and stately Italian prose. And now began the century made glorious by Dante, Petrarch, and Boccaccio.

DANTE.

The facts of Dante's life belong to history, but the vicissitudes of his love, the evolution of his soul, stand within the compass of literature, they explain and reveal his immortal work. He was nine years old when first he met Beatrice, a child of eight; nine years later he again met her in the street, and was favored with her gentle *saluto.* In that instant love mastered his soul, Beatrice was the only object of his thought. The death of Beatrice did not break the charm, though for a moment Dante was attracted by a gentle dame who with him bewailed his great loss; but soon he returned to his worship of Beatrice's memory. ‘La Vita Nuova’ records the incidents and emotions of his love for Beatrice. Through these sonnets and *canzoni* linked together by prose comment, runs a vein of tender melancholy, a spirit of transcendentalism. The canzone *Donne che avete intelletto d'amore* is in the *Dolce stil nuovo* introduced by Guido Guinicelli, with a metaphysical deification of feminine beauty as an emanation of Divine Love as a means of salvation. The sonnets ‘Vede perfettamente ogni salute,’ and ‘Tanto Gentile’ are gems of lyric poetry, and the vision *Donna Pietosa* is of classic simplicity. After telling of his grief at the death of Beatrice, he describes his vision of her soul rising to the glory of Paradise amidst a choir of cherubims singing praises. In Dante's ‘Canzoniere’ are other beautiful lyrics, some with the same inspiration as in ‘Vita Nuova’ and others, known as *Rime petrose,* composed in a different spirit; perhaps inspired by a woman named Pietra. ‘Convivo’ (as the name signifies), is a «banquet» of spiritual food in the Italian language, for those who could not read Latin. Philosophy, astrology, morals, religion, a compendium of the Ptolemaic system, and a dissertation on the destination of the human soul, all are included in this feast; all presented in noble poetry and splendid prose. The *Canzone* ‘Voi che intendendo il terzo, ciel movete’ show how genius can transform dry dogmatic into a noble hymn of beauty. In ‘De Monarchia’ the question which then divided the world—whether the Church should dominate the Empire—is argued from the Ghibelline (or Imperial) standpoint.

LA DIVINA COMMEDIA.

Though doubtless his other writings suffice to place Dante among those illustrious Italians whose composition will always be read, it is because of 'The Divine Comedy' that Dante ranks as the chief glory of his nation, crowned with the same immortality as belong to Shakespeare and Homer.

'La Divina Commedia' was called «Commedia» by Dante, «Divina» being added immediately after his death by his admirers, and since universally accepted.

Poets, painters and preachers before Dante had attempted uncouth description of the three realms of Punishment, Expiation, and Reward. Orcagna's frescoes in the Campo Santo of Pisa are a familiar illustration. From these Dante appropriated freely; his rich imagination and stern logic transforming all into a complex yet balanced harmony. The structure of the poem is simple and symmetrical in its *ensemble,* but elaborate in its detail. The *Inferno* is a huge inverted cone, opening directly under Jerusalem, its outside edged by *Anti-Inferno,* which in its turn is circumscribed by the river Acheron. The interior of this cone is divided into concentric rings (*cerchi*). In the upper, which is also the outer circle, the punishment is least, and increases in severity as in each successive descending concentric circle the sins to be punished increase in turpitude. The bottom of this cone is formed by the funnel in which Lucifer became wedged half way, hurled down head foremost from the *Emperio.* His beastly triple head is in *Inferno,* while his legs form the central point of the opposite mount of *Purgatorio.*

Opposite to *Inferno,* in exact but inverted symmetry, rises the mount of *Purgatorio,* divided into a sequence of terraces corresponding to the *cerchi* (circles) of *Inferno.* Each terrace contains a certain category of sinners, the lowest being the worst. As *Inferno* had an Anti-Inferno and a final city of *Dite,* so *Purgatorio* is preceded by *Anti-Purgatorio,* surrounded by the Eden or Terrestrial Paradise encircled by the rivers of Lethe and Eunoe that wash away every recollection of sin. *Paradiso* is also imagined on the plan of concentric circles, in accord with the Ptolemaic system. Only in these spheres of splendor the Blessed are not constrained to any fixed place, but soar freely from one circle to the other, and they all have their appointed seats in the mystic Rose, whose centre is God Himself.

The symmetrical harmony of the 'Divine Comedy' extends to every detail. Nine circles in Hell and Anti-Inferno, nine terraces in Purgatory and Anti-Purgatory, and nine spheres in Heaven and the Emperio. The two outer circles of Hell form the city of Dite, the last two of Purgatory the Terrestrial Paradise, and the last two spheres of Heaven the mystic Rose. The 33 Cantos are divided into three parts, the repetition and multiplication of these leading up to nine, the perfect number composed of the Trinity multiplied by itself. Each of the three parts ends with the word *stelle.* The material unity of this hugely imagined construction is shown in the line which, straight from the centre of the mystic Rose (centre of Paradise) forms the axis of mount Purgatory, passes through Lucifer's body and reaches Jerusalem. This symbolic line, reaching from God Himself, through the realms of glory, expiation, and punishment, to Jerusalem, uniting the Church triumphant with the Church militant, typifies Redemption. Lucifer, in falling from Heaven has formed the hollow of Hell, and the opposite mount of Purgatory was formed by the horror which made the very earth recoil at his passage. Salvation for a sinful world, starting from the Cross of Calvary at Jerusalem, conquers Hell and by the purifications of Purgatory reopens Heaven, the dwelling-place of God, to redeemed mankind. This unity of conception is continued in the three allegorical significations of the *Commedia,* the personal, moral, and political. Considered as personal to the poet, Dante's journey begins on Easter Day 1300, the Year of the Jubilee, and lasts seven days. Dante, then in middle life, finds himself in a forest in sight of a hill, sun-illumined at the top, his path opposed by three beasts,—his sins;—he is rescued by Virgil, who by Beatrice's command shows him the realms of punishment and expiation. In the political allegory Virgil, typifying the Power of the Empire, leads mankind through the realms of punishment and expiation up to the Terrestrial Paradise from whence Beatrice, signifying religion, conducts him through Heaven. In the moral allegory Virgil is human reason, Beatrice is Faith and all the Scholastic controversy is developed by Saints Thomas, Dominique and Peter. In *Inferno* these ghosts or shades endure pain in the flesh, hopelessly conscious that pardon is past praying for. In *Purgatorio* the expiating soul is comforted with the certainty of ultimate pardon and with bright visions of happiness. In Heaven the souls are no more shades but lights. It is an ocean as full of brightness as Hell was black.

Of the myriad beings who people these three realms of hell, purgatory and heaven, Dante's supreme creation is Lucifer. Indeed, this personification of Evil is the supreme intellectual conception of the Fallen God of all literature and of all time. Dante in some measure attained to and completed what Æschylus essayed. Dante's Lucifer is as repulsive as Milton's Satan is fascinating. All glory is alien to him; all things of sin are a part of and have their source in him. He is all-evil, Evil, pure and infinite, the author of all the sin mankind endures, the loathsomeness of his person, the vileness of his acts, the futility of the motion of his vast bat-like wings, the worst of the hugeness and horror are indescribable. "At each of his three mouths he with his teeth is crunching a sinner in the manner of a brake." Brutus, Cassius, Judas Iscariot! These are the three arch sinners whom Satan's teeth are champing. The first betrayed his king, the second betrayed his friend and king, the third betrayed his friend, his king and his God. And all about is ice and life-congealing winds, the intense darkness of the vast cavern in which the strange voices of Dante and Virgil sound alien, hoarse and hollow.

There are many other stupendous descriptions in the *Commedia,* powerful apostrophies, withering invectives; the haughty words of Farinata degli Uberti, rising from his tomb; the piteous stories of Francesca da Rimini, and of Pia dei Tolomei; the description of the serpents growing into men, then burning down to ashes and forever repeating this atrocious torment; the appalling picture of the forest of withering branches weeping their intolerable misery in drops of blood. Shakespeare has more chords to his lyre, and Homer often rises to supreme heights, but with Shakespeare and Homer will ever be associated in an immortal triumvirate the name of Dante. He remains the chief glory of Italian literature, and a world poet of the highest rank. Cino da Pistoia, after Dante, the most delicate of poets *del stil nuovo,* has left many sonnets, ballads and *canzoni,* in which he sang his love for fair *Selvaggia.* His passionate verses alternate moods of joy and grief, and show some psychologic observation. Cecco Angiolieri writes with humor, despair and gaiety. There is also ample and interesting material in the prose writing of the time. The 'Fioretti di San Francesco,' a compilation of legends and sayings about Saint Francis of Assisi or attributed to him, are exquisitely simple and of deep piety. Dino Compagni's *Cronica,* and the *Cronaca* of the Three Villani's describes the world in which Dante lived.

Francesco Petrarca, 1304-1374.—If Dante was the last splendid representative of the Middle Age, Petrarch was the rising sun of the Renaissance. The first sang the mystic contemplation of other-world ideals, the second initiated the study and observation of the human heart and of terrestrial beauty, and was a prey to that contrast of moods which make him the first victim of pessimism in literature. Petrarch's love for Laura, his habits of elegance, his affection for rare manuscripts and classic authors, his craving for perfection of literary form, jarred cruelly with the religious sentiment which became supreme in his later years. In Petrarch's poetry there is a cry of human suffering, a sincerity of expression which separates it from any previous composition. 'Il Canzoniere' is a searching analysis of a single sensation, the psychology of a single soul. When Laura dies Petrarch's grief is a brooding melancholy, less ascetic and more tender than the devotion professed by other poets of the *stil nuovo.* There are many chords in Petrarch's lyre, and Laura's praise is sung in many moods.

'I Trionfi,' an allegorical poem mostly in *terza rima,* narrating the triumph of Love, Death and Fame, is a continuation of the *Canzoniere.* Petrarch is the poet of love, but he is also the first Italian poet who has intensely felt and sung of patriotism. He dreams of an Italy direct heiress of the Roman Republic of Scipio, powerful in the liberty of Communes; yet he perceives that a national monarchy is the best available form. In Petrarch's writings there is an exaggerated attention to form, though it never quite becomes mannerism as it does with his imitators.

Giovanni Boccaccio, 1313-1375.—Boccaccio was a scholar possessed with the imagination of a poet, a ready wit and the charming manner which secured for him, the bastard son of a merchant, the welcome of princes and the love of a princess. His comprehensive soul and rich nature epitomizes his age and country. He is delighted with the discovery of an ancient manuscript, first realizes the greatness of Dante's poem and spreads the knowledge broadcast; yet though abounding in literary work and scholarly study he finds time for business and also for public affairs. 'Il Filocolo,' 'Filostrato' an 'Il Ninfale Fiesolano,' are praiseworthy stories, overcharged with ornament; but 'Fiammetta' is a literary event, the first psychological novel. Only Dante's 'Vita Nuovo' had contained such subtle investigation. 'Fiammetta' is Boccaccio's own love story, and possesses an accent of sincerity that all the borrowed elegance of Latin models cannot disguise.

The 'Decamerone' is Boccaccio's immortal masterpiece. Over Florence (1348) hangs the horror of the plague. In a delightful villa outside the city a company of gallant youths and gentle maidens have gone for safety, and to seek distraction from thoughts of death and disease through present enjoyment, and the telling of tales. The party of ten, during ten days, tell one hundred stories. A crowd of personages are introduced; the diversity of situation, the fertility of invention or of adaptation, the abundance of familiar detail give us unsurpassed pictures of Neapolitan and Florentine life of the time. Knights and princes, artists and poets, gentlewomen and merry wives, friends, friars, hostel-keepers, shrewd merchants and lusty clerks, all move and speak in the gay medley of real life. The attacks on the clergy were warranted by their immorality, and Boccaccio's obscenity completes his picture. He borrows from all sources, chiefly from French *fabliaux,* with the one purpose of correctly representing the real world around him; its interests, its virtues, its vices. He is a pagan, as are the shrewd, prosperous Florentine pagans about him, those whom Carducci calls *il popolo grasso,* enjoying life and indifferent to any future finality. His only reverence is for Art, which he worships so ardently as to have given to his own work a correctness which ranks him as one of the intellectual triumvirate that molded the Italian languages, and even the very spirit of the Nation.

In perfect contrast with the irreligious and artistic world of Boccaccio and his imitator Franco Sacchetti, and their disciples, loomed a great ascetic spirit, an inspired apostle, who subdued the fiercest and humbled the proudest, by declaring the simple message of Jesus Christ; an illiterate woman of humble birth, Santa Caterina da Siena. Unquestioned faith in herself and her holy mission gave authority to her word, eloquence to her epistles and reminiscences, most uncommon among Italian writers of that or any other period. It is another miracle of the power of Faith.

IL QUATTROCENTO—15 CENTURY. THE RENAISSANCE.

If the *quattrocento* (15th century) seems to have produced little that is memorable in Italian literature, the barrenness is only seeming. It was a seed germinating century, wedged in between the glorious 14th and the brilliant 16th century. A century of progress in classical studies, a period notable in the evolution of the National conscience. Petrarch and Boccaccio only a little forestalled their countrymen, and 'Humanism' soon spread over all Italy.

Whether the word «humanism» be given its Latin signification of gentleness, courtliness; or is understood as emphasizing the human rather than the religious ideal, it equally accorded with the Italian 15th century spirit. A spirit of rebellion against the papal and imperial influences which dominated the Middle Ages. Italians have always claimed to be the inheritors of the Roman world, and to have uninterruptedly continued the classic tradition, and the claim was certainly justified at this time, when Latin civism was asserted in the free *Communi,* when emphasis was given to the Latin language, and when under the patronage of Cosimo de Medici, in the *Accademia Platonica,* meeting in the villa belonging to Marsilio Ficino, learned scholars and philosophers in purely pagan spirit, disputed respecting Plato's and Aristotle's dogmas. Some timid priests, it is true, opposed this humanism, which, with its pagan myths, philosophic inquiry and sensuous beauty, threatened the Church's supremacy. But soon scholarly and epicurian prelates and popes (Niccolò V. and Pio II.) were themselves seduced by humanism, and turned the current of reviving philosophy and letters to the adornment of the Church, if not to the increase of her faith.

These literati were obsessed with admiration for letters and ancient manuscripts and especially for elegance of Latin style. Yet they were more than mere pedants. Working away from the individualistic ideal of the *trecento,* they broadened the range of studies, in the universal Latin language which they called *Lingua Nostra,* opened a large field of investigation to the human intellect, now released from the limitations of scholasticism, helped the progress of humanity, and taught princes and potentates to pay homage to learning. The second half of this century was marked by the fall of Constantinople, which left Italy the sole surviving warden of classical tradition and its princely Courts the only asylum for fleeing scholars and philosophers. The invention of printing spread learning and literature among large numbers. The splendor of newly established courts, each eager to make the people forget their former liberty; in Rome the returning Popes, in Naples the House of Aragon, in Ferrara the Este, in Florence the Medici, and others only less bright because of their lesser importance, all exerting their influence for the glory of letters.

Neapolitan literary life was in the beginning aristocratic, Latin, and scholastic; a concourse of rhetors, grammarians and linguists, of whom Gioviano Pontano (1426-1503) and Jacapo Sannazzaro (1458-1530) are types. Pontano's hexameteric 'Lepidina,' and hendecasyllabic 'Seu Baiæ,' imitate Ovid and Catullus, and sing of lustful love. Sannazzaro's 'Arcadia' presents with more refinement scenes of pastoral life, pictures of innocent gaiety and simple stories of love veiled in melancholy. Florence was not more world-famous for her commerce, than for her glorious triumvirate of *trecentist* poets, and for possessing the literary language. In the Florentine crucible classic and Christian ideals were fused, and from her alembic issued the most perfect examples of humanistic literature. Lorenzo de Medici correctly represents these Florentines over whom he ruled. His admiration for every form of beauty, every phase of human thought; his preference for classic forms, his predilection for pompous and bright pageantry, even the drinking songs (*I Beoni*), which he composed in the solemn, almost religious metre of *terza rima,* are typical. Because he so completely impersonated Florence, Lorenzo de Medici loved Angelo Poliziano (1454-1494) and Luigi Pulci (1432-1484). Poliziano, beginning with Virgil, rifled his gems from all poetic caskets; yet with such gift of assimilation that his *Stanze* are more than mere stolen mosaics. Pulci's 'Morgante' is also a rare product of imitation and assimilation, an endeavor to make ideals imported from chivalric feudal France blossom in democratic Italian atmosphere.

But this chivalry of the North, which in the two preceding centuries had so poorly flourished in the soil of Roman civism, in the 15th century degenerated into the vulgar poetry of wandering *cantastorie,* catering for the amusement of unheroic *popolani* in the piazzas; and of such farragoes of heroic episodes and pseudo-history as 'I Reali di Francia,' which even in this 20th century is still read in many rustic Italian households. Sceptic scholars like Pulci used these popular errant knights, giants, and enchanters as a convenient framework for their own image weaving. Count Matteo Boiardo (1434-1494), of aristocratic Ferrara, treats his chivalrous heroes with respect. He adorns his stories with classical embellishments, and prefers the gentle knights of the Round Table to the stern warriors of the *Chansons de geste,* as is indicated by the very title 'Orlando Innamorato.'

There could be no lyric poetry in this age which ignored the charm of intimate self-communion and was content with the popular *canzonetta* and *rispetto,* or with pedestrian imitations of Petrarch. The religious drama (in a century in which the solitary voice of Savonarola cried in the desert) became an anachronism. Soldiers with muskets stalked through the scenes of the Sacred Passion and angels lisped the prologue. Even the popular 'Santa Uliva' is without literary value. Discarded by scholars, used only for familiar epistle or merry *novelle,* Italian prose only reaches terseness in the instructive writings of artists like Leon Battista Alberti (1407-1472) or Leonardo da Vinci (1452-1519), careless of literary form; and in a few such passionate orators as Savonarola and San Bernardino da Siena, whose eloquence is inspired by the intensity of their convictions.

IL CINQUECENTO.—16TH CENTURY.—CLASSICISM.

The *trecento* which witnessed the disintegration of feudalism and the partial destruction of ecclesiastical domination—those two foes of Italian Nationalism—produced Italy's chief literary glory, Dante's 'Divine Comedy.' The *quattrocento* replaced the mystic Christian Idealism of the Middle Ages with purely pagan ideals of human happiness and beauty. It established Italian as the literary language in place of the discredited Latin, witnessed a literary assimilation of classic ideals with modern observation, saw an unparalleled development of the artistic sense, a refinement of manners and a fastidious taste which penetrated every part of the Peninsula. The *Cinquecento* witnessed the decline of Italian Nationalism. A French army invaded Italy (1494), Rome was sacked (1527), Florence fell (1530) and Charles V. was crowned in Bologna (1530) by Clement VII.; strange contrast with so splendid an era in Italian Arts and Letters! Political disintegration coincided with the integration of the national language, and the spread of national literature. This age of foreign and civil wars, of broken confederacies, of traitorous leagues, is the age of the establishment of new æsthetic ideals and forms of composition, and of that sense of finality which indicated the maturity of Classicism. Erudition, disciplined by antiquity, curbed extravagant attempts to create new literary forms. The *Cinquecento* had all the perfection and all the limitations of undiscussed classicism and aristocratic culture. Popular elements of inspiration in stories of chivalry, sacred dramatic representations, and popular forms of composition, like the *ottava,* the *canzonetta,* the comedy, were assimilated by courtly men of letters and the common people retreated from important participation in literary productions.

Machiavelli, Ariosto, Aretino, Cellini, Tasso, represent this 16th century.

Niccolo Machiavelli (1649-1527) is the product of this age. He impersonates that fundamental element of the Italian character—the spirit of ancient Rome. His admiration is for strength and its result—success. The greatest sin is weakness and failure. The weakling, possessing velleity without power to compel accomplishment, is despicable. Careless of religious dogma, indifferent to moral teaching, the end always justified the means: The welfare of the State is the *suprema lex* under his intent observation personages become meaningless appearances, events become important, and beyond the passing phenomena he perceives the everlasting law.

The Florence of the Medici shared Machiavelli's unprejudiced views, and even his apparent contradictions. He planned the institution of a republic in his 'Discorsi,' yet in 'Il Principe' hailed the advent of the masterful tyrant, who like Cesare Borgia would shake off ravenous invaders feeding on the vitals of Italy, and, unrestrained by any obstacle or moral consideration, would accomplish the unification of Italy; and Machiavelli's fellow-citizens connived at his partiality in retracing historical events in 'Storie Florentine,' since the inaccuracy best served their purpose. In the comedy 'La Mandragola,' Machiavelli, with genuine psychological observation satirizes contemporary society. Though the argument is obscene, there is excuse for unmasking perverted and perverting friars like Fra Timoteo, and in exposing the evil influence of an immoral priesthood on simple-minded women. Francesco Guiciardini (1483-1540) though his history is better constructed than Machiavelli's and more accurate, is an opportunist. He submits to the oppression of unavoidable despotism, and impersonates a weaker generation. The 20 volumes of his 'History of Italy' comprises the important period of the competition between France and Spain.

If Machiavelli typifies the intellectual Roman element of the Italian race, Ariosto, Machiavelli's contemporary, represents those foreign elements, medieval and poetical, which are also a part of the Italian mind. Though he, too, is familiar with classicism and Latinity, they are acquired qualities. It is the legends of chivalry, the *chansons de geste* and epic poems, which fire his imagination; and he expresses his poetry in the popular rhyme of the *ottava.* Ariosto's poetry is bright, spontaneous, sparkling. *L' art pour l' art* was the ideal of this diligent toiler, who without passion, faith, patriotism or religion, yet labors unweariedly to produce artistic beauty. The world he represents, the society that first inspires and then admires his work, equals him in indifference to moral and religious ideals. The 'Orlando Furioso,' Ariosto's masterpiece, is an accurate résumé of *Renaissance* sentiment. The paradise of pastoral simplicity which he describes, is opposed to the Court slavery under which he is restless. In Italy chivalry was not a tangible reality but a traditional fiction, a fabric of the imagination to inspire popular minstrelsy and courtly poets, and held together by the gossamer links of a code of gallantry. Chivalry, like *Cinquecento* mythology and religion, could no longer inspire heroic deeds or write epic poetry. Raphael with equal earnestness painted a Madonna, or a Galatea, and Titian a Venus or his sweetheart; so Ariosto utilized tradition, legend, imagination, in his poem; eager for beauty, and indifferent to the moral content.

'Orlando Furioso' opens with the Saracens in France; they have defeated Charlemagne and are besieging Paris. The episode of this war, ending in the victory of the Christian Emperor, and the flight of Agramonte and his death in combat with Orlando, is the plot which binds together the many stories and endless episodes. The story of Prince Ruggiero the Saracen, and his marriage after conversion, to Bradamante the Christian heroine, is a glorification of the House of Este, issue of this marriage. The episode of the fair and frigid Angelica rescued from the sea monster is very popular. Crowds of personages swarm in this poem, so full of imagination and actuality. Some of Ariosto's heroines are veritable amazons testifying to their love by feats of warlike valor, and contrasting with other heroines, full of sweetly touching timidity. Ariosto's style and versification are faultless. To have written with such perfect cadence and just management of measure, it is said he must have thought in *ottave.*

No history of *Cinquecento* literature should omit the shadow typified by Pietro Aretino (1492-1556), the cynic pamphleteer, whose impudence in selling his defamatory verse, or his silence, is equalled by the immorality of the Popes and princes who bought and flattered him. Machiavelli the philosopher has an ideal of virtue; Ariosto the poet has an ennobling vision of beauty; even time-serving Guicciardini lives an unblemished life and believes that virtue is a good policy; but defamatory Aretino, son of a courtesan, bullies and blackmails; like a ravenous wolf he seizes his prey with violence and impudence. He wears his pen like a dagger, ostentatiously; he wields it like a coward. He surpasses the villain in the villainy of his libels, and is chief among braggarts. Yet, if we are content to take his viewpoint, his picture of his times and contemporaries is true. In this consists its value in a history of Italian literature.

LYRICS, TRAGEDY, COMEDY, IMPROMPTU, FARCE.

This *Cinquecento,* so intellectual and learned, gay and witty, betrays its emptiness in a flood of insipid lyrics, produced in imitation of Petrarch and Sannazzaro. Brightest exception is Michelangelo, who whether voicing his wrath at political corruptions or singing his passionate friendship for the widow Princess Vittoria Colonna, has always strength and nobility of utterance. That same Vittoria Colonna herself wrote praiseworthy sonnets, full of feeling. Tragedy went limping in a moral atmosphere that neither inspired nor could appreciate tragic feeling. The 'Panfila' of Pistoia is a clumsy adaptation of Seneca, and is typical. Giraldi's (1504-1573) 'Orbecche' is more original and shows good intention. Aretino's 'Orazia' lacks genuine merit and would have passed without honor in a less barren moment.

There arrives in the development of every race, as well as of every individual, a certain period characterized by great curiosity to behold itself as in a mirror; an inordinate desire for self-knowledge. The *Cinquecento* led the Italian people up to that stage of self-consciousness, hence the popularity of comedy, a form of composition that vividly pictures society, and presents its manners and spirit in the idiomatic language of familiar conversation. Lewdness characterizes all these plays, because cynical and unconcealed debauch was characteristic of the age. In the palaces of princes, in the halls of Academies, in the *Parlatorio* of every worldly convent, the occasional stage was prepared; and famous artists assisted in the creation of gorgeous scenes and costumes; while the common people delighted in the popular dialogues (*gliommeri*), of the Jugglers. Out of this varied material finally evolved two sorts of composition, each having its own audience. If the dulled palate of the intellectual *blasé* in princely halls preferred the idyls of the Pastoral drama, the larger audiences of the common people delighted in the rude wit and impromptu dialogues of the 'Commedia a Soggetto,' spoken in the local dialect. Satire is also a mirror in which the complacent society of *Cinquecento* delighted to observe its own reflection. Francesco Berni (1497-1535) held up just the reflection to please his contemporaries. The correctness of his style, the elegance of his verse, made the dainty frame. Berni wrote for the enlightened *bourgeoisie* of whom he was a part. In that style known from him as *Bernesca,* a parody of Petrarchism, a mixture of classicism, mannerism and realism; apparently rude, really fine art. In his *Capitoli* sonnets he laughs at the rudeness or obscenity he records, and without bitterness satirizes the immorality of all churchmen, from Pope Clement to the poor parish priest; the comfortless hospitality of whose parish house is wittily described in 'Fracastoro.'

The prose writings of *Cinquecento* may be briefly summarized in the unassuming composition of story tellers, biographers and essayists. Giorgio Vasari's (1511-1574) 'Lives of Painters' is a storehouse of information from which even modern critics are obliged to borrow. Benvennto Cellini (1500-1571) in his 'Life,' even better illuminates the varied aspects of an artistic career, and the strange relation between *Cinquecento* patrons and their *protégés,* Cellini wields his pen as he wields his chisel, masterfully. In both cases his figures stand in relief. He professes and lives up to the moral standard of his time. His imprisonment is a misadventure which broods no introspection and arouses almost no protest. Cellini's prose style is free, flowing, terse and picturesque, equally removed from vulgarity and pedantry. Baldesan Castiglione (1475-1529) in his 'Cortigiano' with classical elegance discourses of good manners. So does Giovanni della Casa (1503-1556) in 'Il Galateo.' 'Il Cortigiano' is the paragon of courtiers; 'Il Galateo' is the hand-book of every polite person, and has been republished many times. The *Novelle,* or stories, amply illustrate the infinite variety between different regions of Italy, they abound in local color and allusion, and diversely mirror the different localities. Lasca, bright, witty, and plebeian, correctly displays the character, life, instincts and ideas of the Florentine citizen. Bandello, once a friar, then a bishop, pompous, courtly and refined, in his 200 stories reproduces in another series of pictures the customs and life of his times.

The second half of the 16th century witnessed a great change in this bright Italian world. The long gathering darkness settled in the double pall of Spanish servitude and Catholic obscurantism. The Italian intelligence has always been either Roman Catholic or rationalist. Some, like Machiavelli, have considered religion as a question politic or artistic, neither to be discussed nor denied; others, like Savonarola, have demanded a reform of clergy but not of dogma. But while other countries were shaken by religious storms and persecutions, in Italy there was no strife and consequently no victory. The heavy hand of the victorious papal power was accepted indifferently. The Council of Trent (1545-1563) enforced discipline, which was resumed in the axiom *Si non caste tamen caute,* and encouraged hypocrisy. The institution of the «Index» comforted timid souls, scandalized by the current freedom of thought and license of expression. The Cardinals in Council could neither create a religious spirit in Italy nor seriously reform the clergy; but they did try and partially succeeded in creating the appearance of this double reform. In the country where

Savonarola had been an anachronism, and where Socinius found neither disciples nor opponents, there could be no real revival of faith; but society asserted the appearance of decency; and literature, assuming the forms of religion, without altering the paganism of its informing spirit, declined into the vacuity and affectation, hypocrisy, pedantism, and mannerism, which culminated in *secentismo*.

Yet two genuine poets and one immortal masterpiece brighten the gloom of the closing *Cinquecento*. Guarini's 'Pastor Fido' and Tasso's 'Aminta' mark the momentous parting between classical *Cinquecento* and rococo *Seicento*, and they gleam with the beauties of both. This is a new and delicate art. Sensualism is veiled in sweet melancholy, a melancholy as indefinite as it is alluring; a modern expression and delicacy of images.

There have been privileged poets whose souls have vibrated in unison with an environment, which they have identified and represented in the serenity of mutual comprehension. There are others, the martyr poets, who have been doomed to live in times and places in bitter contradiction with their own nature: of these, the most unhappy is Torquato Tasso. Both the exterior and the spiritual conditions of his life were intolerably miserable. As a man—whether as courtier or as lover, as a spiritual being—both as Christian and as poet, there was eternal warfare between his character, his circumstances and his environment. There was ample cause for his insanity and for his subsequent pitiful death. Tasso's heart, full of tenderness and sentiment, craved love in the loveless circle of court life; Tasso's soul craved the comfort of Faith and of a spiritual religion; and the Church gave him sophism and formalism. He was a feather, beaten and tossed upon a stormy sea. When at last after pitiful misfortune, imprudence and illness, he is visited by a gleam of glory, cheered by a ray of hope, then he dies; he dies, and the bells of the Capital peal for his incoronation: the laurel crowning of the author of 'Gerusalemme Liberata.'

Tasso's great poem glorifies the second Crusade, the battles between the Christian army under Godfrey of Bouillon and the Infidel under Aladin. The love of Tancredi for Erminia, of Olindo for Sofronia, the enchantments of Armida's garden; how eagerly have they been read, how freely imitated! The weakness and yet the charm of 'Gerusalemme' is that this poem, having the heroic or epic form, is lyric and sentimental in inspiration. Modernity characterizes Tasso's poem; a sympathizing introspection. It thrills in the immortal smile of Armida's eyes, it is beautifully analyzed in that scene of beauty, the death of Clorinda. 'Gerusalemme' was the last glory of *Cinquecento* before the gloom of *Seicento*.

IL SEICENTO.—17TH CENTURY.—DECADENCE.

In his 'Promisi Sposi' Manzoni has vividly portrayed that wretched contrast in Italian seventeenth century life between the actual poverty and weakness, and the inflated magnificence and insincerity which in art produced *barrocchism*, and in literature produced *marinism*. What the over-ornamented statues of Bernini, or the *façade* of San Mosé in Venice are in sculpture, the poetry of Marino is in poetry. Productions vacuous in conception, lavish in embellishment. But life is more than poetry and the plastic arts, and these do not completely represent the evolution of the Italian people. Though the *Seicento* is the most barren in the history of Italian literature, it is also the century of such solitary souls as Giordano Bruno, Tommaso Campanella, and Galileo Galilei, and Paolo Sarpi; a period of travail from which was born the modern spirit and the beginnings of a new era in Science and Letters and experimental philosophy; the more beautifully bright when contrasted with the surrounding meanness and spiritual poverty.

Secentism in Italy, *euphuism* in England, *le style précieux* in France, *gongorism* in Spain are all equivalent phenomena. The mannerism of this period can be traced back even to Petrarch, and is seen in Tasso, but it only became overwhelming under the double pall of Spanish and Papal oppression that now weighed upon Italy. It was not the special fault of any individual poet or prose writer, though some were greater sinners than others; it was the characteristic of the century, this moral inertness, this soul vacuity, this pretension, this imbecility, virtuosity and affectation of glitter that was not gold, nor even pure brass. Love, that informing spirit of all lyric poetry, which had been allegorical and mystic in the Middle Ages, æsthetic and sensual in the Renaissance, now became a mere rhetorical artifice, a *leit motiv* for infinite melodious and fantastic variations and multitudinous images, and minced and prated in sensual trifles. In the pages of the crowds of epic poetasters striving for immortality along the path of Tasso and Ariosto, the word «heroism» echoed as sounding brass and tinkling cymbals. The more religion, morality and patriotism—those great lights of inspiration—grew dim in the souls of men, the more did the marshlight of imitation elaborate with emptiness the pages of these versifiers.

Yet never had the forms of composition been more elaborate and finished; all the spoils of the past, all the treasures of classicism and Renaissance, were at the command of these witty, refined, but sceptic, wearied and unspiritual poets; incapable of either Pagan or Christian ideals. Giambattista Marini (1569-1625) is the epitome of *Secentism*. What Bernini is to Michelangelo, Marini is to Tasso and Petrarch. The same fatuity which multiplies the flowing draperies around the sculptured figures of the one, fills the poems of the other with strained images, extravagantly expressed. Marini, with his ample imagination, familiarity with classic models, facile devices of lewdness, grossness of detail, excessive ornamentation, extravagant metaphors; remains a curious document of the degree of aberration into which a civilized society can fall at some turning point in its evolution, when the intellectual lights of the past have grown dim and the beacon fires of the new age are not yet perceived. *Toute société a la poésie qu'elle mérite*, and Marini's 'Adone' was as low as the society for which it was written. Even the pulpit caught the infection and the cheap rhetorical *falbalas* of Padre Segneri were greatly admired. At least these writers and orators gave to their most meaningless sentences the charm of melody, they possessed the gift of style.

Alessandro Tassoni was a man discontented with his own lot and who perceived the emptiness of the world about him. Witty, pungent, impudent; his invectives, libels and satires struck everything he disliked, especially the Spanish oppressors of Italy and the sometimes subservient Savoian Princes. His 'La Secchia Rapita' was the sort of ridicule which could prove effective, but his critical essays 'Pensieri' have slight literary value.

Francesco Bracciolini's 'Scherno degli Dei' is a parody of mythological legends, and Lorenzo Lippi's 'Malmantile' is still a mine for students of old Tuscan customs, proverbs, traditions and popular sayings. In Florence, Francesco Redi (1626-1698) unearthed the antique dithyramb. His 'Bacco in Toscana' is still quoted. If Vincenzo da Filicaia's 'Canzoni' are forgotten, his sonnet 'Italia Italia o tu cui fea la sorte' is remembered for its genuine patriotism.

On 5 Oct. 1690, in San Pietro a Montorio was held the first meeting of the *Academia della Arcadia*. The patron saints were Theocritus, Virgil, and Sannazzaro, the protecting deity *Gesu Bambino* (the Child Jesus) as a symbol of purity; the emblems were a rustic *zampogna* wreathed with laurel, the constitution a mixture of archaism and affectation, the aim a return to Arcadian simplicity, the means an artificial refinement of both manners and language. 'Arcadia' has had many literary sins laid to its charge, and justly; nothing could be worse than its axiom that nobility of literary composition was to be obtained through imitation; but the follies, puerilities, affectations and dilettantism of Arcadia was a symptom rather than the cause of the current literary corruption. Giambattista, Zappi, Eustachio Manfredi, and Paolo Rolli are among the less forgotten poets of 'Arcadia' and Carlo Innoceuzo Frugoni (1692-1768) the last and most extravagant.

Scicento produced no Italian tragedy worthy of consideration, though the attempts were numberless; usually imitations from the Spanish drama, or founded on some episode of the *Gerusalemme* or the *Orlando*. Giambattista Andreini's 'Adamo' provided some scenes for Milton's 'Paradise Lost.' So, too, the literary comedy chiefly consisted of imitation or translation of Plautus and Terence. Popular comedy (the *Commedia dell' Arte*) extended its success even to the Court of France, though of the *Arlecchino, Truffaldino, Brighella* and the extravagant enthusiasm for the charming *Isabella* and *Columbina*, there has nothing come down to us but *scenario,* the plot; stripped of the witty impromptu and brilliant dialogue. Initiated by Poliziano's 'Orfeo' Italian opera was gradually taking form. In 1600 Rinuccini's 'Euridice' set to the music of Peri was received with favor, and was succeeded by Chiabrera's 'Rapimento de Cefalo' with Monteverdi's music.

Justice to this much despised 17th century demands that credit be given to the vigorous writing of the martyr philosopher, Giordano Bruno. A spirit preoccupied by such lofty thoughts could only be eloquent and forceful. The candle he lighted at the stake has continued through the centuries to illumine the lamps of the heirs to his ideals. Tommaso Campanella, another victim of religious obscurantism, paid with twenty-six years of prison and seven applications of torture, for his faith in man's perfectibility through science and the help of wise government, as set forth in his Utopian dream, 'La Città del Sole': Galileo Galilei (1564-1642), whose wonderful discoveries and miserable fate are familiar, in his famous 'Dialogues' is a master of prose composition. Fra Paolo Sarpi (1552-1623), the champion of Venice and antagonist of Papal supremacy, in his 'History of the Council of Trent' presents a remarkable example of well-balanced historical information in pure and noble language.

IL SETTENCENTO—XVIII CENTURY.
ARCADIA—RINNOVAMENTO.

Mannerism, affectation, and pretension characterized seventeenth century Italian literature; the emptiness of the early years of the following century was not less depressing. The Academy of Arcadia loudly proclaimed a return to pastoral simplicity, a reform of manners and literary taste, and a refinement of language. *Jesu Bambino* was the patron, and the Pandean pipe the emblem of the puerile association. Among the few silly sheep who have escaped oblivion are Vincenzo Gravina, Paolo Rolli, and Carlo Frugoni. There were, however, a few prose writers worthy to be precursors of the *Rinnovamento.* Ludovico Muratori (1672-1750), in 'Annali d' Italia,' recalls his degenerate countrymen to patriotic ideals, Girolamo Tiraboschi wrote the first complete manual of Italian literature, and the philosopher Giambattista Vico (1668-1744), seems to have had prescience of much that has lately been proved by experimental science.

After the Peace of Aix-la-Chapelle (1748), and the return of the Italian Princes to their thrones, ensued an era of social reform and intellectual activity. The influence of French philosophers, especially the scepticism and humanitarianism of the *Enciclopédie* spread rapidly; in Milan, in the hospitable *Casa Verri,* a group of young and eager intellectuals inaugurated *Il Caffè,* a periodical which from 1764-1766 exercised real literary influence, and Cesare Beccaria wrote his great treatise on 'Crime and Punishment,'—*Dei Delitti e delle Pene.* Galiani, Algarotti, Baretti, and Gozzi were worthy critics; on the subject of «purism» literary controversy was vehement. The conservative *Accademia della Crusca* opposed the admission of neologisms and foreign words to the language, and proscribed popular phrases; while the revolutionary *Caffè* insisted upon enriching the classical idiom by free foreign borrowings. Melchiorre Cesarotti (1730-1808), in his 'Saggio sulla Filosofia delle Lingue' dictated the theory of this rebellion against linguistic tradition.

Metastasio, Goldoni, Parini, Alfieri, are the great writers of the Italian *settecento.* Pietro

Trapassi, known under the hellenized name of Metastasio (1698-1782), was a facile versifier, and understood the human heart. His tragedies are still admired, and his mannerisms and stage arrangements so universally copied, that with slight alteration of names and appearances, his heroes and heroines still strut the stages of Europe. Carlo Goldoni (1707-1795), in his 250 plays accomplished for Comedy what Metastasio did for Melodrama. His faithful presentations of life are seasoned with smiling humor and indulgence, and make no attempt at philosophic generalization, pathos, or passion, while he represents his corrupt age with a delicacy that is not hypocrisy. He preserves the familiar figures of *Arlecchino, Brighella, Colombina* and the other *maschere,* but gives them new characteristics, and observing the classic unities his plays move rapidly, with few episodes or secondary characters. *Bottega del Caffè Rusteghi. Pantalon de Bisognosi* and *Tita Nane* treat every rank of life with equal indulgence, and their serenity, gaiety and winged epigrams still amuse Italian audiences. In the second half of the 18th century the poet Giuseppe Parini (1729-1799), preached the new gospel of humanity. In Parini's chief poem, 'Il Giorno,' he satirizes the empty life of a fashionable dandy, whose morning occupation is the toilet; the second part, including the *Giovin Signore's* attendance on his fashionable mistress «*La pudica d' altrui sposa a te cara,*» enlarges the scene.

Alfieri (1749-1803) and the Tragedy.—When Alfieri read 'Plutarch's Lives,' and contrasted that early heroism with the pusillanimity of his own Italy, he shed bitter tears; and resolved to rouse his countrymen to a love of liberty and hatred of tyrants. He chose the theatre platform in order to reach the largest audience. Discarding all secondary personages, all episodical ornament, he surpasses his model, Corneille, in the simplicity of his composition; the dialogue is abrupt, long speeches being reserved for declamation against tyrants and grandiloquent expressions of patriotism. Alfieri's tragedies all consist of contrasts between heroes and tyrants, as Don Carlos against Philip, David against Saul. This eloquent appeal came at the crucial moment, the closing years of the 18th century; it sounded as a resurrection trumpet to the Italian Nation, and the dead became alive. Alfieri's writings possess literary qualities, but they are chiefly important for their patriotic purpose and political effect.

OTTOCENTO—XIX CENTURY.

CLASSIC,—ROMANTIC,—MODERN.

The revival of Italian letters was closely associated with those political events of the 19th century which changed a mere *expression géographic* into a great and independent Nation. Never in the world's history has the reciprocal influence of literature and political events been greater than during the Italian *Rissorgimento.* This literature was both child and parent of the Italian cry for freedom, both product and inspiration of the national revolt; the three periods of national evolution correspond with three phases of literary development. A first period of «classicism» answered to the Napoleonic shadows of glory and dreams of universal Empire (1800-1820); following close on the disappointment of the Congress of Vienna and the restoration of the Austrian Princes to their Italian thrones, the aroused spirit of rebellion assumed the literary form of «romanticism» (1820-1859). When the union of Italy was accomplished and reality failed to fulfill the promises of phantasy, came a third period, one of disillusion and depression, of which the literary expression was «realism;» followed finally by the *Terza Italia* in which republicans and neoguelphs became reconciled to the monarchy, and literature found its present natural and national channel. Classic with Carducci, æsthetic with D'Annunzio, religiously mystic with Fogazzaro; with as many divergent tendencies as there are masterful writers to indicate new ideals, Italian literature has become an Art; worthy of the present, promising for the future.

Vincenzo Monti (1754-1828)—represents the conflicting tendencies of the first period. 'La Bassvilliana,' written in 1793, echoes the general reprobation of republican violence; 'Ritorno d' Astrea' welcomes even an inglorious peace after the horror of war. Monti gathered honey and perfume from every flower; Shakespeare, Alfieri, and the Greeks, suggest the heroic note in his tragedies 'Aristodemo' and 'Caio Gracco;' his 'Bardo della Selva Nera' is imitated from Gray's 'Bard' and Klopstock's 'Messiad' furnished material for 'Bassvilliana.' But Monti's assimilation and sensibility save his imitations from servility.

Foscolo, Niccolini, Manzoni sang the name of Italy. Their alarum rang out in the silence of a Nation's night, they appealed to abstract ideals and aroused some emotion, but Ugo Foscolo's novel 'Ultime Lettere di Jacopo Ortis,' awakened the Nation. Foscolo's nature was of pure Greek classicism, yet when in this novel he attempted to imitate Goethe's 'Werther,' his production thrills with a romantic passion for liberty. Though classic eloquence inspires the speeches of Jacopo Ortis, the approaching wave of «romanticism» is felt in the sentimental story of the lovers. It was the beginning of the duel between «classicism» and «romanticism,» which was continued at Milan between the reviews *La Biblioteca Italiana* and *Il Conciliatore;* the former being paid and controlled by the Austrians to reconcile Italians to their bondage, pretended to defend classicism and the purity of the Italian language; while in the opposing review *Il Conciliatore,* Pellico, Gioia, Romagnosi, Melchiorre and other liberal writers strove to rouse their countrymen to a knowledge of foreign thought and literature. Their battlecry was «romanticism», because romanticism meant rebellion against every literary, religious, or political yoke; and opposition to classicism, and everything else favored by the Austrian oppressor.

In the midst of this turmoil loomed Giacomo Leopardi (1798-1837). With craving for beauty, love and glory, with seething mentality, soaring imagination; this solitary soul, without faith or the consolations of religion, beats and breaks his wings on the iron bars of his spiritual prisonhouse. One by one all ideals, all aspirations drop from him; virtue, love, patriotism, crumble; a poet's heart is desolate, empty, despairing;

each new pang, each bitter disillusion evokes a poem. 'Le Ricordanze' is the mournful story of love unattainable, 'Consalvo' and 'L'Ultimo Canto di Saffo' voice the deepest agony; welcome death is the only refuge from the torments of cruel love. Leopardi does not reproach God, he ignores Him. Brute Nature, *Il brutto Poter che a commun danno impera,* is the enemy. In 'La Ginestra' nature is a perverse will planning the misery of men; 'Canto del Pastore Errante' reveals a darker despair, a deeper penetration of the mystery than does even De Vigny's 'Maison du Berger.' Leopardi's suffering differs from the sentimental romanticism of Manfred, Werther, or René; he is essentially classical, his vision of beauty has the simple outline, the grace, of Greek statues. What antique elegance and serenity are in 'La Quiete dopo la tempesto,' 'Il Sabato nel Villaggio.' Because of this truly Italian classicism and introspection Leopardi's fame survives as the founder of the school made illustrious by Carducci.

Alessandro Manzoni (1785-1873) wrote two tragedies, 'Carmagnola' and 'Adelchi,' admired for their resounding verse; and his 'Inni Sacri' are true hymns of Christian faith; but Manzoni's fame is founded on his novel 'I Promessi Sposi' ('The Betrothed'), which is the only great novel of the Italian romantic school. 'I Promessi Sposi' is a faithful mirror of the moment, though modern Italians dislike to admit that the passive endurance of oppression there described truly represents the national spirit of that period. It is a simple story of love, with homely figures and characteristic types, round which is constructed a large and life-like historic picture. Once every novelist was a Manzonian. Grossi accepted the master's guidance, D'Azeglio his advice. Romagnôsi, the deepest sociologist of his time, and Rosmini the opponent of Jesuitism, and many poets, novelists, and philosophers formed the Milanese literary group of which Manzosi was the centre.

Manzoni and Ippolito Nievo will always be contrasted, as will 'I Promessi Sposi,' and 'Le Canfessioni d'un Ottuagenario' ('The Memoirs of a Man of Eighty'). These novels are the beginning and end of the romantic period. Manzoni lived to see his romance an abounding success, Nievo died before his was published. The very name Ippolito Nievo is an evocation of the romantic, rebellious, heroic Italy of which he writes. Like a hero of some legend, Nievo uttered a cry, wielded a sword, loved and was loved, and then in words vibrating with passion, pathos and sincerity, he created a marvelous picture of his period, a wonderful presentation of the double evolution of himself and of his Italy. Nievo's life, his novel, his country, each explains the other.

The romantic tragedy was attempted by Giovan Battista Niccolini. His 'Arnaldo da Brescia' is an epic of symbols ringing with war trumpets, rather than a play. Italy is here represented by Arnaldo, the Papal power by Pope Adrian, and Imperial tyranny by Federigo III. Patriotism also inspires the poetry of Berchet, Giusti, Carlo Porta and Poerio. Gioacchino Belli (1791-1863) is a master of humorous and patriotic poetry; his sonnets sound the inextinguishable laughter of the Roman people; the tavern and street corner, the priest and Pope, the mendicant and parasite all pass by, as he unrolls his panorama; it is Life,—Roman life. The poetry of Giovanni Prati and Aleardo Aleardi fanned a flickering flame into the dying embers of romanticism, Giacomo Zanella was applauded for his short poem 'Sopra una conchiglia fossile;' but soon these pale stars were extinguished by the rising sun of Carducci's classic splendor; and romanticism fled from Italian literature when Nationalism, the patriotic purpose which inspired it, was attained. Though true as representing a psychic moment, «romanticism» was false as a representation of Italian temperament.

Third Period.—After the occupation of Rome as the capital of Italy (1870)—fulfillment of hope long deferred,—Italians faced many discouraging political, social, and financial problems incident to the amalgamation of many petty states unto one united kingdom. Literature reflected this moment of peculiar perplexity. In Giosuè Carducci *Terza Italia* found its voice; his soul was the soul of the people, his genius the genius of his race; the classicism, earnestness, patriotism of his poetry, are those of the complete and complex *Italiano;* 'Juvenilia' is purely classic, 'Levia Grava' is not free from foreign reminiscence, in 'Decennalia' and 'Giambi ed Epodi' are the impulses of Juvenal, the grandiloquence of Hugo; 'Rime Nuove' is the greatest poetry of modern Italy, and is composed in every variety of metre; 'Odi Barbare,' so-called because they lack the *arsi e tesi* of the Latin, are classic reconstructions; 'Ça ira' is an approach to a modern epic. Always Carducci adores Italy; his landscape, his characters, are purely Italian. What beauty in *Maria Bionda* whose smile is like the sunbeam of *April novo* on fields pied with flowers! How far from «Arcadian» mannerism and frisky lambs, is the life of the Maremma (*Idilio Maremmano*) plentiful in primeval plowing, with young men lustful and brave, vaulting on wild horses!

While poetry flamed prose literature plodded. Paolo Ferrari and Achille Torelli wrote popular plays and Giuseppe Giacosa held the boards for 30 years. His plays 'La Partita a scacchi' and 'Il Conte Rosso' pleased Italian audiences and 'Come le foglie' and 'Il Piu Forte' display feeling, and perception of the Italian problem of a sceptic Nation with an ancient civilization and an outworn faith, facing modern civilization. Pasquale Villari's authoritative histories, 'La Storia di Girolamo Savonarola e dei suoi tempi,' 'Niccolò Michiavelle,' and 'I primi due secoli della Storia di Firenze,' are not less known through English translation than in Italian; they are a part of the best Italian literature of the century.

The Novel.—The last Manzonians and some pedestrian imitators of the French were issuing a few scarcely read novels when the dispute about 'realism' aroused attention and stimulated writers. Zola's claim of having lighted a new lamp was not questioned; yet Italian literature in every age has shown a direct observation of life. What more realistic than some passages in Dante, Boccaccio and Ariosto? Except for the first few imitations from the French, Italian realism,—or «naturalism,» as they call it, developed in a purely Italian manner. Individualism is the keynote of the Italian character, and is reflected in that mirror of society, fiction. Love, to the Italian, is the effect of physical sensation, though this often afterwards develops into a sentiment. In Rovetta's novel ‘Mater Dolorosa,’ Lalla loves her husband yet accepts a lover; Serao's *Ballerina* is the slave of desire for a man who has never mentioned love to her; Neera's maidens are all swayed by physical sensation; Fogazzaro's ‘Daniele Cortis’ is almost the only successful Italian novel in which love is conquered by duty.

Giovanni Verga and Luigi Capuana were the first champions of the realistic Italian novel. Verga's representations of simple semi-civilized Sicily are truly Italian. De Roberto, a follower of Verga, has traced an historic picture of Sicilian life. Matilde Serao, after attempting the sentimental novel and the Zolian methods of observation, has successfully blended these two fictional elements in ‘Suor Giovanna della Croce.’ Enrico Butti has given remarkable studies of the modern conscience. Antonio Fogazzaro's novels are an honor to Italy, they unite realistic observation and spiritual insight. Gerolamo Rovetta faithfully represents a society lacking in noble ideals; his characters are as often sordid as wicked. Salvatore Farina is optimistic, Grazia Deledda feelingly describes her own Sardinia, and De Amicis presents familiar scenes of soldier life and street car episodes.

In the beginning of the 20th century Gabriele D'Aunnuzio occupies the first position among Italian writers. He is the most widely read and the most imitated, and he has made incursions into almost every form of literary composition. In his lyric poetry bright images and harmonious rhythm partly conceal the coldness; adopting Greek elements in his tragedies, a vague theory of heredity replaces classic fatality, and the undaunted will is substituted for heroic virtue. But D'Aunnuzio the complex, refined, egoist and sceptic, cannot grasp the grandiose simplicity of antiquity, — the transcendental self-abnegation which is the finality of tragic art. The pathos of *Mila di Codrio,* the sentiment of *Francesca,* even the devotion of *Maria Vesta* are tainted with artificiality.

The immorality and cruel individualism of D'Aunnuzio are less repugnant when read in his novels than when spoken in his plays. ‘Piacere’ is a prose poem to the goddess Aphrodite. ‘Il Trionfo della Mortè’ is D'Aunnuzio's greatest novel. What reintegration of life in symbols, what evocations of beauty! Yet what emptiness! What half-truths. Half-truths presented with beauty, harmony and *volupté* in gorgeous golden pictures. ‘Le Vergini delle Rocce’ is dream-stuff, impersonations of virtues; the castle, the landscape, the glory of spring-blossoming, the symphony of water, the grandeur of majestic hills, the splendor of sunsets! It is a new species of literary composition. ‘Fuoco’ is also a dream of beauty. Venice, has never been sung with more complete comprehension of her seduction. D'Aunnuzio is the apostle of the pagan interpretation of life and beauty. He satisfies the Italian craving for elegance of style and purity of language. But he gives a false impression of life; he generalizes from accidentals; though he is keenly alive to the lesser sensations he is ignorant of the majesty of the human soul, and his glittering phrases contain no solution of life's great problems.

Satisfactory criticism by the Anglo-Saxon of Italian literature is difficult, the view-points, both moral and æsthetic, are so different. In the Italian psychology there is much latent paganism, this is evidenced in the persistence of classicism in literature; it accounts for the popularity of D'Aunnuzio. In Italy it is often asserted that the national literary development tends towards a return to *Cinquecento* ideals, the ideal of the artist careful only for the precepts of his own art. But since no nation does ever return to a previous state, and since those predominant factors of modern literature, the novel and the drama, must inevitably reflect the nation's life and be occupied with the themes which appeal to the national conscience, Italian literature will doubtless give increasing attention to social and economic conditions and the relations of the individual to society. Writers on these subjects will seek for a philosophy of life and emphasize rather the emotion of ideas than the emotion of sentiment. For others, like Fogazzaro, the soul of man will be the arena of supreme strife, and the law of the soul, the relentless despotism of conscience, the subject of supreme interest; while still others, of D'Aunnuzio's school, will insist on the «humanist» ideal of «Art for Art's sake,» and find in Joy, Art and Beauty, the «fullness of life,» and the subjects for literature.

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22. Italy—Art in Ancient Italy. Italy's geographical situation, extending from north to south and reaching far into the Mediterranean Sea, nearly midway between its eastern and western extremities; open on all sides to the migrations of peoples and the activities of commerce, has from the earliest times been influenced by the civilizations of the various nations, «The Peoples of the Sea,» Phœnicians, Egyptians, Etruscans, Greeks, the inhabitants of the Balkan Peninsula, and all dwellers on the shores of that great inland sea, and even the teeming life of the Orient. Indeed it was the movement of this Oriental civilization westward which retarded the progress of Italy in Art as compared with Greece. Nevertheless some of the primitive Italian peoples developed peculiar artistic manifestations worthy of consideration.

There was no true art in the paleolithic age, although some primitive Italian manufactures reveal a certain æsthetic sentiment for form and considerable skill in the making. Liguria, the Valley of the Vibrata and the Island of Capri, are the chief Italian districts where are found relics of human industry of the paleolithic age, but these scanty remains do not permit of the minute classification which is possible for the same periods in France.

The neolithic period was more productive. Its remains are similar almost everywhere in Italy and in its objective manifestations it does not differ from the *facies* which this period of civilization presents in the rest of Europe. In architecture we have not immense megalithic constructions as in England and France; perhaps because the civilization of the neolithic age was not prevalent in Italy at the time in which these megalithic constructions were in vogue. Notwithstanding this, there are Dolmens in the province of Otranto; the caves of Liguria are full of neolithic remains and the islands preserved for a long period the remains of the population and of the civilization of the neolithic period, and especially of the latter phases of that civilization what is called cupro- or æneolithic.

Throughout Italy may be found weapons of elegant form, both in stone and in copper. Ceramics attained to artistic forms more than any other manufacture, as in the bell-shaped cups and bowls decorated with ornaments crudely cut with a knife, or stamped with wormlike designs, and then filled with a coloring matter; the decorative element is always geometrical. The most beautiful works in neolithic ceramics are found among the insular populations, the Sicilians and the Sardinians, who had for a longer time tried to develop their civilization. And, thus, even architecture made noteworthy advances in this period, perhaps through the influence of the Orient. We do not know if the dwellings of the living had already assumed artistic forms; although the ceilings of the dwellings in the neolithic and æneolithic ages indicate great progress in roof construction; they were circular or oval and partly sunk and covered with a kind of cupola. The artificial crematory vaults of Sicily are complicated systems of tombs, which may be compared with the oriental tholoi; the nuraghi, the domus de gianas, etc., of Sardinia, similar to the megalithic construction of the Balearic Isles, or of Malta, and of Pantelleria, are an ulterior and characteristic development of the monuments of neolithic civilization; there is an oriental suggestion in the cupolas, the rare spiral decorations, and in some exceptional instances of fortified walls, or of encorbellement.

In Sicily (probably owing to Aegeo-oriental influences), the development of a ceramic art is to be noted which in the subsequent period substituted painting in place of incized decoration, with the richness of polychrome ornaments.

In regard to architecture the new people of roving habits, accustomed to living in marshy plains, or on the lakes, brought with them a knowledge of building which was better adapted for buildings of wood than of stone. The palisades and the «terremare» of Lombardy, which are but the continuation of these, are constructed on strict principles of exactitude, defence and permanence, which we find later in the Etruscan cities (for instance Marzabotto); or in the intrenched Roman camps. Indeed, it is even a matter of doubt with some whether the architectural portions of the *terremare* should be attributed to these primitive people at all, and not rather to the subsequent Roman buildings. The fact is that the rude manner of life and the low development of the arts, do not well accord with such a perfect system of land surveying. The ceramics of these people are of coarse and imperfect paste, of a dark color, for the most part not well moulded, scantily decorated, generally with protuberances or applied ornaments, more rarely with engraven or stamped designs.

The bronzes, on the other hand, show more advanced artistic forms; daggers, lances, arrows, and personal ornaments in molten bronze, among which at length appears the fibula, while there may still be found ornaments of bone, ivory, amber, and other natural substances (shells, teeth), or artificial substances, imported glass compositions, etc.

Whilst in the Aegean archipelago and in Greece the civilization called Mycenean flourished, in the third and second thousand years before Christ, there was in the Mediterranean basin a continual coming and going and mingling of people, in active commerce. During this period must have been formed the principal nuclei of Italian populations that figured in the dawn of history. A great part of Northern and Central Italy was occupied by the Umbri: the East centre and the South by Osco-Sabine populations; in Liguria, in the islands and the extreme Southern portion there survived primitive stocks such as the Liguri, the Siculi, early Sicilians, and the Sardinian and the Messapii. In the upper eastern corner the Illyrian migrations continued which gave rise to the civilization of the Veneti; then in the central part on the Mediterranean, or Tyrrhenian, there arose the splendid power of the Etruscans; while, later, there descended from the Alps, the Celts and Greek colonies that invaded the South.

Each of these peoples for a time held a certain supremacy over considerable territory and represented a certain phase of Italian art and civilization. The most splendid and most characteristic phase of the iron age in upper Italy is that found in the Felsinean (or Bolognese) territory corresponding to that on the other side of the Alps called *Halstatt* civilization.

The incinerating tombs in the last period are ornamented with *stelai,* or narrow slender slabs of sculptured stone above the surface of the ground. The metallic ornaments and bronze weapons are partly of molten work, some filed, some in relief, and some carved and engraved.

The ornamental designs are evidently inspired by the geometric forms of contemporaneous Hellenic civilization. With the progress of Mycenean decoration we have the gyrate, the wolf's tooth and the double spiral.

The broadsword belts of laminated bronze are beautiful; the swords with hilt in form of antennæ; the poniards, etc.

Almost contemporaneous was the civilization of Venetia. The shapes of the vases are various; their characteristic decorations are first the bright stripes of red and black, then the impressions, then the incrustations of metal bosses. Great is the variety and richness of the pendants, tassels and amulets: sometimes fantastic animals double bodied, in evident geometric style. Later appear the laced garments, and the famous *situlæ,* finely worked in relief in long circles representing living scenes, festivals, hunting parties or simply animals running, as on the Corinthian vases.

In Central and Southern Italy, «Umbria», the people who dwelt there in the first iron age were represented in the industrial age by similar forms, which had no time to develop as did those of Bologna, because of the super-imposed Etruscan work. In the Adriatic watershed, the more ancient ethnical foundation prevailed, and the Illyrian influence made itself felt; in the Mediterranean watershed, before the Etruscan invasion, the civilization of the Oscoli, the Sabini, the Falisci, and the Latini was more simple. Thus are manifested the remains of the Albanian necropolis, of Campania and Tuscany, before the appearance of the Etruscans.

In the South of Italy, before the Greek colonizations, there was an extended Italian civilization; but it fused with Sicilian elements which always predominate. In the extreme Eastern limb, the Sallentine peninsula, we find among the Messapii survivals of a local civilization which developed under the Mycenean influence. Characteristic, for instance, is the ceramic art which lasted until a late epoch with forms of a *conca,* or water vessel, of *trozzelle* and with vivacious bright-colored painting, consisting of elements, in part geometric, in part flowers, and a phenomenon which goes *pari passu* with the advance in Sicilian ceramics in which exactly at this period polychrome art found its widest and most varied application.

Another element of Italian art which started in the South and extended to Central Italy is the civil and military architecture. In Lucania we find more rustic, and perhaps more ancient, instances of these constructions, called Cyclopean or Pelasgic, which are found in a more perfect, or earlier phase in Central Italy. Here are also found walls of support for terraces, such as the Cretan, streets sustained on sloping sides, bridges, *hierons,* altars, or central temples, etc.

Exhaustive researches are still necessary to finally settle the disputes as to the antiquity and origins of these constructions. There are three hypotheses: either they derive their origin from the megalithic constructions of the neolithic age, or are an importation of the Aegæo-Mycenean architecture; or are an imitation of the Hellenic fortifications of later times.

Central Italy was soon made to feel the influence of a people who, more than any others, inhabiting a beautiful country, were endowed with a love of life and the artistic spirit.

The Etruscans represent a problem in the history of ancient Italy, which the unwearying efforts of learned men of two centuries, and vast and profound excavations, have not yet been able to solve. It seems, however, as though the better theory considers the Etruscans a people differing from the other Italian races, as immigrants perhaps from Asia Minor. All students agree that the ancient inhabitants of Tuscany developed on Italian soil a peculiar form of civilization in which art had a great field of expansion and which exercised a powerful influence on the neighboring or subject peoples.

At the end of the 10th century B.C., or before that, we find in Etruria new forms in architecture; and in the industries, which are the most ancient arts.

Civil and military architecture in Etruria was displayed in the fortified cities, where they had not the structure and the archaic forms of the so-called Pelasgic cities, although the same roof construction prevailed. The most ancient instances are those of Rusellæ, Cosa and Fiesole; at Populonia we find the intermediate phase, and at Volterra and Cortona the more progressive form.

In architecture, and especially in sepulchral architecture, there are remarkable survivals of Mycenean architecture. The decorations of the gate of Felsina with two heraldic animals facing each other has a parallel in the Gate of Lions at Mycene, and true and regular *tholoi,* or circular buildings such as the sepulchral chambers of the Tumulus of Petriera near Vetulonia and the tomb of Cuma, recall as do none others the barbican vaults in the celebrated treasuries of Mycene. Still more characteristic bee-hive forms are seen from the ancient Tullianum in Rome, and ogival sections of the fountain at Tusculum are direct and indirect remembrances of the Mycenean roof structure. Later on, as in Greece, the sepulchral vault was more commonly in rectangular form with sloping roofs, copied from the houses, of which we have effigies on several urns and sarcophagi.

One of the merits of Etruscan architecture is, that it developed curved lines in roofs, following a principle of oriental architecture, that is to say, the invention of the arch and the dome formed by wedge-shaped pieces of the building material converging toward a common centre.

The most ancient examples, however, do not appear to go farther back than the 7th to the 6th century B.C., as for instance the so-called Tomb of Pythagoras near Cortona.

On these principles the Etruscans were able to build roads, bridges, subterranean tunnels for drainage or aqueducts, to build gates in their cities of enormous size, as, for instance, that of Volterra, or the later one of Perugia.

As regards the edifices we must suppose that the early wooden structures continued until considerably later times and we see imitations of them also in stone, as in the section of a tomb of Carveto. Through their maritime commerce with the Orient and Greece the Etruscan architecture developed on Greco-Ionic models, of which the Tuscan style affords an example.

Recent discoveries prove that even in more modern buildings the foundations were constructed after the Mycenean pattern. The excavations at Marzabotto show the plan of the Etruscan cities. The city faces east and west, its two principal streets, the *Kardo* and *Decumanus,* dividing it into a cross; in the centre of the cross is the *Templum,* and the four principal gates are at the extremities of these two cross streets. The Etruscan temple was rectangular upon a high base, sometimes a simple cell with *pronaos* or portico in front of the cella, but more often with three alcoves for the three idols, Jove, Juno and Minerva.

The form of the Italic and Etruscan dwelling differs from the Greek dwelling, is oriental in its origin and was brought into Italy by the Etruscans. This is the origin of the Roman *domus,* though so modified that the primitive form is almost unrecognizable.

In Etruria, plaster was used chiefly for the ornamentation of edifices, especially of temples, in which terra-cotta ornamental designs in different colors were applied. But whether owing to the lack of a material suitable for sculpture, such as marble, whether through the practice gained in this decorative sculpture, coroplastic made great progress in Italy, as we see in the written traditions which celebrate, for instance, Damophilos and Gorgasos, the decorators of the temple of Ceres, and in the museums where it figures as the principal art of the Etruscans. Remarkable examples of the archaic period are the sarcophagi in the Louvre, the British Museum, and the Museum of the Villa Giulia in Rome, and the Ionic decoration discovered in recent times on the face of the temples of Luni, of Falerii, and of Arcevia.

Modelling gave the Etruscans special opportunity to practice the art of portraiture. Naturalism, sometimes carried to caricature, may be seen on some of the most ancient *busti,* on the cinerariums, called «Canopi,» as those of Chiusi. The Tyrrhenian sculptors knew how to accurately trace physiognomical traits; they were the true creators of the art of drawing from nature, which we find later in Roman art, and renewed again in the *Renaissance* in the works of Donatello, on Etruscan ground. The *Ius imaginum* in the noble families encouraged this characteristic side of Italian art, but the true incentive was in the peculiar disposition of the Etruscan stock.

Next to coroplastic, but more rare, is the sculpture in soft stone, clay, rotten stone, *nenfro,* and *peperino;* which acquired a more dignified aspect by means of plaster and colors. In time these materials were also substituted for wood in the construction of more important buildings.

Painting was also extensively used by the Etruscans. The immoderate luxury of their life and the special care devoted to the dwellings of the dead, caused them to place their tablets inside the tombs, concealed from public sight. From this it is argued that painting was also frequently used to decorate public and private buildings, of which no remains have been preserved.

The most ancient examples of mural painting are found in the tombs of Veii, depicting animals of oriental form, and in the slabs of Cære in the Louvre, with scenes relating to the religious ceremonials of the dead.

The richest and most varied sepulchral paintings of the beginning of the 6th century are found to-day in the necropolis of Corneto (Tarquinia), Orvieto (Volsinii), and Cervetri (Cære). The favorite subjects are those which, while representing material joys of life, as well as the basest and most cruel, seek to enliven the Elysium of the dead, perhaps with scenes of funeral ceremonials or historical events or the terrible scenes of Inferno, peopled with demons, evident prototypes of the Tuscan religious paintings of the Middle Ages. These paintings reveal the influence of Greek art, especially of Ionic art; the imported vessels (cups, bowls, etc.) served as an inspiration to the local artists, but the sentiment expressed in the subjects, full of mystery and ferocity, and the heavy and vulgar style of the faces are sufficient to reveal the different character of the Etruscans.

The Etrusci tried also to imitate the beautiful ceramics which were brought from the best Greek manufactories; but it is hard to say how far they succeeded. They rather became specialists in the manufacture of the *bucchero,* a dark pottery for funeral uses. Certain copies of metal house utensils derived from the Italic clay paste, but perfected on Græco-oriental models, soon became an Etruscan specialty, and in later times acquired the delicacy and lightness which is lacking in the more ancient type.

They were recognized as masters in the fusion of metal, even by the ancient Greeks. They executed a great number of works of industrial art, rising even to great sculptures, as in the Capitoline Wolf at Rome, the *Arringatore* of Florence, and other statues and statuettes scattered about in the different museums.

They were unsurpassed artists in the working of gold. It seems as though they had inherited from all the ancient people their special arts; from the Aegæans, filigree work and granulated work and glyptics; from the Egyptians and the Phœnicians, enamelling and glass compositions (pastes); from the Syrians and other Asiatics, moulding and carving; from the Ionians, the ornamental designing of fantastic flora and fauna, already reduced to decorative use; from the celebrated arts, the art of blending different woods, of soldering metals, of wood carving, and *ageminatura.*

From the most remote times we find in the Etruscan tombs ornaments of oriental character, finely worked in gold, electron, silver, etc., mostly fibulas, belt clasps, necklaces, etc., as at Vetulonia, Cære, Præneste, Cuma, about which there has been much discussion; some archæologists maintaining that they are of Græco-Ionian, or Phœnician manufacture; others, that they are of local art. This last opinion seems now to be the most trustworthy. Later we find, especially in Southern

Etruria, chests decorated with the finest engraving, an art which became localized through the Latini of Præneste, a technical art which was greatly employed in the manufacture of mirrors, and succeeded in imitating the celebrated Phœnician drinking cups.

In all the industrial arts the Etruscans excelled. The few remains we have of carved ivory show a perfect knowledge of intaglio. They were less happy in the manufacture of money, which they learned probably from the Greek colonies of Southern Italy.

Altogether, the Etruscans were a people eminently gifted with the artistic sense; they had the merit, through their conquests, by which they dominated a great part of Italy, or through their commerce, of diffusing also this branch of their civilization, the first true historical civilization of Italy, upon which was laid the foundation of that Roman power that conquered the world.

The Etruscans had as competitors for the domination of Southern Italy the Greeks, and as rivals in commerce the Phœnicians, especially those of Carthage. But these had no standing in other countries but a commercial one; their influence was not that of colonizers and a people that is essentially practical, and with precise ideals, can never have a true and individual art of its own. Hence the Phœnician influence in art in Italy is quite inconsiderable, if we take some of its special manifestations in the colonies of Sardinia (as in Nora), and of Sicily (for instance, Eryx, with its walls). Besides this, the Italians and the Etruscan spirit were profoundly diverse, and agree only in anti-semitism.

The Greeks, on the other hand, who colonized Sicily and the extreme lower part of Italy in the 8th century, and who also had perhaps a commercial influence, if they were not true colonists in the earlier times, entered as the principal factors into the classical civilization of Italy, investing the Etrusco-Italian civilization with elegance and refinement of form, without changing the substance.

We must remember that in one period of Greek history, *Magna Grecia* found itself in a more flourishing condition than Continental Greece, and that artists found in the West a better field for the exercise of their art than in their own country. The principal Greek colonies in Italy were of Doric or partly Doric origin; hence Peloponnesian art was readily diffused in Italy. The Doric temples of Segeste, of Selinunte and of Posidonia of the 6th century recall those of Olympia and Egina.

Sicilian sculpture is similar to the works of Olympia; is seen also perhaps in the less archaic metopes of Selinunte, resembling the works of Kritios, and the acroterii (Ionian) of Locri.

The numismatic art of the Syracusans was unexcelled, and their coins stamped with the signature of Euainetos are the most beautiful specimens ever executed, even when compared with those made in Greece itself.

Tarentum was not only the commercial but the artistic centre. There are said to have existed manufactories for bronze moulding, for gold work and for ceramics, the products of which are found all over Italy. One of the most singular manifestations of Greek art on Italian soil is ceramics. This western ceramic art differed from that of Greece, as well in a freer, clearer design, as in a greater richness of coloring and greater size, suitable to a barbarous style. The subjects, even the mythological ones, deal chiefly with funeral ceremonies, for which they were exclusively destined.

Meanwhile the power of Rome increased, and its dominion extended, and in it was gradually concentrated all the Italian spirit, laying the foundation of its various elements. Rome, originating in small Italian beginnings, had soon received with Etruscan domination the spark of civilization and prepared itself now to absorb Hellenism. The outcome of this was the classic western civilization, the civilization of Rome.

Early art in Rome was essentially Etruscan. That is shown by historical tradition and by the earliest, most archaic, monuments. Let us take, for instance, the tomb of Romulus in the Roman forum, the temple of Jupiter Capitolinus, etc. The mural paintings of the Exquilinus preserve the Etruscan character, although of more recent date (2d century). They belong to the historical class, and in this class, to be exact, we must place the works recorded by tradition, naming as artists Fabius, the Painter, Pacuvius, M. Plautius, Lycon, etc.

The monuments of the period of the Republic partake of this Etruscan character with the Greek habiliments; such as the constructions in clay, whether they are fortified walls, in isodoma work, where the vertical joints of one course of stone are immediately over the centre of the blocks in the course below, (Rome, Ardea, Tusculum, Satricum, etc.), or whether they are the most archaic temples of peperino ornamented with polychrome stucco work (Temple of Victory on the Palatine Hill). The very city of Pompeii, the best preserved of Latin times, has a foundation of Etruscan characteristics, later hellenized.

In architecture the Romans made great use of curves and of arches, which they learned to construct from the Etruscans, and they employed these forms in the most ingenious ways such as in the long line of aqueducts, the bold bridges, the triumphal arches, the super-imposing of several tiers of arcades, in which people pretend to trace the Hellenic influence, even to the cupolas, among which the vault of the Pantheon, reconstructed by Adrian, is conspicuous for its amplitude and solidity.

Towards the end of the Republic and at the beginning of the Empire, there were introduced into Roman architecture, together with diverse materials, different artistic forms.

Bricks of solid clay, well shaped and of regular form, small dice of tufo, or simple chips and splinters of flint pebbles, were collected into a solid mortar with chalk and *pozzolana* (a ferruginous stone from the volcanoes of Latium or Campania). The solidity of this material allowed of new constructions, especially the crossed arches, the ample arcades. As regards architectural ornamentation, the Romans, besides the Tuscan, and the three Greek styles (with preference for the Corinthian), made use of a new style of architecture, the composite, which was the outcome of the blending of the Ionic with the Corinthian.

In plastic art, the Romans soon became the servants of the Greeks, whose admirable works obscured the rude local sculpture. Only in portraits did the former maintain, until the time of the decadence, the value of nature, whether it be in form or ethical. Sculpture at the time of Augustus tried to imitate the best models of Attic art; the most perfect of the monuments built in the golden age of Rome was the Ara Pacis, the culminating symbol of Roman civilization. And into historical reliefs, inspired it may be, by Hellenic models, they knew how to put fresh life, as is shown in the reliefs on the triumphal arches, of Claudius, Titus, Trajan, and Marcus Aurelius, and in the admirable sculptured recital of the Dacian wars, which surround the column of Trajan like a *scitala,* copied afterwards in the column of Marcus Aurelius. The Roman Consuls, in their war booty, and the pro-consuls and the administrators of the provinces enriched the country with true works of original art, despoiling Greece and the Orient. What they could not steal, was copied and the copies were made with the fidelity of perfected mechanical methods. The passion for collecting art works prevailed among private persons, and Greek artists came to Italy to establish their studios, attracted by this mania of the rich Romans.

The artists of the family of Polykles were called by Metellus; Apollodorus, Apollonius, Glycon, Cleomenes, Antiochus are names of artists that may be read on the famous statues in the Italian museums, such as the Torso of Belvedere, the Venus of Milo, the Farnese Hercules. Avianus Evander was a celebrated sculptor in the service of Antonius, etc.

Pasiteles was the founder of a school which flourished in the latter days of the Roman republic and the first of the empire; a school without originality, and which, following the archaic fashion of the times, copied and adapted earlier models and composed untruthful work. Among the products of this school are the Orestes and Electra of Menelaus, in the Ludovisi gallery and the Orestes and Pylades in the Louvre and the other group at Naples.

Nero, Adrian, Marcus Aurelius, Heliogabalus, Alexander Severus, were true and real artists; Adrian left us a work of architecture, the Temple of Venus in Rome, while the Greek, Apollodorus, architect and sculptor, created the admirable works which commemorate the glories of Trajan.

To the architects and sculptors of imperial Rome, the decoration of the rich tombs, which extended for many miles beyond the gates of the city, was a fruitful field. All the most varied forms of mausoleums found a place there, from the modest sepulchral to the altar-tomb, and from the sarcophagus to the colossal tumulus richly ornamented, as for example the archaic tomb near Albano, still of Etruscan type, and the sepulchre of Cæcilia Metella on the Appian Way, of the latter days of the republic.

The Italian form of the tumulus, erected on a circular base, still prevailed; but the garments were hellenized. The imperial tombs of Augustus and Adrian still preserve that form as a foundation, while in the architectural adornment they are inspired by Hellenic monuments, such as the Mausoleum of Arsinoe in Samothrace. But there are not lacking imported, or purely Hellenic forms; shafts, *ædiculæ,* little temples, or perhaps exotics like the Egyptian pyramid of Caius Cestius, or the turreted tombs with steps, as if several buildings were placed one on the other; as, for instance, that of the Julians at S. Remy and that of the Secundini, at Treviri.

Roman painting of the more prosperous times remains only on mural decorations, and it is easy to form an idea of what the painting of easels was like and in the technical art of encaustic. If one may be permitted to form a conception of the reproductions of paintings large and small in fresco on the walls, of portraits like the mummies of Faijum, and if the «Muse of Cortona» was not an imitation of the Renaissance, it is certain that Roman art was not less advanced than Hellenic art. But it was just this resemblance to Hellenic art which deprived the Roman paintings of originality, unless it be that the samples have been destroyed of a national art, parallel with that of historic sculpture.

Decorative painting may be studied in the few examples that have survived in Rome (the house of Livy, the Farnese Palace, the Auditorium of Mæcenas, the Thermae of Titus), and in the much-visited examples in the houses of Pompeii, but they are provincial art. Similarly with painting, mosaic and stucco decoration developed (as in the so-called Farnesina house, the tombs of the Latin Way, etc.). Besides this, the artists of the Renaissance preserved sketches and designs of mural paintings, since destroyed, and it was from this art that the school of Raphael drew inspiration in its «grottesche.»

It has been possible to reconstruct the historical development of this Roman art. The first period resembled marble designs; the second, of an architectural style with effects of perspective; the third, a richer style with portraits interspersed; the fourth, ornamental and overladen with fantastic architecture, with scenes painted according to nature, alternating with copies of the most celebrated antique painting, sometimes most archaic. The prototypes of this pictorial decoration of the Hellenic epoch exist, or may be sought, in the islands of the Aegean Sea, in Asia Minor, and Alexandria.

Mosaic and the *opus sectile,* or colored marble inlaid work, were also of oriental origin. In the most ancient mosaics with large tiles or stones and few colors, the motives are simple: divided into mythological figures, animals and fishes. Then there were represented, in a greater variety of colors, fishes and other animals, little tables covered with the remains of the meal, until with a more refined technique (*opus vermiculatum*) they made regular and true pictures, hunting scenes, as in the great mosaics of Præneste, and gladiatorial scenes, as in the mosaics of the Thermæ of Caracalla, and contests in the arena, etc., until they succeeded in copying true and real pictures, such as the Battle near the Issus, found in the House of the Satyr (Faun) at Pompeii.

In industrial arts the Romans, especially in the provinces, obtained fresh results. In the history of Italian ceramics, the production of types derived from the Greek ceased with the Calenian manufactories, and in Etruria arose the manufacture of vases and the plastic ornamental work of Orvieto, then the delicate cups of Arretium, made of the finest clay, sometimes silvered and gilt, in the work of the Alexandrian *toreutic.* The names of these manufacturers are known: the celebrated Canuleius, Gabinius and Attilius, and Popilius Attius, and it is supposed that these vessels were not imitated directly from the gold and silver vases, but from cups in relief of Megara. The glass industry, which throve principally in Cisalpine Gaul, blown and colored, or turned on a wheel in the style of glyptics as in the *murrinæ* cups, and the *vasa diatreta,* or even in the style of cameos, little by little supplanted the use of terra-cotta for table purposes, and gave the death knell to the elegant vessels of *figulina* clay. Also the vessels made of precious metal kept alive the traditions of Alexandrian art, and we have an example of it in the rich silver furniture of *Boscoreale.*

In glyptics, the Romans continued the traditions of Greece and especially the Hellenistic traditions in the great historical cameos. In the art of working in gold they remained inferior to the Etruscans, although they surpassed them in artistic models inspired by the Greek models.

What the art of the cabinet maker was able to produce in Roman times is found in the scarce specimens of furniture, inlaid with ebony and ivory, and encrusted with metal and precious stones, engraved, or sometimes in relief, appliques compared with paintings in which objects were represented, made of materials easily destroyed. It is worth while here to recall the beds (in the Palace de Conservatori at Rome, in the Museum at Naples, and in the Kircherian Museum), the litters (in the Palace of the Conservatori), the *tensa Capitolina,* and the ivory beds of Ancona.

The weapons of war also present rich decorations, especially those for parade, the imperial arms (the sword of Tiberius), or the gladiatorial weapons (Naples).

The limits of this article do not permit consideration of the art of caligraphing and miniature, so richly developed in the Middle Ages; as seen in the beautiful codices of Virgil in the Vatican, and of Terence, and the Iliad of Milan; and others which prove that the classic age did not lack the taste for art in books, which is shown in the beautiful shape of their characters, as well as in the scenes which illustrate their books. To the Romans belong above all the classical nations, the merit of giving an artistic shape to the letters of the alphabet.

But the very power of Rome which extended itself over a great portion of the known world was the cause of her decadence. Whilst the new classical civilization diffused itself beneficially in barbarous countries and art in these places assumed a provincial character, Rome absorbed fresh ethnical elements, and with these the germs of artistic decadence.

The mania to obtain grandeur through hugeness, richness through a plethora of ornamentation, was the cause of this decay. The barocco style was the signal of this decline in art.

In the public edifices there was already to be noticed this exaggeration: if, for instance, one stood before the Forum of Cæsar, and the Forum of Augustus which surrounds the beautiful temple of *Mars Ultor,* with *Forum Pacis* and with that called of Nerva, in which is seen the most refined minuteness of ornamentation, proper in the second style of the 1st century, and then the immense Forum of Trajan, an admirable group of edifices, worthy centre of a capital of about a million inhabitants, we may see already in the golden age the tendency to excessive immensity. And it is still more instructive to compare the Thermæ of Agrippa and of Titus, elegant and moderate in size, with the enormous constructions of Caracalla and Diocletian, where the amplitude of the arches becomes gigantic, and the incrustations of colored marble give the whole an oriental polychrome character.

The Orient, that land of the origins of civilization, has disburdened many times on the young West the ardor, the softness, the exuberance of its thousand years of civilization.

At the time of Diocletian and Aurelian, we see the rude constructions of Spalato and Salona, or of Baalbec, in which are found the lines, in which are piled up cornices, the foliage, animated by figures which move in the incaulicoli of the capitals, triumphant on the keystones of the arches, climbing on the bells which seem broken or distorted by a convulsion which agitates all the lines, moves the plants on the façade. And all this requires to be imagined as constructed in marble and metals splendid in coloring, a vision which forecasts the Byzantine churches, six centuries in anticipation.

Plastic decorative art had a similar course. If we compare reliefs on the arches of Titus and Trajan, which with their three arches show an amplification of the pure Roman arch of the golden age, with the superimposing without life of the figures on the arch of Septimius. The monotony of the motives is reflected in the particulars, for instance, the parallelism of the folds. Only in portraits was the characteristic style kept alive.

And when Constantine, improving on the various elements of better times, of Domitian Trajan, etc., gave orders to compose a monument of this order, the few reliefs that were added were, like the ivories of the *Diptycha,* like the Christian sarcophagi, the Omega of classic art and the Alpha of mediæval art in Italy.

There is little to say about the minor arts in Italy in the centuries of decadence. Decorative painting was to a great extent supplanted by mosaic, the *opus sectile,* by tapestry and textiles. Gold work began to take on barbaric forms which came from the peoples of the North; the fibulas with rays are an instance. Glass work, the flourishing art which also came from the barbarians, continued to produce many tinted and artistic vessels, and glassware, incrusted with gold with engraved designs, and the enamel in colors which was introduced into mosaics, became the fashion.

In Roman art during the decadence there were in embryo all the forms of mediæval art, and for a time they were none other than the continuation or the revival of these forms, and the historical and traditional end of the fall of the empire cannot be taken as the period which distinguishes classical from mediæval art. And in treating of this, we must consider the Roman monuments of the 4th century. Whoever, therefore, studies classic art may be said to have exhausted his list in the artistic examples of the 3d century.

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23. Italy—Historical Synopsis of Italian Art. From the time of Constantine to that of Justinian the Latin nations have gathered together the inheritance of preceding ages in order to transmit it to the modern world. Under the stratifications of Hellenic art in Imperial Rome may be found poor, coarse popular forms which, on the decline of the Roman splendor clearly represented the artistic potentiality of the Latin race. By constant moulding and remoulding these became the consecrated forms of Pisano and Giotto; just as, on the decadence of Roman culture, the noble, the dignified words of Cicero and Tacitus were forgotten in the vulgar expressions of a common speech which in the course of slow transformation became the language of Dante. Besides the popular, or rustic forms, not subjected to the laws of classic art, the patrimony of the Roman arts became enriched with all the Greco-Roman forms that had become common, and whose types were found everywhere, in the workshops of the stone cutters at Rome, and in the provinces, even to the southern boundaries of the Roman and Phœnecian colonies of Northern Africa.

The conservative popular spirit of the Middle Ages long preserved this nucleus of form, a precious legacy left by the liberties and the slaves of Rome to the new and almost savage masters of the West. To this may be added those simple and modest forms of Christian art, which had endeavored in the catacombs to give an humble reminiscence of the elegant scenes of the life of the gymnasiums, and a tender form to scenes described in the Holy Book and suggested by Christian imagination. There was an artistic tradition in the representation of biblical themes, common to Occidental and to Oriental Christianity; and not alone were there certain symbolical types, but sometimes also the distribution itself and the lines of composition were preserved, through the Middle Ages. Many artistic forms of this epoch, so poor in imagination, reject the ancient origins, and, in spite of the added incrustations of time, the modifications and the restraints imposed on them, go back to early Christian types.

But there were also some Etruscan forms. As the etymology of the Romance languages shows us a group of words derived from the ancient Italian dialects, so also in the arts we can trace these indigenous forms across the centuries of the Republic, which were not extinguished by contact with a triumphant art, nor conquered by other forms which had migrated from the Occident. Research into the relations of Etruscan art to the Roman arts reveals a series of important facts that, as we trace in them the vestiges of Etruscan civilization, reminds one of the detritus of the mountains which forms the fertile soil of the valley.

From Syria as from Byzantium in contact with the eternal examples of Greece, as from Asia Minor and Egypt, there spread through the Occident, and principally in Italy new forms,—living, rich, splendid, which were transmitted from generation to generation, from age to age, like the old songs and the old stories.

The German elements did not introduce any substantial deviation from the organism of Italian art. The Romance languages gained principally in warlike terms, but art cannot receive contributions from barbarians such as the Lombards who could not have a special architecture. When Roman art lost its peplum of majesty, the barbarians came and covered it with many colored vestments resplendent with rubies and garnets, brilliant clasps, necklaces of glass and amber set in gold. The arrival of the Lombards in Italy marked the period of extreme decadence; with it began the animal form of decoration, peculiar to Germany, in the special mediæval forms, where pass in review gryphons, centaurs, which look like the Oriental marthicore, and serpents, lions and leopards. And all is rigidly fashioned: man, the wild beast, the plant, are so represented as to be unrecognizable.

From the 7th to the 11th century, Italian art slowly elaborated the traditions of the *bassi tempi* (decadence), repeated hereditary forms in a more or less uncertain manner, using methods that were sometimes childish. There was no real revival in decadent art during the rule of the Lombards. Before the struggle of the Iconoclasts, Italian artistic decadence had reached its extreme limits, and during this struggle Byzantine art could not have found a refuge in Italy. Byzantine art at that time weak, persecuted, condemned by the very persons who should have protected it, had not the force in itself to diffuse itself in the world. Nevertheless the struggle of the Iconoclasts helped to further the progress of art. Certain ancient types had to become daily more obscure and mystic, farther from the common life. And the naturalistic decoration, which took the place of the sacred images, depicting animals of every species, representations of hunting and fishing scenes was not transitory, for it remained in the work of mediæval art.

While the Occidental empire was being politically reestablished, Carlovingian art attempted a reconstruction of the fragments of classic art. In the monasteries, the refuge of ancient science, through the influence of Cassiodorus the ancient manuscripts were transcribed. Architecture also revived: the Basilica of Germigny-des-Près was constructed by the Italian Teodulfo. Particularly, in Lombardy, more subject to the influence of the Carlovingians, there arose churches, manuscripts were illuminated, and the greatest monument in gold work was constructed in the Carlovingian age, in the altar of gold of Saint Ambrosius in Milan, the gift of the Archbishop Angilberto II., constructed by

Vuolvinio and completed in the year 835. Other signs of artistic revival were at this time seen in various parts of Italy; but before Italian art could assume its own special forms, new influences intervened from the direction of Byzantine art which, about the 11th century, flourished with Greek beauty.

After the 11th century art sought to adapt itself to the country, to air, to light; and there was introduced into art a tendency to new expressions. Already in the 12th century romantic art flourished: its towers rose like lances from the projecting plain of the human hive; castles were erected; cities were surrounded by fortified walls; and in the midst of the towers, the castles, the houses, there arose the Cathedral. The instruments were rude which sought this expression of life, but they became refined by work; breaking the stone, cleaving the caves of the mountains of Luni, of the Veronese, of Lombardy, and of Istria. There were as yet few examples that taught the virtue of ancient art, but in Etruria the various Artinians appeared as if descended from the sky at Ristoro d'Arezzo; from the sarcophagi and classic marbles, Woligelmo and Nicolas took the decorations of the cathedrals of Emilia; from the Italo-Greco vases of Apulia was formed the beautiful style that Niccolo afterwards rendered eternal; from the columns of the temples of Athens, Syracuse took the form for other Christian edifices. In the soul of romanesque art, lives ancient art; there remain in it traces of triumphal arches, of Thermae, of theatres, forums, reflections of the provincial rustic Roman forms, of the legionaries, the sarcophagi of the Roman decadence (*Bassi tempi*) and of primitive Christians; but the aspect of the fine arts changes and varies, owing to the tendency of the indigenous Latin elements to compose themselves into national forms, just as the *langue d'oc* and the *langue d'oel* are different from the language *del bel paese dove il si suona.* From the ancient stem of Roman art new roots sprouted, wherever the standards of the Roman legions had once passed by.

Of the edifices erected in the Romanesque period there are few remains in Northern Italy. The houses were usually of wood, thatched with matting and straw, and only in the 12th century did they begin to formulate ordinances for the covering of the roofs, to prevent the frequent fires. And the houses were built everywhere, and in the 13th century palaces were built in the shadow of the towers, palaces of Reason, palaces of the Podesta, and of the Capitano. Mantua, Cremona, Piacenza, Milan, Como, Bergamo, Brescia, Padua, Vicenza, Monza still retain some of these palaces called Palaces-of-the-People, or of the Commune, of the public, of reason, of the consuls, of the Prœtorium, or of the Broletto. The timid ferocity of mediæval man is shown by the towers against which the houses nestle as if for protection and defense. In the 12th century when civil discords were raging, the towers were crowded in the cities of Lombardy, and Pavia received the cognomen of «towered.» The very high tower erected at Bologna in the beginning of the 12th century by Gherardo Asinelli is famous; and the other, erected about the same time, and at a short distance, near the house of Garizendi. Meanwhile the summits of the Appennine hills became covered with castles; and the chronicles tell of continual incendiary fires, assaults, destruction of castles. The towers of the gates and of the fortifications were crowned with battlements in which were loopholes, at the gates there were fortifications, or barbicans, and in the 13th century drawbridges. From tower to tower they fought as from battleships trying to grapple; the vanquished one was broken down, or razed to the ground.

Romanesque architecture developed greatly in Piedmont and Monferrato in the 11th and 12th centuries, and it was with these regions as with Liguria, that they brought into Italy French forms. In Lombardy the new systems of architecture found the most ancient application in the church of St. Ambrosius, at the beginning of the 12th century, at the time when San Michele arose again in Pavia, a signal for a restoration of architecture; in the Cathedral of Modena, of which Lanfranco was the architect; followed by the cathedrals of Cremona, Piacenza, Ferrara, and Verona; by the Abbeys of Nonantola, of S. Benedetto di Polirone, by San Zeno di Verona. Several of these churches no longer retained their primitive form, but there were not wanting traces of their ancient common origin.

The Venetian architecture of the 11th century marked the great vital flower of the powerful republic which, in the frequent contact with the art of the Byzantine Empire fashioned itself on the Oriental without rejecting, however, many forms of the Roman decadence existing in Ravenna and Istria, and gathering to itself also the new arrivals from Lombardy by way of Verona. The Basilica of San Marco rebuilt in the second half of the 11th century expresses in the highest degree the importance of Byzantine art to Venice.

In Tuscany Romanesque architecture developed very early. Pisa, (a flourishing republic in 1063) undertook to construct its own cathedral, as Venice had done, and about the same time constructed her San Marco; and Lorenzo began, in 1013, on the hill of San Miniato the noble Basilica, and at the same time his baptistry, *il bel San Giovanni*, reconstructed the ancient «duomo» (cathedral) or the church of the Abbey of Fiesole, erected the ancient parish church of Saint Andrew in Empoli. In Lazio there were not many examples of Romanesque architecture; in Umbrian architecture the Romanesque characteristics prevailed, as in Rome and its environs; in the Marches the most complete monument of Romanesque architecture of the 11th century is «Santa Maria di Portonovo;» the most splendid, the cathedral of San Ciriaco at Ancona, since then restored in the 13th century. In Apulia the first restoration in architecture was owing to the labors of the Benedictines, then to the diffusion of Northern characteristics and of the contrasting Byzantine forms. In Campania, particularly in Caserta Ventria, we see the blending of Arabic and Norman elements, as in the churches of Sicily, and in portions of the Apulian cathedrals. The efforts of the Norman-Sicilian art are triumphant in the Cathedral of Monreale.

Romanesque sculpture, developed in Northern Italy in the cathedrals of Emilia through the work of Wiligelmo and Nicolao, reached a certain eminence under Benedetto Antelami, under the Veronese sculptors, under the Venetian sculptors, the restorers of the Christian type.

In Tuscany its development was delayed; in Lazio (Latium) it was more especially decorative in the hands of the sculptors and Cosmati, who supplied the churches with their ecclesiastical furnishings; in Campania, in Apulia, in Sicily, it flourished in the time of Frederic II.

Under Frederic II. the Gothic style entered Apulia, the Basilicata, Abruzzi, and became common everywhere in the 12th century, and sought to adapt itself to the surroundings, the traditions, the life of Italy. From S. Maria d' Arbona, from Fossanova, the influence of the Gothic style was spread by the instrumentality of the Cistercians, throughout all the continent and in Sicily. From the Studium Artium of the Monasteries there came artificers who introduced everywhere the Gothic style. And the influence of the Cistercians extended also to the other religious orders, and lasted until the local Italian schools, the masters of the new art, blended them and finally superseded them: expanding, consolidating the Gothic; and until square and plummet passed from the hands of the monks into those of the laic masters.

In the *Dugento* (13th century) pictorial art was still in its infancy. Human affections could barely be perceived overcoming the rigidity of the material, popular forms being substituted for ecclesiastical forms, the tender aspects of life for the uncultured representations of things, adolescence in flower for the Romanesque asceticism. The love of nature which from the beginning of the *Dugento* was manifested in the Canticle of the Sun (*Cantico del Sole*) by San Francesco d'Assisi, and became potent with the lapse of time; but not the cell of reeds of the Holy Francesco, not the Poverty that was his bride, not the foundation stone of reality was found in the new art. The monk of Assisi spoke of love—and art understood in its own fashion, and over the remains of the saint erected the most beautiful House of Prayer that the world can boast. Beato, Margaritone and Ginuta have attempted to portray it; but art is not competent as yet to describe its proportions, it has no words or phrases to express them. From Bertinghieri to Orlandi, from Ginuta to Rainerio d'Ugolino, from Margaritone to Guido da Siena there is a slow progression of low forms. In vain does modern criticism seek to exalt Guido da Siena and make of him the representative of the Renaissance as it boasts of his pictorial palimpsest in the public palace of Siena. In the *Dugento* (13th century) *Roma docet!* Torriti created more splendid mosaics; Pietro Cavallini, in his mosaics and frescoes, created the new art with the old Roman soul; Filippo Rusuti introduced contemporary costumes into the mosiacs of Santa Maria Maggiore; Giovanni di Cosma, in his sculptures and his enamels makes the latter brilliant with the Cosmatesque forms, in the twisted columns, in the facade of the edifice. Among these masters we find Cimabue, athletic, powerful, who in Assisi in the calvary of the greater basilica created the drama of Golgotha.

At the close of the heroic period of Cimabue, of Pietro Cavallini, and of Torriti, began the modern age of art with Giotto, and the new style was imitated. Giotto is the first free painter, the painter of the truth of life. In the basilica of Assisi he renewed everything, giving free play to his emotional nature, taking advantage of fleeting impulses of sentiment, determining the characters of men and of things: He continued his work of restoration at Rome, Florence, and Padua; and again at Assisi; at Naples, and again at Florence and at Milan, crowning the efforts of the past and being the forerunner of those of the future. His genius dominated the 14th century (*Trecento*); a whole constellation of artists revolved in his luminous orbit. Throwing aside the royal mantles, the accoutrements of the Byzantines, Giotto draped his figures in the humble garb of the people; and he listened to the voices of souls, to the murmurs of sentiment, to the cry of the passions. Giotto, like Dante, with rapid strokes portrayed the living emotions; now representing Magdalen regenerated by grace; now the blessed Francesco who loved the Sun, the little plants, all his fellow creatures, the rock on which he rested, the dawn which chased away the darkness, the birds which flew around him who would not injure them. And in the Church of Arena at Padua the painter portrayed the life of Mary («*umile e pia piùche creatura*») (more pious and humble than any creature), from the joys of maternity to the sorrows of exile, from her atrocious sufferings to her everlasting joys; and in Santa Croce at Florence he added John the Baptist who did not tremble before the tyrant and died praying, St. John the Evangelist, who rose to the contemplation of the mysteries of the Hereafter; and in the palace of the *Capitano* at Florence God sits in judgment on Florence the lowly and the great, surrounded by a chorus of Florentines, among whom is Dante the painter poet, who gave form to human knowledge.

Venetian and Florentine art met together in Florence, penetrated into Umbria, into Assisi, and at last into the Marches. At Siena, the city of the Virgin, painting flourished without the dramatic impulse of Giotto, without his simplicity of the people. Durcio di Boninsegna, who in Florence had collected the forms of Cimabue and adapted them to the elegance of the Byzantine school, had made them resplendent with imperial richness, and moulded them in the rigid ecclesiastical mould. Simone Martini, a follower of Durcio, a friend of Petrarch, the painter of Laura, supplemented what was lacking in Venetian art. Gradually his coloring grew warmer, and the gold changed to crimson. At Assisi he worked with his brother Donato; at Avignon he appropriated the colors of the most beautiful gems and created a school which hastened the advance of painting in France. At Siena, Lippo Memmi, his cousin, produced his beautiful works and also at San Gimignano, at Orvieto, and at Pisa; the Venetian miniature painters reproduce them in the Hymnals (Books of chorals) and the Liturgical books; at Avignon another imitated him in illustrating the parchments of San Giorgio, of Cardinal Jacopo Stefaneschi.

While Siena placed the aristocratic forms of

Durcio and Simone Martini in contrast with the popular forms of Giotto, the brothers Lorenzetti of Venice modified art at their expense. In the court house of Siena, in that monument of civil wisdom painted in conformity with the dictates of the doctrines of Aristotle, and at Arezzo, Assisi, Florence, and Massa Maritime, the two brothers displayed their part: beautiful Ambrosio Lorenzetti in Tuscan garb; and impetuous, rough, savage, dramatic Pietro. The blending of the forms of Durcio and of Simone Martini with others foreign to Siena, appropriated and assimulated by the Lorenzetti, endure until the beginning of the 15th century in an innumerable series of works, in the constellation of Venetian artists. The diffusion of the Venetian style was widespread: it conquered Pisa; Barnabo da Modena accepted it; Allegretto Ruzi and Francescuccio Ghissi retain traces of it; Andrea of Florence was subject to it; Lorenzo Monaco was taught by it.

At Florence the traditions of Giotto held the ground during all the 14th century; and in Agnolo Gaddi, who carried out the ancestral models, they stagnated. Spinello Aretino shook off the somnolence of Florentine art in the second half of the 14th century; and at the same time was the forerunner of an art that sought new ideals, renewing itself in the combined study of the antique, and of nature. At Florence, in the middle of the 14th century Giovanni da Milano labored and presented Florentine art on the banks of the Arno. The decorations of these two oratories (chapels) resemble that which was employed by Avanzo and Attichiero from Verona to Padua, of which there are noble instances in the beautiful chapel of San Giorgio, and in the chapel of San Felice in the church of that Saint. Giusto de Menaturi of Florence is a conventional artist in comparison with Avanzo and Allichiero of the new school; Guariento is a painter who labors to escape from the rigidity of the Byzantine school. Avanzo and Allichiero created historical scenes with greater aptitude, and portrayed in review noblemen with their families being conducted by their patron saints to the Altar of Divinity. With Aranzo and Allichiero, with Antonio Veneziano who revealed his genius in Pisa, with Tommaso da Modena, the painter of the story of Saint Ursula at Treviso, began the new Springtime of pictorial art in the north of Italy, at the end of the 14th century.

The popular *motif* impressed on pictorial art by Giotto was similar to that impressed on sculpture by Niccolo d'Apulia (called Nicolo Pisano). This style appeared for the first time in Tuscany, at Lucca, in the carving of one of the side doors of S. Martino; and in it Niccolo showed that he had adapted with great ingenuity the power which breaks forth in the antique art, the fullness, the robustness, of sincere naturalism.

We then see him in Pisa engaged in decorating the exterior of the Baptistry, the first row of arches, placing at their junction and on the keys heads and busts where the human element is restored by the genius of Niccolo with a power such as to compel us to declare that modern art in its inception has spoken the final word. When, with the aid of his followers he had completed his great work and was preparing to carve the pulpit of the Baptistry at Pisa, he had bestowed on him the citizenship of Pisa, and was nominated a citizen in its Hall of Fame. From the pulpit of Pisa (1260) to that of Siena (1266-68) the style of Niccolo's art spread rapidly. At Pisa it is more forceful, grander, more monumental; at Siena it is more Christian, more dramatic. Under the impulse of genius the monument grew with great unity of form, at the same time allowing one to distinguish the individuality of the workers, especialy of Giovanni Pisano and of Arnolfo. From Siena, Niccolo d'Apulia went to Pisa, thence in 1273, to Pistoia; in 1274 to Perugia for the work on the fountain of the Piazza Maggiore, brought to completion by Giovanno Pisano, his son; in 1278, the year of the death of Niccolo, that great genius who by his art constructed a bridge between the ancient and modern era. Pisa, educated by him, was the teacher of Italy.

While the Baptistry of Pisa was wreathed with garlands, the Pisa Camposanto received the bodies of men in holy ground brought from Calvary, and the Pisa cathedral (Duomo), raised its superb front beside the Leaning Tower; the Pisano journeyed to Lucca to decorate the beautiful San Martino; to Perugia to sculpture the fountain where, amid the water jets, sounded the voices of the virtues, of the liberal arts, of the Bible, and of history; at Siena in placing on the front of the cathedral the prophets, the sibyls, Plato, Aristotle, who impelled by the ecstasy, the fury of poetic rage, proclaiming the coming of the Word, or the Eternal Truth to the Faithful; from the ox-like eyes of the Patriarchs; from the cavernous eyebrows of the philosophers, from the convulsions of the sibyls there came blinding flashes and enormous dragons, and horses rushing forth from billows of marble. Thus Italy was conquered by the strokes of the chisel of the school of Niccolo d'Apulia; of Giovanni Pisano, who made his statues pulsate with passion, spread his paternal art throughout Tuscany, in Umbria, and in Venetia; Arnolfo, his comrade, invested his marbles with the ancient beauty, and at Rome he was victorious and transformed the art of the Cosmali; Andrea Pisano cast in bronze the door of the Baptistry at Florence through which modern art passes triumphant; Tino da Camaino founded in Naples the school which, until the Quattrocento, repeated the artistic dictum of the Pisan school; Giovanni di Baldunio da Pisa brought models to the masters of Campione and Como in his arch of Sant'Eustorzio at Milan. Towards the close of the 14th century Venice, as she had already done in painting, elaborated new forms, and among other sculptors Farobello and Pier Paolo dalli Maseque are prominent. These all diffused Venetian sculpture throughout Italy, at Bologna, where it held the field, to Milan; places where the florid Gothic founded the last of its great monuments, the Basilica of S. Petronio, and the Cathedral of Milan.

The *Quattrocento* gave form to national ideals, without losing in fidelity to nature, intensity, passion, soul. It did not sacrifice itself for the sake of effect; it spoke, but it did not declaim rhetorically. From the yet rude forms, from the realistic harshness spring the most beautiful flowers of sentiment. The True was worshipped with childlike curiosity and tenderness. Romanesque art downtrodden by the Gothic, was not destroyed; it returned resplendent amid the Gothic, it had become more ample. Amid the pinnacles and the spires it insinuated itself, pausing in its experiments, and, expanding the proportions of architecture, rounding the sharp corners, squaring the contours, planing the summits, it regained its ground. The antique forms were recast, and blossomed again among the Christian. Not forgetful of its ancient life, of its glories, of its motives, Italian art recalled the classic statues; the nude saw again the light of day, even at the entrance of the churches, for the beauty of the nude form no longer seemed a demoniac qualification, but a gift of God. Art, in its new youth, was the forerunner of humanism, of a restored civilization.

Architecture in the *Quattrocento* received its first impulse from Filippo Brunellesco, the friend of Paolo Toscanelli. The cupola of S. Maria del Fiore is the principal monument to his glory; Michelozzo and Giuliano da Mariano are his principal followers. Leon Battista Alberti was more Roman in his architecture; was the designer of the temple dedicated to the Goddess Isotta by Ligismondo Pandolfo Malatesta at Rimini; the more refined Bernardo Rossellius, who at Piacenza created for Pius II. the Piccolomini palace, and the palace of the Commune, the cathedral and the Campanile, a whole city clothed with rare elegance.

With a Florentine grace, with a witching delicacy Luciano di Lamana created the palace of Pesaro, the newer portion of the palace of Urbino, and that of Gubbio for the Lords of Montefeltro. Benedetto of Milan built the model of the Florentine city palaces, and that of Strozzi in Florence. Bramante d'Urbino, first in Milan and then in Rome, gave the crowning glory to the architecture of the 15th century.

Painting in the 15th century displayed itself in the cities of Italy in a variety of types, many colored like their flags. The palaces of the nobles were adorned with frescoes; the churches were splendidly decorated. Every public festival was a festival of art. If the mysteries and the comedies of Plautus and Terence were presented, if the crowd endeavored to do homage to their lords, if the princesses were going to their wedding in their bridal carriages, art improvised machines, scenery, arches, triumphs. They carried the maidens to their wedding; and art gave them as furniture the nuptial chests painted at that time with the Boccacian fable of Griselda, or the Triumphs of Petrarch, the anchor with the Madonna seated, the Holy Child in her arms, the illuminated Book of Prayers, and the Gentilezze of goldsmiths. Art in the beautiful *Quattrocento* breathed in all things, in the Majolica vases, in the brocaded robes, from velvet to brocade, in the leather cover of the ledger, as in the binding of books of devotion. From the cradle, ornamented and beautiful, art guided man until he slept beneath the sepulchral arches between the chapels, escorted by Virtues and the Liberal Arts. In the *Quattrocento* art was in the atmosphere, it permeated all the social life. It appeared as if in ancient Olympus the divinities were obliged to clothe themselves in the costumes of the citizens of the *Quattrocento;* it seemed that the heroes of antiquity were restored to life to enlist with the soldiers of the republics and of the Italian Signoria; it seemed as if the biblical figures revived to take their place among the officials and mayors of the corporations; it seemed as though God and the Saints descended from the clouds to take human form. Every figure sacred or popular, allegorical or historical, found in the society of the artist his garment, or his background. There were no longer conventional forms, but imaginary or historical scenes were represented with such simplicity as to make it appear that one had seen them with one's own eyes in the public square, or along the streets of one's city, on the verandahs or under the wooden ceilings in one's own house.

To Masolino da Pamcale and to Masaccio, popular masters, belong the boast of having designed in Tuscany the new ideal of the art of the *Quattrocento.* The relation of their sculptured figures to the landscape is determined, the perspective assigns everything to its place; anatomy invests with bones and flesh the human form, which lives and moves in a real world, its individuality reconquered. Less modern, still Gothic, were the paintings of these times by Gentile da Fabriano, who had, as Michaelangelo says, a hand as refined (*gentile*) as his name; and Pisanello, a true painter of animals, who sought out their instincts, discovered their habits and their movements. The two masters left their influence on many parts of Italy, in Venetia and in Lombardy; in Emilia and in Tuscany, in Umbria and in the Marches, in Rome and Naples. But meanwhile Piero del Borgo, or Piero della Francesca, exercised the greatest influence on the new style of painting; at Urbino, at Senigallia, at Rimini, at Bologna, at Ferrara, at Padua he taught the art of perspective and left along his passage a trail of light like a comet. The stern painter «*monarca a suoi di*» (monarch in his day), as Luca Pacioli said of him, brought the science of perspective to the height which it reached with Leonardo da Vinci; his figures have a great luminosity in the clear air, transparent and light shadows, flesh tints faintly rose-tinted, tender coloring of Spring flowers.

While Piero della Francesca gained so many portions of Italy for Tuscan gracefulness, at Florence, Fra Giovanni da Fiesole, called the "Blessed Angelico" was painting, depicting diaphanous angels and saints *veramente di Paradiso.* His art had the effect of a sweet psalmody. The ladder seen by Jacob in his dream, upon which fair angels ascended to Heaven, was seen anew by Giovanni, whom posterity called the Blessed. He composed sacred scenes with great ingenuity, with a childlike simplicity, his Madonnas clothed in Gothic tunics, with clear eyes, whose pupils look out from beneath their faintly penciled eyebrows, and with the lithe, slender bodies of children. Benozzo Gozzoli and Fra Filippo Lippi gave substance and development to these forms, but not the innocence of Angelico; Andrea del Castagno and Paolo Uccesso loved strength and science rather than mystic contemplation; Pesellino, youthful, gentle, sought more than did Angelico mere corporeal beauty. In the realistic work of Andrea del Castagno and of Paolo Uccesso, in the studies in perspective of Piero della Francesca, Baldovinetti, Pietro and Antonio Pollajuolo, Andrea del Verrocchio took their inspiration and sought for plasticity of form, the robust structure of the human figure; the grace of Fra Filippo was imitated by Sandro Botticelli. Through him, Florentine art became a canticle of Spring, all redolent of jessamine and roses. The followers of Botticelli, Filippino Lippi, and Ghirlandaio, closed the great era of Florentine painting of the *Quattrocento*. Among them Luca Signorelli di Cortona, sunburnt, warm, ruddy, rose to the summit of art; he was strong, quick and resolute. The Cortonese (Luca Signorelli) retained his character of a mountaineer, but beneath his rough exterior he had a soul of fire; his nude figures seem to be chiselled as if by the strokes of a hatchet, but from the strokes issue robust and healthy bodies.

The Tuscan school of the *Quattrocento* had as the crowning glory of its sincere efforts, of its indefatigable research, the work of the giant, Michaelangelo, of Leonardo, the prophet of modern times. Michaelangelo remained a sculptor in his painting; his prophets, his sibyls, have the imperial cast of the Moses who arises, terrifies and thunders. The painting of the *Quattrocento* had sought the grace which he disdained; had been prodigal of flowers and smiles to the sacred figures into which he infused a sculptural, monumental grandeur; had refined and prettyfied everything, whilst he enlarged everything and raised it to the sublime. His athletes wrestled under the power of his gaze, and reposed solemnly in the corners. The physiognomical traits of his figures disappear, to give place to the lineaments of the imagination; we cannot see into the foundation of the works of Michaelangelo, for the man himself, alone, fills the entire space and breaks down the obstacles and the limitations from within; life dwells in him, and breaks forth from him.

Leonardo da Vinci, excited at his vision of things, impelled always by an irresistible desire of something new, restless because of the sense of perfection, which ever vaster horizons had hitherto denied to his attainment, left uncompleted the greater part of the works that he had undertaken, because he found matter inadequate to depict the soul of things. Sublime in every stroke, in every word, even in his own day Leonardo appeared a prodigy. Lombard painters turned their eyes towards him, as satellites around the sun. The purified idealism had come down through the ages, the multiplied energy of generations, and had found their expression in the marvelous man who defied study and analysis.

Other regions of Italy had also their geniuses who regenerated the ideals of nature; the days of accomplishment came when the iconographic progress made great strides, and idealism became purified in the course of ages.

In the Marches and in Umbria the painting of the *Quattrocento* took the form of the representation of sacred and allegorical subjects, as though invaded by the spirit of the populace who went through life with a scourge; and it fell into a forced naturalism, into a vulgar conventionalism. Niccolo Alumo appeared sometimes to be a savage who broke forth into shouting and depicted sorrowful, wrathful, disconsolate figures. Like him, Crivelli, the Venetian, who also looked at the world with the eyes of a magpie, came to the Marches to get force of expression, in exaggeration and grotesqueness. But the suavity of Tuscan art breathed into this region the fragrance of Spring flowers in Piero della Francesca, in the Blessed Angelico, in Benozzo Gozzoli, and in Verrocchio; and its Fiorenzo di Lorenzo, Perugino, and Pinturricchio. Perugino invests his figures with a rare grace, although they all bear the imprint of the same model, have all the same sentiment of devotion, of humility, of abstraction; his saints gradually become rosy, ethereal; his personages are transformed into a monotonous, melancholy, mellifluous type. Pinturicchio, frequently the companion of Perugino, was intoxicated with color. From the works of Perugino, in particular, was moulded the crowning genius, of the ideals of art of Umbria, and the Marches; Raffaello d'Urbino. In his first works, in the incomparable sweetness of his youthful Florentine figures, most delicate in movement, he exhibited his tendencies; in the work subsequently executed in Florence he drew more from the examples of ancient and modern art that was triumphant on the banks of the Arno; in those he painted in Rome the great assimilator gave us models of monumental art. Raphael, who had sought at first in Perugino the sweetness of the devout Umbrian maidens, in Florentine art, the noble elegance, became, in Rome, a child of the South; and idealized the vigor of the peasant women of the Roman Campagna, with ample proportions, bronzed with the sun; and of the children with their large eagle eyes, and black hair. The last of his works was the Transfiguration; his pupils placed the picture on his bed when he closed his eyes forever, the *gentilissimo Raffaello d'Urbino*.

The Emilian region gave tardy signs of a revival in painting. From the school of Squarcione at Padua were cast seeds also in Emilia. Cosmé Tina of Ferrara appeared at the beginning of the second half of the Quattrocento as the head of a school, a great smith, who with the blows of a hammer wrought figures in sheets of metal, and illumined them as from an inward flame. At this time also flourished Francesco del Cossa, rugged in his saints, with enamel-like coloring. Ercole de Roberto, Lorenzo Costa, and Ercole Grandi were disciples of these two masters. Returning from Ferrara to Bologna several of the masters of Ferrara, Galasso, Francesco del Cossa, Ercole de Roberto, Lorenzo Costa, held the field in painting. A comrade of Costa was Francesco Raibolini, called Il Francia, a painter of scrupulous conscientiousness, of a well-ordered intelligence, with a simple and pious mind. A contemporary of Francia was Francesco Bianchi Ferrari, of Modena, a painter with an accuracy of execution that had something of religion; and he was the master of Correggio, the youth, of the genius who took his place at the apex of Emilian art. Except for his first figures, which partook of the spirituality of Bianchi Ferrari and of the Mantegnese solidity, Correggio held his own as a colorist, and appeared to draw his tints from rubies, sapphires, topazes, and amethysts, from the sap of the rose, the brightest colors of the rainbow, the most diaphanous shadows. Correggio was the painter of light. With his colors, harmonized like the sounds of a lyre, he diffused happiness and joy around him in all hearts. In the blending of the lights and the shadows appeared his Danae; on the Autumn landscape distilling gold from the verdure, his Leda; in an aureole of golden hair, his Antiope asleep; enfolded in a downy cloud of love, the nymph, Io; poised in space, Ganymede, while the zephyrs toyed with his blond locks. His angels in the Madonna di San Francesco di Dresda vanish in the azure in the morning light, rosy with the dawn; those of the Madonna di San Sebastiano are illumined by the light that falls from the top of the cupola, and the robes of the saints gleam in rose and gold; the other angels in the «Night» are enveloped as in a flame which comes from the Holy Child, and is diffused and chases the darkness. While Dosso Dossi, the Ariostesque (in Ariosto's style) painter put strong enthusiasm and phosphorescent brilliancy into his fantastic forms, Correggio enveloped his in the most voluptuous twilight. He cast treasures on the earth *il pittor delle Grazie!*

At Venice, painting which, in the 14th century, had not had a development similar to that in other Italian cities, in the *Quattrocento* (15th century) was given a living impulse by Gentile da Fabriano, by Pisanello, and still more by the school of Squarcione, who was the founder of the greatest school of Lombardy. As on the head of Brunetto Latini there fell some leaves from the laurels of Dante, thus, through Squarcione, was projected the glory of his adopted son, Andrea Mantegna. The school of Squarcione became known everywhere. From Negraponte, an island in the Egæan; from Dalmatia, Parenzo in Istria, from the Venetian Lake, from the capital of the Estensi, from the learned Bologna flocked artists to this school. Above all the rest, like a giant, rose Mantegna. Mantua was the principal scene of his fame. He had in his soul and in his art the sentiment of Roman grandeur; this is expressed in its highest form in the Triumph of Cæsar, now at Hampton Court. The classic was his master, and the triumphal arches, the ancient ruins formed the scenes in which were displayed the Christian ceremonies; but he did not forget the strong, austere character of the Italians of the *Quattrocento*. As in his painting, so we see unrest in the bronze bust which he made in Saint Andrea of Mantua, passionate, rugged, the wreath of laurel made him look like the victorious leader of an adventurous army, terrible to his enemies, or like a conquering Perseus. But the sculptured, marble figures of Andrea Mantegna lacked the atmosphere with which they were surrounded by Giovanni, the son of Jacopo Bellini, who, with his brother, called Gentile, gave rise to the Venetian school. Giambellino, in his first works detached himself slightly from the Paduan or Mantegnesque forms. But, little by little, all that he touched took the color of gems, his shadows became transparent, his clouds floated luminously through the air, a visible harmony manifested itself all throughout his idyllic compositions. The knowledge of Mantegna became poetry in Giambellino. His madonnas rose sublime to reign over the earth, with the beautiful silver white drapery on their heads, with their opaline flesh tints, with the sweetest expression, seated on thrones of marble beneath cupolas made of golden mosaics.

A whole host of artists around Giambellino became intoxicated with color: Antonello da Messina and Carpaccio, Ciona da Conegliano and Boccacciero, Bartolomeo Montagna and Marescalo, Lorenzo Lotto and Giorgione. Coloring rivaled the splendor of the windows of Murano and of Oriental tissues: color sang! Giorgione began to put the crowning touch to the work of the *Quattrocento* (15th century) in Venetia; but, snatched from life, he left his task to Titian. He passed through life rapidly, like a splendid knight in gleaming armor conquering the kingdom of the beautiful. Born in 1477, he died at the age of 33 in the flower of life. The individuality of the artist was manifested in the realm of color, the femininity of the Virgin with the long oval face and with her thoughtful eyes veiled in shadow; in the Venus with the ivory who yields to slumber in her draperies of silvery white and red, whilst the light gleamed on her beautiful limbs and the green earth smiled, and the little clouds here and there floated in the sky. In all one finds the same seeking after nature in its varied landscape, the most delicate selection of all the minutiæ, the same noble style, the same luxuriant forms; a desire for air, light, nudity, beauty. The wisdom of Giorgione resembled that of Titian, the great master who bathed his canvasses in sunlight, made the blood course through the forms he depicted, and with colors produced live flesh tints. The doges of his Serenity, Varlo V., Filippo II., the Medici, the Gonzago, the Estensi, the Farnesi, and Aretino had their portaits painted by him, in which they are immortalized today; his daughter, Lavinia, superlatively beautiful, still bears witness to the love and pride of her father. When he died, the voices of joy were silenced, the splendor of the Venetian Republic was dimmed. And with the cessation of the festal chorus of the last representative of the art of painting transmitted by Giorgione to Titian, Tintoretto, appeared, heavy in coloring and in thought. It appears as though he had painted, at fever heat and in a single day, his *chef-d'œuvre,* the Miracle of San Marco, so strong, full and resolute is the stroke of his brush. It seems as if a flame had darted from the sky and enveloped the earth; the flesh of his figures seems to be composed of gold, the very marble is illumined and reflects gold, the foliage of the autumnal trees takes under his hand tints of crimson. His colors are of flame; and his painting looks like waves of flame at the setting of the summer sun, at the decline of Italian art.

Italian sculpture takes the same direction. In the *Quattrocento* there were forerunners who rose spontaneously to the summit of the ideal, and they attained the highest eminence, and sculpture did not progress, as some have affirmed, outside of the sepulchre of classic antiquity, of patched up counterfeits and copies of the antique. New apostles of art traversed Italy, the Tuscan sculptors, and they conquered it with the strokes of their chisel. Now there were erected on the public squares monuments, par excellence, equestrian statues, now triumphal arches were built and the churches were transformed into temples of beauty. Florence, the new Athens, as with a winnowing fan enlarged the wealth, the civilization of her sister cities.

The *trecento* had carved the great periods of learning, of the highest mechanical arts, of the seven liberal arts, of the seven planets, of the seven sacraments, etc.; but the *Quattrocento* bore the palm in industrial progress. Zampo della Quercia even sculptured the virtues around the Gaia Fountain at Siena, but as noble matrons proud of their moral beauty. Learning left its traces on the *Quattrocento;* but the artists in representing this or that sky seemed to have lost their memory; they made and unmade freely, wove on a woof that was no longer the classic; committing to oblivion Marciano Cappella and Pendenzio, Cicero and Boetius, Saint Augustine and S. Francis of Aquinas. The representations of Old Testament scenes, after Ghioberti had depicted them in a gate of the Baptistry at Florence; Jacopo della Anucia in S. Petronio at Bologna; were no longer in the same rank, no longer bore the same relation to the Antique. It was found in painting—not so much in sculpture—that in the desire for monuments many scenes had to be omitted because they were not suitable. This tendency may also be noted in the scenes from the New Testament, limited to the scenes of the Passion of Our Lord.

Donatello was the greatest among the masters in his representations of the tragedy of the God-Man. There never was a more violent outburst of passion in art, never was the distinction between the antique and the modern more forcibly shown, the difference between classic serenity and Christian agitation. The concentration of the sculpture of the *Quattrocento,* which was shown in some of the most significant scenes in the life of Christ, demonstrates that sculpture lent itself rather to dramatic than to historical scenes, rather to the culmination of the events which had come down from the classic. Thus it was in the scenes of the life and of the legends of the saints, synthesizing, summing up in the chief essentials; demonstrating the scope of the unexpressed actions, allowing one to guess at their fulfilment, to rise to the original form. From the beginning of his activity Donatello affirmed those artistic aims set forth in St. John the Evangelist and the Moses of Michaelangelo, and creating the type of San Giovannino, who fed on honey and locusts. But, after Donatello, sculpture showed a tendency towards classic art, taking refuge in depicting martyrdom, tortures, and death; in everything, youth, calmness, sweetness, moral grandeur, civilized decency. In making the figures true to life the Virgin, previously represented as a mother playing with her infant son, or as a good housewife, becomes more mature; the infant Jesus becomes the little lord of the universe; the angels lose their infantile ingenuousness, and become graceful youths. All that with which *Quattrocento* had formerly clothed the figures—the kindly expression, the natural vivacity, the popular simplicity, was now withdrawn, because the idea of strength, of size, of Roman art, of sovereignty, was opposed to the pure ingenuous representation of the sacred forms. The contrast was established also between the pictorial elements that had come into the modern art and statuary. But only a genius like Michaelangelo could personify the national tendency to place art in unison with the great memorials of antiquity, to make it prominent, or to detach it, as in the foundation of the Thermæ, the Forums, and the Roman circuses.

It was natural that on Italian soil there should be a tendency towards a living type, and that art should obey the certain laws which rule things during certain periods, towards a progressive advance, augmentation, increase in size, a continual amplification of forms. But all through the 15th century, sculpture was not permeated with classicism, as was literature; it was animated by it when it was in accord with its character, it sought the antique as it came by degrees from the purest sources, it had the vision of ancient civilization as it became clearer from day to day. Arrived at the end of the *Cinquecento* and at its highest degree of development, it sought the grandeur of sculptured forms, the complex ingenuity of composition, the restless expression of emotion, and began to look at examples of art that had ripened elsewhere, and had been inspired by another civilization; but, before this, the assimilation of the antique had come by degrees, and the naturalism of art in the *Quattrocento* was the highway to the invasion of classicism.

The antique inspired Italian sculpture with artistic liberty, animated it with a love for the nude; but modern art, before modelling nude figures and giving them free action, first of all perfected the head, and gave the bust a place of honor. Not alone the features are represented in it, not alone the physiognomical traits, but the individual character, the truth of life; and Michaelangelo omitted even the physiognomy, in order to represent the thought. The bust was a sign of the victory of individuality, but it did not fulfill the human desire to leave a remembrance of itself, to establish its love of fame. In the equestrian statues of Ferrara, Padua, Venice, monumental art found its highest expression in the *Quattrocento,* that art which is found in the gates of castles and palaces, veritable triumphal arches; in the mausoleums, transformed into mortuary chapels, veritable sacred spots; in the altars peopled with statues. Mistress of her tools, Italian sculpture of the *Quattrocento* answered to the multiple needs of the people and diffused itself throughout all the courts, and in the castles of France, in the Flemish guilds, in the palace of the Sultans, in the royal palace of Mattia Coromo, King of Hungary.

At the beginning of the *Quattrocento* Niccolo Lamberti di Arezzo in the door of the Mandorla of Santa Maria del Fiore rivaled with his metal mouldings the ancient vases of Aretino; Lorenzo Ghiberti applied the laws of painting to the door of the Baptistry and transformed the bassorelievi into so many pictures full of life. Meanwhile Luca della Robbia employed in painting only such colors as would give life to the chiaroscuro and revive the plastic effect. Simple, tender, most human, Luca della Robbia has not the high imagination of Ghiberti, nor the epic grandeur of Donatello; he placed amid vases of lilies, Mary, the fairest lily of earth; and with the sweet image he brought joy into the Tuscan life of the *Quattrocento.* But above all the Tuscan masters of this century towers Donatello, who translated into marble, bronze, plaster, Man, the whole of man, whether in the niches of Or San Michele he placed the bold knight St. George, the patron of the corporation of cuirasses, or arose in the Campanileo, rugged, wrathful prophets; whether he sculptured a dissolute dance of lads, or gave the supposed bust of Niccola da Uzzano the character of a tribune. Classicism conquered him for an instant after his second voyage to Rome; but life once more broke in upon the sacred history of Padua, in the harassing drama of the close of Christ's life in the parchments of San Lorenzo di Firenze.

Andrea di Cione, called *Il Verrocchio,* followed in the footsteps of Donatello, and rendered immortal, more than did his own exploits, Captain Bartolomeo Colleoni, who appeared, as a knight without reproach, to throw down the gauntlet to his enemy, under fire and the shots of catapults. Among the pupils of Donatello is known Agostino di Durcio, who, like a neo-attic sculptor, draped his figures in clouds of tissue and cloth, with garlands, spirals, curves. At the same period lived Desiderio da Settignano, who gave his marble a soft vagueness, which seemed to be attained with a feather and not with a chisel; and Mino, his disciple, who gave everything a facile, light character as though executed in wax or paste, and was, as Vasari said, more versed in the graces than in the fundamentals of art. Superior to Mino were Bernardo and Antonio Rossellino and Benedetto da Mariano. Contrasted with these is Pollainolo, who loved the strength that is evidenced on the muscles of the athlete. Their realism is shown in an unfeeling spirit of analysis and in the want of repose in the form of the larger extremities, of the knotty fingers, the iron tendons.

While Florence was laying the foundations of modern sculpture, Siena was doing the same in Jacopo della Quercia, who represented the return of art to the forms of its Etruscan ancestors. Free from all grossness in art, he died expecting his soul to be transformed into that of Michaelangelo by an artistic metempsychosis. Hercules was in the soul of the marbles of Michaelangelo, he slumbered beneath the white blocks of Luni and on awakening he cast far away from him the chips, like flakes of snow, that covered his powerful muscles. And behold! Moses arose with a look of hesitation, with lips on which resounded the tones of malediction. And behold the slaves of the museum of the Louvre, who shudder on awakening, their arms supporting the old world; and Lorenzo di Medici, the thoughtful (*Il Pensieroso*), beneath whose head passes the shadow of death's wing; and the «Night» (*La Notte*), who sleeps on the sepulchres of the Middle Age, not desiring the light. Michaelangelo is steeped in sadness; in his soul are projected the shadows of human sorrow, his heroes in the midst of their glory hear the wailing of humanity. He raises himself, however, above the things of earth and touches the heavenly; he exalts his divine sentiment and touches the mysteries of existence; he raises himself on human tragedy, and arrives at the sorrow of the universe. Michaelangelo is the huge limit of modern art, as the mountain which he himself carved was transformed into a giant which with its head mounting to the clouds at the summit sheds waves of light on the Tyrrhenian Sea. Michaelangelo was this giant on the summit of Italian art!

The other regions of Italy had not in sculpture the genius which combines in itself the multiple forces of production. At Venice the Tuscan masters had given the impulse to the formation of the new school.

The sculpture of Lombardy in the *Quattrocento* (15th century) is instanced particularly in the statues that adorn the Cathedral of Milan. It is recognized with less uncertainty in the second half of the 15th century, in the works left in the Carthusian monastery of Pavia by the brothers Mantegazza and by Amadeo and his followers. The *chef-d'œuvre* of the art of Lombardy of the *Quattrocento,* the work probably of one of the masters who decorated in terra cotta the cloisters of the Carthusian monastery of Pavia, is the Dance-of-the-Angels in the vaulted ceiling of the cupola of the Portinari chapel in Sant' Eustorzio at Milan. Agostino Busti, called *Il Bambaia,* was an exponent of all the characteristics of the Lombardy school of sculpture in the 15th centry, showing himself, however, insatiable in the adornment of his statues, and in the decoration on his monuments.

From Northern Italy the art of sculpture was introduced into Sicily by Pietro di Bondate, Francesco Laurana, and, above all, by Domenico Gazini, the master of a school that filled Sicily with statues until the *Cinquecento* had advanced. Antonello Gazini, architect and sculptor, was extraordinarily industrious and productive, and displayed ever the native grace, the continence of the *Quattrocento.*

Mantua in the *Quattrocento* gloried in Sperandio; Modena in Guido Mazzoni; Bologna showed signs of vitality after there came to her walls the brothers Dalle Masezze, Jacopo della Quercia, Niccolo dall' Arca di Bari, Sperandio, Andrea da Fissole, Francesco di Simone da Fiesole, and began to paint and attempted to represent the noble figures of Francia.

At the commencement of the *Cinquecento,* the differences in art in the various regions of Italy disappeared. Those masters who reflected the social life and sought the costumes of their contemporaries, the most minute characteristics, the individual verity, were superseded by those who represented traditional costumes, general forms, typical truth. To spontaneous art succeeded the art reflected by the artists inspired by the lyrical art of Raphael, or the epic grandeur of Michaelangelo, which from the Sistine Chapel dominates the century. A great national artistic unity began to take form, caused mainly by the predominance of classical antiquity in the new art. The pagan world which art revived represented submission, oppression, and inaugurated the Decadence; the word «*rinascita*» (rebirth) spoken by Vasari, who saw the salvation of the art of the *Cinquecento* in the initiation of classic antiquity, expresses for us the arrest of Italian artistic vitality. When this vitality was on the wane, art became a servile imitator, sacrificed itself on the altar of classicism. The geniuses (the last sons of the *Quattrocento*) having disappeared, formula was substituted for sincerity. Raphael seemed to be triumphant everywhere by being imitated by a host of artists; but his sweetness was not to be found in the frescoes of his imitators; it seemed as though Michaelangelo should dominate the world, but the statues of the acrobats who imitated him had not the strong breathing power of his athletes, nor the terribleness of his imagination. And thus, art, towards the middle of the 16th century, appeared to be almost without inspiration, the grandeur of massing was employed in order to produce astounding effects; one felt the chill of immense spaces, and attempted restlessly to enliven them with strong chiaroscuro effects, setting out to twist, contort, torture all forms. They invoked grace and found a grimace; they sought to clothe themselves in great magnificence, but succumbed under the weight; they endeavored to imitate the antique and made only a parody of it; in conventionality, truth was effaced, and imagination played no part; all this art, which did not follow nature, which was bowed down by the weight of reminiscences gnarled, wrinkled itself, swelled itself out savagely.

The neo-classicists of the *Cinquecento,* the Peruzzi, Antonio da Sangallo Junior, Sannicheli, Jacopo Sanseverino, built edifices with the antique solemnity. The old formulas of the ancient orders of architecture were not as yet rigidly observed; and architecture had still its appropriate colors. The Veronese, Palladio, alone, constituted a sort of Roman authority.

The *Scicento* (17th century), as if in reaction against the cold art of the mannerists of the end of the preceding century, chose the strong contrasts of light and shade, the delirium, the dizziness of the forms; and on account of this bewildering art, appealing to effect, to this magnifying of things, to this superabundance of material, the art of ancient times, the flower of civilization, was cast aside.

Even sculpture, under the followers of Michaelangelo in the *Cinquecento,* seemed to be exhausted. Emilia, however, had still the terra cotta frescoes of Antonio Begarelli; Venice was adorned with the works of Jacopo Tatti, called *Il Sansovino,* and with the busts of Alessandro Vittoria, who rendered in marble and plaster the portraits of Venetian noblemen, which rivaled the pictures of Titian and Tintoretto.

The painting of the *Cinquecento,* after the decline of the great generation that issued from its threshold, became from day to day more weak. Florence, after Fra Bartolomeo and Andrea del Sarto, triumphed no longer; Siena, after having had fresh glory from Sodoma, and from its Peruzzi, became insignificant; Parma lost its elegance after the death of Francesco Ferrara, and Mazzola, the two Dossi being exhausted, no longer had any splendor; Milan, on the disappearance of the followers of Leonardo, of Solario, of Luini, and of Gaudenzio Ferrari closed its school. Venice, which had been tardy in art development like other Italian cities, advanced more than did these in its triumphal career. The contemporaries of Titian, among them Palma Vecchio and Sebastiano del Piombo, Lorenzo Lotto, and Bordenone, continued the great Venetian traditions; Bonifacio, Paris Bordone, Moretto da Brescia, Paolo Veronese, Gian Battista Moroni, da Bassano, transmitted them to all the *Cinquecento* through their followers. At the end of the *Cinquecento,* at the time in which Florence appeared to have exhausted her strength; Venice no longer reflected the Oriental gayness of coloring; Bologna and Naples, which in the *Cinquecento* had had a poor artistic development, now dominated in their turn, the one with the eclectic school of Caracci, the other with the naturalistic forceful school of Michaelangelo, of Caravaggio.

The man who appeared to personify in himself all the art of the *Seicento,* the most versatile that Rome had seen since Michaelangelo, was Gio Lorenzo Bernini. In architecture he retained the monumental feeling; he glorified Michaelangelo unconditionally as an architect, and despised Borromini, who, he said, instead of becoming inspired by the human form, lay down rules established on illusions. He considered round forms, or those described in a circle, as the most perfect, and particularly admired contrast, observing that things do not appear what they really are, but get their appearance from the surroundings. Bernini looked at architecture as if it were a thing similar to sculpture; and in architecture, as in sculpture, he saw with correct eyes. Bernini was the architect who founded modern Rome.

To sculpture, Bernini brought his pictorial knowledge; and his chisel passed over the drapery, over the flesh, the hair, changing power, the strong features, varying tone; sometimes he broke and rebroke in rage the plans of his figures; sometimes he spun hair soft, light and waving in the wind. The polishing of the marble sometimes made his figures flabby and baggy; his draperies swelled like willows in a tempest, lashed the figures and strangled them. Bernini, in everything seems like a coreographer who seeks to correct nature, which is too weak and contemptible for him, who desires to make it gigantic in order that it may impose, subjugate, and blast.

The return to the antique was the programme of the Carracci, who applied it in gathering the reminiscences of the great art that had flown, reuniting them in eclectic formula, not in a new harmonious potent form. The triumvirate, Annibale, Ludovico, and Agostino Carracci, created an Academy of Design, the first type of the Academies of Fine Arts. Annibale, endowed by nature more highly than the others, left in the gallery Farnese in Rome the most splendid example or decorative art of the *Seicento* (17th century). In the princely palaces of Italy, in the vast churches created by the Jesuits, the art of the Carracci penetrated, exalted God and men in a language full of emphasis, amid the fumes of incense, gaudy gold objects, the crowd agitated by the barocco statues. The efforts of the Carracci to impart dignity and vigor to the ancient tree of Italian art were not in vain; for instance, Guido Reni, who painted rapidly representations of Christ crowned with thorns, his eyes languishing in sorrow beneath his eyelids, as though his spirit was trying to return to the light; also Albani, the painter of cupids, of gallantry, or frail nymphs, of coquettish Graces; also Domenichino, a *Quattrocentist* astray in the *Seicento,* timid among his bold contemporaries, conscientious among so many that were careless and slovenly; and Guercino, who wrapped his compositions in gloom, and here and there enlivened them with rays of white light; and Lanfranco, who raised colossi on the arches and cupolas and the large wharfs!

Other eclectics, greater in technical force, painted at Naples under the influence of Caravaggio and Ribera; and one, the prince of modern Italian landscape painters, Salvator Rosa. Other eclectics at Genoa were: Bernardo Strozzi, a disciple of Caravaggio; and Benedetto Castiglione, a disciple of Van Dyck. This great painter influenced also a Sicilian master, Pietro Novelli, called *Il Monrealese.* Tuscany had other eclectics and more celebrated ones; the sweet Carlo Dolce, the antiquated Pietro Berrettini da Cortona.

At the dawn of the 18th century art decayed, became gayer, took on smaller and more cheerful proportions, twined itself like ivy, moved like a snail, turned into sketches, issued in spurts, poured itself forth in the cascades of Arcadia. Human figures lost their bones, and were released from the prison of enormous mantles of marbles in the midst of rocks and clouds, their hair flying in the wind, their arms in awkward and convulsed gesticulation. Then it was that classical antiquity attracted anew, like a siren for the modern artist. Benedetto XIV. outlawed from the throne the crusade for classicism; and Winckelman sounded the call to arms suddenly around the Greco-Roman *simulacri.* The antique entered brusquely into the midst of the crowd of *cicisbei,* advanced frowning gravely, severe, tyrannical amid the uproar of knaves. It was proper, then, that art, without high ideals, should turn to social life, renewing the affectations, but also collecting a treasure of observation and of truth in the hands of Leon Ghezzi, of the Loughi, etc., that erudition, philosophy, science came in to arrest art in its search for reality. The serious Menzo held in honor the principles of the Carracci; and Winckelman, with his idealistic enthusiasm for antique beauty, united all in admiration of the civilization which in Pompeii and Herculaneum arise like a phoenix from its ashes.

Decorative paintings in the *Settento* (18th century) had displayed its splendors in Venice through Gian Battista Tiepolo, Piazetta, and Sebastian Ricci; but in that century there was, in general, a kind of division in artistic work; some were landscape painters, among whom Zuccarelli, the Venetian, is admired; other, painters of ruins, of architectural compositions, the best of them being Giovan Paolo Pannini; others painted flowers and fruit, street scenes, and of these last Antonio Canali, Bernardo Belloto, and Francesco Guardi were unsurpassed.

In sculpture, Canova was a representative of his school even in its variations of tendency. In a relief in terra-cotta of the Seminary of Venice, the master shows himself still barocco; but after his youthful years all was changed to an assimilation to the antique. He had said to himself that it was necessary to look at "nature with the eyes of antiquity." But the blending of the antique with the new art was, until the end of the Setticento, the dream of scholars; to depict faces with profiles in which the forehead and the nose were in a straight line, the forehead brevis of Marziale, or tennis of Arazio, the forehead of the same length as the nose, and the rest of the face from the extremity of the nose to the end of the chin; to arrange the hair in a curve so as to make an oval of the face, to mark the fine eyebrows, to round the chin gracefully, etc., meant to construct the human body on an algebraic formula. Hence there appeared expressionless faces, oval in shape with soft effeminate cheeks and the surface of the face rounded and smooth, with curls on the forehead, and carefully twisted tresses; but these heads did not breathe, they grew by artificial means in a hothouse, without the warmth of imagination, without the rose of life. Classic art is a fossil tree that can no longer delight men with its shade. Canova hoped that the trunk of this tree would once more become green; and full of impulse for classic beauty, he began one of the many return movements towards the antique, which, in Italy, originating in the classic field from time to time at every breath of civilization, were fatal. From time to time, in the Italian sea, the tide rises and flows to the antique shores, where there are no longer either sirens, tritons, nor nereids.

In vain do we attempt to construct new triumphal arches and basilicas and theatres on the Roman model; the opulence and the Roman sense of empire are lacking. The various parts of the edifice may have corresponding proportions, measurements, marked by square and compass according to the antique; but the whole result is mechanical, material, pallid, cold. All the ornamentation was *volute,* as in the Roman, but it had no color and fell into identical, stereotyped forms. Decorative painting of Appriani attempted to recall to life the grotesque figures of the Roman thermæ and of the houses of Pompeii; but they remained without meaning in their conventional elegance. All this art passed by like a comet which had obstructed the light of the sun, and left long trails in the wretched art productions of the 19th century.

The *Ottocento* (19th century) was the century of archæology. The art of the past was persistently recalled; but neither the Cincinnati nor the Coriolani created by the art of the kingdom of Italy; neither the knights and the ladies embellished by the Roman sky; nor the saints of the pre-Raphaelites with the heads in a frame of gold fastened to their dress can express the new life. Now art idolized classic beauty, now it contorted itself in the neo-gothic spears; now it had a mystic fervor; now it became concupiscent; sometimes it turned towards the graceful *Quattrocento,* sometimes toward the solemn *Cinquecento,* or the ponderous *Seicento,* or the unrestraining *Settento.* Thus, the art of the past century remained without unity, its aims undefined, and desired only technical progress; now gathering about the past as around a plank of safety, now taking refuge in navigating without a compass in the kingdom of dreams. But, having achieved technical progress, and persuaded now that counterfeits of the antique are of no value, having abandoned academic ecclesiasticism, and feeling the need of adapting themselves to the sentiment of the common people, Italian art is preparing to speak the final word.

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24. **Italy — The Natural and Physical Sciences in Italy.** Old and young at the same time, Italy combines with the traditions of a glorious past in the field of science and the arts, the untrammeled energy of an overflowing vitality in modern times. She boasts among her sons the genial Leonardo da Vinci (q. v.), eminent as an artist and philosopher, an engineer and a naturalist; and the immortal Galileo (q. v.), a martyr to truth and human progress. And if the former, prophetic and solitary on his intellectual heights, did not exercise a great influence on the development of science, it was the latter, on the other hand, from whom were derived those sciences which on account of their methods are called exact sciences, and who had followers at once in the Academy of Cimento which took as its motto the celebrated «Provando e Riprovando.» A member of this Academy was Borelli, who applied the laws of mechanics to the motions of animals; and Torricelli, a pupil of Galileo, who invented the barometer and demonstrated the impossibility of perpetual motion.

At the close of the 18th century and at the dawn of the 19th century in Italy we see Galvani, who in 1891 published his celebrated work, 'De Viribus Electricitatis in Motu Musculari;' and Volta, who interpreted the experiments of Galvani with a greater intelligence and gave rise to a new branch of physics, the application of which has contributed very largely, next to the application of steam, in transforming our civilization.

Contemporary with the two above mentioned was Spallanzani, who disclosed the secret of fecundation.

The works of the poet and naturalist, G. B. Brocchi, on the other hand, belong entirely to the 19th century. He shows us the geological structure of the Apennines, and in his works on paleontology unfolds ideas which to a certain extent anticipate the theories of Darwin. To the same period belong the researches of Count Amedeo Avogadro, who was the first to insist on the distinction between atoms and molecules, and who discovered the law that bears his name; also the ingenious experiments of Melloni, who, through the discovery that heat rays had the essential characteristics of light rays, made an important contribution to the theory of the unity of physical forces, which had also a valiant defender in Father Secchi. We must also mention Dal Negro, who in 1830 built the first electric motor. Towards the middle of the century, Corti published his 'Recherches sur l'organe d'ouie des mammifères.' in which he reveals the mechanism of the auditory organs, discovering the one that bears his name; Fusinieri, a thinker who has not been appreciated at his full value, put forth ideas that were strangely similar to the most modern theories on the constitution of matter; and Ascanio Sobrero, in 1847, made a preparation of nitro-glycerine, which only 15 years later was made an industrial manufacture by Alfred Nobel.

At the present day the scientific institutes and laboratories of the great universities, and even of not a few of the middle-class and smaller colleges constitute so many centres of research, which, aside from their value to the professors of the special branches of science, furnish their assistants and collaborators and others (outside students), also the younger graduates of the universities, with their first equipment in the field of scientific research. The government observatory of the Collegio Romano (the old Jesuit college) at Rome; the observatory of the College of the Vatican; those of the Collegio di Brera at Milan, of Arcetri near Florence, of Genoa, Turin, Padua, Naples, Palermo and Catania, all of which, however, are not equipped with modern instruments, and others of minor importance, are zealously and earnestly devoted to the study of astronomy and celestial phenomena, as well as to meteorology and physical geography. In connection with these last two studies there are numerous allied institutes of which we will first mention the Central Bureau of Meteorology and Geo-dynamics, which was established by Pietro Tacchini and was under his direction for many years, and is now under the direction of L. Palazzo. This Bureau, besides making daily weather forecasts by aid of the regular observations of a vast chain of meteorological stations, gives incentive and impetus to allied scientific research. There are, besides the observatory of the Collegio Romano, which is connected with the above-mentioned Bureau of Meteorology, the Observatories of Rocca, di Papa, and of Vesuvius, established specially for the study of seismic and volcanic phenomena, the Observatories of Mount Cimone (2,160 metres above sea-level), of Mount Etna (2,950 metres) and of Monte Rosa (4,560 metres). By means of its meteorological bureau Italy has been able to join the international organization for the concerted universal study of seismic convulsions, and on the other hand the organization participates with the Italian Æronautic Society and the Military Æronautic Corps in international æronautic ascensions, from which meteorology derives the greatest benefit. There are similar institutes for botanical instruction and study, the first of which was founded in Italy in 1545.

Finally we will mention an institute which, thanks to the noble initiative and generosity of a stranger, arose on Italian soil, and is destined to pass entirely into the possession of Italy. We allude to the Zoological Institute at Naples, which was founded in 1870 by a German, Anton Dohrn, for the study of marine fauna and has become a model for similar institutes which have since been established at other seacoast towns. It is now being enlarged by the addition of another laboratory for the study of the physiology of marine animals.

In addition to the attention paid to scientific research in the universities and other institutes above mentioned, the scientific life of modern Italy displays itself in the Academies, which according to their statutes should gather in themselves whatever there may be of note in the intellectual ranks of the country, or of any of its provinces, and in the special Associations which, in return, seek for affiliation and exchange of ideas between students in the same branch of science. We will name among the Academies, some of which have already been in existence for a long time and are rich in glorious traditions and illustrious names, the Accademia dei Lincei in Rome, the Istituto Lombardo di Scienze e Lettére in Milan, the Istituto Veneto di Scienze, Lettére e Arti in Venice, the Academies of Turin, Naples and Bologna. Among the Scientific Associations we may mention Società Italiana di Scienze Naturali, the Società Geologica Italiana, the Società di Fisica, the Società Seismica, the Società degli Spettroscopisti, the Unione Zoologica, the Società per l'Entomologia, la Malacologia, etc. In addition to the transactions, memoirs and reports published by these Academies and Associations, scientific information is placed at our disposal by the publication of numerous technical journals, among which we may mention the *Annali di Matematica, pura ed applicata,* the *Gazzetta Chimica,* the *Archivio Zoologico,* the *Nuovo Giornale, Botanico,* the *Annali dell' Ufficio Centrale di Meteorologia e Geodinamica,* the *Rivista Italiana di Paleontologia.*

Passing now from institutions to men, from the work to the authors, and beginning according to ancient custom with astronomy, Italy of our own day gives us men who have acquired a merited celebrity even beyond the confines of their country and outside the circle of their co-laborers in the same path of science. Tempel, a native of Germany, who from 1875 until his death in 1889, was the director of the Observatory of Arcetri near Florence, was a keen observer and an unwearying discoverer of comets and of smaller planets. Father Secchi (1818-1878), who gained a world-wide reputation for the Astronomical Observatory of the Collegio Romano, of which he was the Director, devoted himself to the systematic study of the spectrum of the fixed stars, of which he made the first rational classification, based on the characteristics of their light rays. To Schiaparelli (b. 1835), the genial astronomer of the observatory of Brera, we owe the discovery of the relations between falling stars and comets, a lengthy series of exact studies relating to the planet Mars, of which he designed the first chart subsequent to the observations made by him during the planetary opposition of 1877-78, and finally, the establishment of the fact that Mercury and Venus in a manner analogous to what we know in regard to the moon, complete their revolution around the sun in the same time that it takes each of them to perform a complete revolution on its own axis. Tacchini (1838-1905), an unwearying organizer, took the initiative, or gave the impulse, in the establishing of scientific and astronomical societies. In his own personal studies solar physics predominated. He devoted himself to observing the most important solar eclipses of the year 1870, and later, and discovered the white protuberances in addition to the red protuberances already mentioned. In the same branch of science we have an accurate and efficient investigator in Riccò (b. 1844), who devoted his attention to terrestrial physics, and especially to the study of Mount Etna, in which field he was preceded by the two Gemmolaro and by Silvestri, and earned the name of biographer of the great Sicilian volcano.

The activity of Vesuvius, on the other hand, was observed and made the subject of study for many years by Palmieri (1807-1896). He was also one of the first to apply exact methods to the investigation of the phenomena of atmospheric electricity. And as this brings us into the domain of meteorology, we must mention Father Denza (1834-1894), an earnest worker and investigator, who made noteworthy improvement in the perfecting of meteorological instruments, and caused the establishment of regular observations in many mountain stations.

It is scarcely to be wondered at that in a country so frequently devastated by earthquakes as Italy, seismology should have found many earnest and efficient students. Among those who deserve first mention is De Rossi (1834-1898), although the tendency of his 'Meteorologia Endogena' to establish a connection between atmospheric and seismic phenomena cannot be said to be in conformity with the objective investigation of the facts. In the modern study of seismology, which pays minute attention to even the slightest movement of the earth's surface, the works and instruments of Agamennone, of Cancani and of Vicentini are of great value.

From volcanoes and seismology it is but a step to geology and paleontology, the fundamental principles of which were conceived, or at least instantly accepted, in Italy, where Leonardo da Vinci saw in some fossil the traces of animals and plants of former ages; where Brocchi, who may be called the father of modern geology, recognized the formation of the Apenines; and where Capellini (b. 1833) as early as 1861 developed his course of lectures on the basis of the Darwinian theory. Pilla (1805-1843) deserves mention as the precursor of many others in modern ideas; Meneghini (1811-1889) on account of his studies in Italian geology; Stoppani (1824-1891), the geologist of Northern Italy, who in his book 'Il bel paese' showed himself a master in the art of popularizing science; A. and E. Gismondi, as at the head of the Piedmontese school; Canavari for his 'Palaeontographica Italica.' In mineralogy we have Sansoni (1853-1895), the author of classical works on the crystalline forms of calcite; Bombicci (1833-1903), celebrated outside the domain of his special science as the inventor and strenuous upholder of the discharge of cannon as a preventive of hail; Viola crystallographer; and Artini, geologist.

Turning now to the exact sciences, in mathematics we find Betti, who taught mathematical physics at Pisa; Brioschi (1824-1897), who excelled in all branches of his science, and particularly in the theory of equations and determinants; Beltrami (1835-1900), who was remarkable for the clearness and elegance of his deductions; and Cremona (1830-1903), whose works in graphic statics and in projective geometry won him great fame. These were the masters of a host of students who to-day teach and advance their science throughout all Italy. In the present generation we have Dini, who teaches higher analysis; Bianchi, author of 'Lezioni di geometria differenziale;' D'Ovidio and Veronese, geometricians; Volterra, subtle mathematical physicist; Enriquez, a mathematician and philosopher.

In the domain of physics, the seed sown by the undying work of Volta was destined to bring forth fruit primarily in other lands, where Ohm discovered the law of the electric current, Ampère the electro-magnetism, and where Faraday explained induction and the laws of electrolysis. Nevertheless, in every age Italy has given precious contributions to physics. We need only mention Nobili, who constructed the first sensitive galvanometer, of which Melloni made use in his celebrated experiments on radiant heat; Dal Negro, inventor of the first electric motor; Mossotti (1791-1863), whose ideas on molecular force contained the germs of certain theories that were developed later by Faraday and Clausius; Matteucci (1811-1868), who conducted many researches on magnetism and on the phenomena of magnetism and induction. Felici (1819-1902), was a pupil of Matteucci, and his researches in electro-magnetic induction, which are admirable for their elegance and simplicity, furnished him with the subject-matter for a theory of induction which is a classic.

In modern times we name Blaserna, who established the first modern institute of physics in Italy; also Roiti, to whom we owe one of the first exact experiments determining the unity of electrical resistance; Pacinotti, who as a young man invented an apparatus that later, under the name of Gramme's Ring, became the characteristic part of dynamo-electric machines and of electric motors with continuous current; Battelli, unwearied investigator and unexcelled instructor. Foremost of all is Righi, a genial experimenter, who, in a series of prolonged researches into the electric discharges in gas, made many observations which anticipated the later discoveries of other investigators, and which have acquired added importance in the light of modern theories. By his studies on the subject of electric waves Righi completed the analogy already made evident by the classical experiments of Hertz, between these waves and the motion of light, and at the same time inspired the first experiments of Guglielmo Marconi. Marconi himself, to whose genial perception we owe wireless telegraphy, must be mentioned in this review; for his work, as well in its beginning as in the later phases of its development, constitutes a splendid application of scientific principles and discoveries, and is a shining proof of the practical value that may be obtained from even the most abstract researches. We must not omit from the list of physicists of the present day, Galileo Ferraris (1847-1897), although he was snatched from his scientific labors 10 years ago; for his work, through which originated the discovery of the rotary magnetic field, which has found extensive application in electric motors, is stamped with the imprint of modern ideas.

Chemistry, the sister science of physics, often finds herself face to face with problems which by their nature are related to both these sciences, or which necessitate the use of methods of study belonging to the domain of physics. Hence, there arose an intermediate branch of science, physical chemistry, in the beginning of which Italy also participated when Avogadro formulated his celebrated law which correlates the volume of different gases with the number of the molecules they contain. Cannizzaro, the Nestor of Italian chemistry of the present day, insisted on the exact distinction between atoms and molecules, which was due likewise to Avogadro. In order to determine the molecular weight of composite substances, Cannizzaro made use for the first time of the density of their vapors. The recent progress in physical chemistry, which was inaugurated some decades ago by the study of dilute solutions, and by the application of the principles of thermo-dynamics in the investigation of certain problems in chemistry, was greatly aided by the contributions of Italy in the labors of Paternò and his pupils, and of the schools of Ciamician and Nasini. Cannizzaro's researches on the subject of alcohols are also notable. The labors in organic chemistry of Ciamician, excellent as a teacher, are also celebrated, as well as his studies, carried on in association with Silber, on certain chemical actions of light. Nasini is another brilliant teacher, who has recently made a study of the gases and radio-active emanations of the thermal springs and baths of Italy. Finally, in the domains where chemistry is auxiliary to other sciences we must mention Selmi, who discovered the ptomaines, and Guareschi, who contributed greatly to legal chemistry.

Among modern zoologists Italy can boast of Grassi, who discovered the secret of the propagation and metamorphosis of the eel, and by means of his celebrated researches, carried on in association with Bignami and Bastianelli, established beyond a doubt the fact that mosquitoes, and especially the Anopheles claviger, or large mosquito, are the agents in the diffusion of the parasite of malaria. These researches opened a way by means of which successful attempts have been made to fight malarial infection (and other diseases that are transmitted in like manner), whether by taking timely precautions against the sting of these insects, or by extirpating the insects themselves by drying up the marshes in which their larvæ abound. Another eminent zoologist, Emery, author of an able manual of his science, has also acquired deserved fame through his monograph on the Fierasfer, and he is equally well known for his exact and diligent studies in the ant world.

In botany, Italy has given us Malpighi (1628-1694), who was the first to discover the mechanism of nutrition in plants, and the relative function of foliage. In modern times we have Delpino (1833-1905), an eminently scientific mind and the inaugurator of vegetable biology, which from 1867 he has dissociated from physiology. It is he who by systematic research established the functions of animals, and of the atmospheric factors in the biology of flowers, and who classified plants with exactness, according to the manner of their fecundation. In the past and in the present generation we may mention Parlatore and Carnel, horticulturists; Saccardo, the mycologist, to whom we owe the 'Sylloge fungorum omnium;' and Pirotta, author of a vegetable physiology.

This cursory review of the condition of the sciences in Italy does not pretend to be exhaustive. In the midst of the activities and feverish life of a great nation it is difficult enough, if not impossible, to distinguish all the ideas that contain in themselves the germ of future progress, and the calm and impartial observer would find himself at a disadvantage if he should try to classify all intellects and weigh all merits. Instead of being a finished picture which is placed before the reader, this is only a rough sketch—a sketch, however, which while not defining particulars, should give a lively and clear impression of the essential characteristics of the object represented. And, thus, this sketch is intended to indicate whatever there is of enduring excellence or is characteristic in the scientific life of modern Italy.

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25. Italy—Italian Music. The death of Giuseppe Verdi, without a doubt, signalized with the ruthless fact of the inevitable, the termination of the most typical and most glorious epoch of Italian music. From this point of view the date of 27 Jan. 1901, is full of historical importance. With it closes definitely the heroic age of Italian national music, of that art which, particularly in the works of G. Rossini, V. Bellini, G. Domizetti, and of G. Verdi, irradiated the world. At the death of Verdi all understood that the legendary age of Italian opera had come to a close forever, and that now it would behoove us to deal in realities. To the heroes, succeeded simple mortals; to the rule of genius, that of technique. What we lost in sublimity, we attempted to gain in profundity; compensation was sought for lack of clearness in the design by brilliancy of coloring; for the loss of melodious verse, by the intensity of psychological meaning; and local color took the place of passional intensity.

Yet this new art preserved intact some precious characteristics of the Italian race, this art which, while struggling nobly in the midst of surroundings that became each day more refractory and utilitarian, still succeeded in making its influence felt at home and abroad, leaving always a genial impression, and Italian national pride has no reason to be ashamed of it. It is, in fact, an indication of our constant progress in musical culture, which to-day shows a tendency to reorganize itself on broad and healthy lines.

We shall now see how the way was prepared for the actual musical movement, how and when it was outlined, assuming definite characteristics, and what were its successive vicissitudes up to the present time.

Giuseppe Verdi as long as he lived was at the head of Italian musical evolution. Alfredo Catalani, Amilene Ponchielli and Arrigo Boito were ancient and authoritative pioneers.

Arrigo Boito, with the aristocratic and complex temperament of a poet and a musician, writing for Ponchielli the libretto of 'Gioconda,' and for Verdi the two splendid libretti 'Othello' and 'Falstaff,' collaborated efficiently in the renaissance of Italian lyric drama. But his most direct and decisive action was in the composition of the score and the libretto of that 'Mefistofele,' which was given in Milan in 1868, and revived in Bologna in 1875. A happy union of classicism and modernity, 'Mefistofele,' together with the last *chef-d'-œuvres* of Verdi had truly a great awakening power.

With his vocal scores, Ponchielli, especially in his 'Gioconda,' divested of obsolete conventionalism and animated by frank human passion prepared the way for modern realistic melodrama; while Catalani, of the delicately elegaic inspiration, with the Lorely and the Wally, devoted himself by preference to Wagnerian ideals. There are not wanting, then, notable composers. However, the inventive faculty of Italian musicians which appeared for so long to have slumbered in idleness did not awaken until 15 years later in 'Cavalleria Rusticana,' by Mascagni, whose marvellous success was the commencement of a new school, and of a new dawn of art. In the fever of novelty and of modernity at any cost, this music gave evidence of the haste with which it had been created, as though it would recover the time that had been lost. With some exceptions it almost always showed the spasmodic effort to attain half results, rather than the serene joy of one who has achieved the fullness of completion. However, many of those works exercised at the time a fascination and continue to do so. Bearing the imprint of a broad modernity they have a happy relation to the indistinct needs of our souls; and if, in their bearing on art and artists they represent only a halfway house on the wearisome road, to the public they may well mean the revival of opera. Such was certainly 'Cavalleria Rusticana,' in spite of some inequality of style in this melodic flow so limpid and spontaneous, that characterizes it from beginning to end, but especially in the freedom of movement and the freshness of impressions which were to make of these short scenes of Sicilian life the basis of the new musical trend.

After the triumph of 'Cavalleria Rusticana' nothing but realistic melodrama had any success in Italy. The madness of *Carmen* and the plunging of the dagger of *Don Jose* evolved on æsthetic canons of the powerful and elegant art of Giorgio Bozet, had already prepared a propitious soil. The love song of Turiddu and the slash of the knife of Compare Alfio did the rest. And here we have the realistic opera with Southern setting invading Italian ground, and the gentlemen with cape and sword retiring in good order before the heroes of Malavita, of M. Giordana, before the oyster venders of A. *Santa Lucia* of Maestro Lasca, before the Camorrists of *A basso porto,* of Maestro Spinelli.

Meanwhile Maestro Leoncavallo, following implicitly the word realism, gained a wide and well deserved reputation with his 'Pagliacci,' while the Maestro Cilea with 'l'Arlesiana,' and Gaetano Luporino with 'Dispetti Amorosi' and the 'Collana di Pasqua' were well received, as they also followed the prevailing artistic tendency. It was not thus with Giacomo Puccini, who was already known before Mascagni by his 'Villi' and his 'Edgar' of romantic fanciful order. Following these with 'Manon,' with the exceedingly popular 'Bohème' (his masterpiece), with the tragic 'Tosca' and the exotic 'Madame Butterfly,' he accomplished a gradual evolution towards more realistic forms, while maintaining in his art a subtle passionate fragrance that betrays its far away romantic origin.

We must not suppose, however, that all the younger maestri followed exactly in the steps of Mascagni, Puccini, and Leoncavallo. Each of them studied to invent something new, but in his own manner and according to his own ideas. Thus Alberto Franchetti, in his 'Asrael,' showed himself from the first to be a romanticist of the romanticists, enamored of Wagner and of the German school to which he belonged by virtue of the exact and profound study he had carried on in Germany. 'Asrael,' a splendid example of polyphonic technique, and remarkable for its brilliant orchestration, gives the gauge of Franchetti's talent, that loves grandeur rather than simplicity, and places him readily in the foremost rank. In truth, Franchetti, together with Mascagni and Puccini, completes the famous triumvirate of younger maestri, who for some years have been the sole representatives of the most modern musical school.

But others, and not a few, may be added to those already mentioned, and they must be noticed here to complete the character of this first period, full of activity and illusions. Among the works that deserve special mention are 'Hero and Leander,' by Luigi Mancinelli; 'Lorenza,' by Mascheroni; 'Maruzza' and 'Colonia libera,' by Floridia; 'Christ at the Feast of Purim,' the remarkable philosophico-social drama by Giovanni Bovio, set to music by Maestro Giannetti; and besides these, 'La Pellegrina,' by Clementi; 'Ratcliff,' by Pizzi; 'Savitri,' by the Maestro Conti; 'Desta a Marina,' by Coronaro; 'Celeste,' 'Gringoire' and 'Cortigiana,' by Scontrino, and many others upon whom the attention of the public has been centred, but only in fleeting fashion.

Considered as a whole, this first period of the modern movement in music had, therefore, a prevailing characteristic of realism, as is shown in the selection of subjects, and in the form of the libretto. All of which does not prevent this predominant school with the Bizetian (Bizet) characteristics from being met in the field by an almost contemporaneous school with Wagnerian proclivities, represented by Franchetti, Canti, Mancinelli, and a few others. It was natural that the two schools should mutually exercise an influence on each other, and thus it happened that with reciprocal advantage the external differences in subject-matter and form finally disappeared and we come to a second period which represents the fusion of the two schools. A new programme seems to have been substituted for the ultra-realistic, and ultra-romantic order which had served their time, and the new programme had a higher conception of dramatic environment and of a technique on a broader basis. The first honors in the bringing about of this evolution belong again to Mascagni, Puccini, and Franchetti. Already in 'Amico Fritz' and even more in 'Ratcliff'—a profound artistic conception—Mascagni knew how to inspire crude realism with a breath of sublime poetry. And if Rentzau, Silvano, and Zanetto had caused a halt in his upward career, 'Iris' came just in time to reawaken the former confidence of the public. The dramatic action of 'Iris' is a curious and strange blending of the real and the fantastic; but Mascagni's inspiration gave it new treasures of harmony and orchestration, which made this opera the worthy rival of 'Cavalleria Rusticana.' Puccini met with similar favor in his 'Tosca,' with its gloomy and violent coloring, but strongly passionate style. Franchetti, after creating in 'Asrael' and 'Cristoforo Colombo' splendid fantastic and historical pictures, attempted with a happy touch to portray modern epic sentiment in 'Germania.' Leoncavallo, after making in his 'Medici' an incursion into the field of the great historical drama, and then coming back to realism in his 'Bohème,' gave us in 'Zaza' the modern passional opera on intimate social lines. Meanwhile in 'Chenier' and 'Fedora' a new and strong temperament in opera was revealed in the Maestro Giordano, who, in these much praised works showed himself to possess the theatrical vision. Finally, the Maestro Cilea in 'Adrienne Lecouvreur' succeeded in captivating completely the attention of the public.

Taken altogether, the productions of this period are found to be better constructed and more balanced than those of the preceding period. The almost excessive seeking for direct scenic effect, which was the evident outcome of the choice of highly sensational subjects was now largely replaced by a greater nobility in style. However, we are not considering a sporadic condition of our lyric drama, but actual characteristics common to all composers and which became more markedly evident in the third and more recent period of our operatic activity.

The success of Cordara's lyric mystery, 'La tentazione di Gesu,' founded on the verses of the illustrious poet Arturo Graf, was a significant sign of the new aspirations.

Another worthy musician, Giacomo Orefice, already known by his 'Gladiatore' and his 'Cecilia,' acquired a deserved fame by his 'Chopin,' in which, with the able help of the poet Angiolo Orvieto, he cleverly portrayed the life and music of the great Polish musician in a lyrical drama; and this fame was increased by his 'Moses,' with its mystically grand, eloquent phraseology and its exalted style. The present output is full of the high conceptions and an effort to develop a more marked national character. This character of nationality is a question of life or death. On it depends whether Italian opera shall be able to reaffirm its traditional preëminence in the face of the tremendous competition of the schools of other countries.

Besides opera, which in music is our most typical form and the most complete of our musical activity, there are also other kinds of music in which the Italians have taken honors. Among these is oratorio.

This form of art, which is, as it were, an imaginary bridge connecting sacred and secular music, is of purely Italian origin. But while it developed most markedly outside of Italy under Bach and Handel, it became popular in Italy towards the end of the 17th century, in a long period of decadence which lasted to our day. To the Abbot Perosi belongs the honor of recalling this noble order of music to new life. The oratorios of Perosi are in fact a happy grafting of dramatic sentiment and improved modern technique on the ancient and glorious stock of Palestrinian traditions. They awaken in the popular mind a deep echo which appeared to be dying out, and their great success inaugurates a true and important evolution in oratorical construction, which had worthy exponents in Maestro Tebaldini, Padre Ambrogio, and Maestro Sonzogno. Oratorio had also a conscientious historian in the young and learned Abbé Pasquetti, author of a book on 'Musical Oratorio' in Italy.

As of oratorio, so also of real and regular sacred music there is much to say. In publishing his famous *Motu proprio sulla musica sacra,* Pius X. laid down minute rules not only for the execution, but also the composition of church music, which he desired to bring back to its ancient purity. Among the most severely censured writers of sacred music are Bossi, Gallignani, Tebaldini, Terrabugio, and others.

It is unpleasant for an Italian to have to acknowledge that Italian symphonists receive little encouragement. Italy certainly has not the glorious symphonic traditions of which Germany can boast. Nevertheless she has acquired some fame, through Bolzoni, Celega, Scontrino in his 'Sinfonia Marinaresca,' and above all through Giovanni Sgambati and Giuseppe Martucci, the present Director of the National Conservatory of Naples, in his highly valued symphonies in «D» and in «F» major.

Also in instrumental chamber music, Sgambati and Martucci have made themselves conspicuous. In this field Italian production is unable to compete with foreigners. However, artistic qualities may be found in the works of Bossi, Buonamici, Adolfo Crescentini, Frugatta, Del Valle, Faini, Enrico Oswald, and in three interesting quartettes by A. Scontrini. Among the most recent works those of Zanella, Tarenghi, and Brogi deserve praise.

Vocal Chamber Music has not with us taken on the classical character possessed by the *lieder* (songs) of Schumann and Schubert in Germany; it deals exclusively with ballads, and the ballads of Tosti, Rotoli, Denza, M. Costa, and E. De Leva are universally known.

The great popularity of Italian singers in other countries obviates the need of mentioning names. There is almost always a wealth of good voices in Italy and there will never be lacking of those who understand the delicate mechanism of the Italian *Bel Canto.*

The schools of stringed instruments of Milan, Turin, Rome, Naples, Pesaro, and Parma enjoy a merited renown, and in general, the musical conservatories of these cities graduate a large number of the finest instrumentalists. But Italian musical instruction is not up to modern standards. And a proof of this is the fact that almost all our best concertists (orchestra players) have studied, or perfected themselves in Belgium or Germany. Besides her orchestra players and her singers Italy boasts of a great number of orchestra leaders of renown, such as Mancinelli, Martucci, and Toscanini, and the Maestri Mugnone, Usiglio, Ferraris, and many others.

Then in the field of musical literature there are writers of genius and intelligence, as Nappi, Depanis, Franchi-Vernecq, Pozza, Checchi, and Monaldi.

In spite of its partial disorganization and consequent scattering of energy, Italian musical art has proved its inexhaustible vitality, and its admirable faculty of adapting itself to the new age. But the instruction now given in conservatories should be made more practical and more modern; care and intelligence should be given to the reorganization of Italian musical life, which from the theatre to the concert hall is in a condition of uncertainty and continual crises; and above all, Italian musicians need to give serious thought to impressing on all their musical productions a more vigorous and more sincere Italian character. CARLO CORDARA,

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26. **Italy—Economic Conditions.** The fundamental traits of the modern economic conditions are similar in the principal countries of Europe and America. Wherever the returns from property are distinct from the returns from labor, wherever simple accumulation is the source of industrial remuneration; the more numerous class of laborers and persons in the employ of others are recompensed with wages, for the most part not commensurate with the productivity of the enterprise. In recent times wages have shown a tendency to rise to a greater or lesser degree above the amount required for bare physical subsistence; and the conditions of workmen have improved also in function of the growth and vigor of their unions and organized insistence on more liberal compensation.

But if the general laws of distribution are uniform, the actual distribution varies in different countries; because of the diversity in the primary economic conditions of the various classes; by reason of the number and relative importance of the fractional parts into which the proprietary class is divided; because of the degree of density of the population, and other causes; all of which exercise a greater or lesser degree of influence on the entire social system. Hence, the economics of each nation have their special peculiarities resulting from their specific conditions. In considering these conditions as they exist in Italy, we must remember that as an organized political unit Italy has had less than half a century of existence, whilst as regards the degree of cultivation of the land and country, she is economically ancient. But not until political unity had been obtained was there any considerable development of capital and an increase of industries in the various parts of Italy. The constitution of the new kingdom, therefore, marks an essential moment in Italian economic history. The accomplishment of political unity which is the brilliant triumph of the past generation has also given a special direction to public finances, which ought to be subordinated to the particular needs of the new collective organization, and in harmony rather with the principle of productive taxation, than with that of rates chosen in proportion to the individual revenues and wealth. In addition to this the new state assumed the debts and the deficit of the ex-states, who transmitted to her an onerous burden, about 2,250,000,000 lire of public debt, besides 100,000,000 lire of deficit.* The excess of expenditure was augmented by the expenses of war and of civil renovation, as the consolidated debt continued to increase largely, and the taxes by degrees made greater and more absolute demands on the wealth of the taxpayers. A persistent fight was instituted against the deficit which, from 700,000,000 lire in 1866 decreased to less than 150,000,000 lire, and except for a rise in 1870 began sensibly to decline, and in 1875 became transformed into surplus. Trusting too much to the natural increment of revenue and the permanent efficacy of transitory expedients, the government agreed to a disproportionate amount of expenditure, and thus, after 10 years, a troublesome period occurred similar to the first, and in order to steer through this the government was obliged to practise the greatest economy, to increase the rate of many taxes, to introduce fresh taxes, to prohibit in the future recourse to the consolidated debt.

This severe political action not only tended to reëstablish the equilibrium of the budget, and to the making of advantageous and continuous surplus after 1896-97, but served to give a stability to the Italian budget that richer nations may envy. In 1902-03, the budget showed a realized surplus of 99,000,000 lire; in 1904-05, of above 47,000,000, although an extraordinary but productive expenditure had to be met with the ordinary income. The prices of Italian public stocks in the last few years were maintained above par, so that on 29 June, 1906, the government could put into force the law whereby the 5 per cent. gross and 4 per cent. net obligations for an entire sum of more than 8,000,000,000 of capital were converted into obligations bearing only 3.75 per cent. interest and automatically transformable after 15 years into 3.50 per cent., thereby causing a saving to the government of many millions in interest charges. Banking conditions have also improved notably, doubtless because in conformity with the provisions of the law of 1894, the reserve funds have increased, whilst the industrial and commercial expansion produced a greater demand for bills of credit, so that agio was done away with, although as yet conversion at sight into metallic money has not been attained.

These facts are quite remarkable, but one must not infer only from the financial prosperity of the government and the sound state banking circulation that the condition of national economics is absolutely vigorous. Taxation in Italy is very heavy; its total perhaps equals one-fifth of the annual production, and although the system of public revenue is complete in the sense that it reaches all the direct and indirect sources of individual economics, it is defective as regards elasticity, coordination, and is too burdensome upon the most necessary articles of consumption. While the land and house taxes have the character of a real tax, that on the income (ricehezzi mobile) is personal, and may relate to profits, interest, honorariums, stipends, salaries, but which, by its character of a partial tax, hardly serves as an offset to the severity of the first two taxes. Permanent incomes are taxed at a higher rate than temporary or uncertain incomes; the exemptions are few and the minimum of exemption is low. Another 200,000,000 lire is obtained from a class of imposts called taxes on business, but the general opinion at present is that they should be reformed as to their acceptation, as annoyances are caused by their collection. Modern progress was only evidenced in 1902 in the taxes on succession, and this is the laudable initiative to a better distribution of the taxation. But it is to be deplored that the food and home of the workingman should be so heavily burdened with imposts. A diminution of the rate of taxation would probably lead to a rapid increase of fiscal revenue, through the expansion of consumption, as occurred recently after the reduction of the duty on Brazilian coffee. But although it would be a benefit to finance and economics, it is not given any consideration on account of commercial policy. The duty on grain is 7.50 the quintal, and if it yields the state a variable, though always a considerable revenue, it places on the taxpayers the heavy burden of about 200,000,000 lire. Added to this pernicious distribution of wealth, owing to the duty, there has been no advance in the cultivation of cereals, and now the average yield of 10 or 11 hictoliters per acre is still small. Taken altogether, agricultural products are on the increase; unproductive land is becoming scarce. An estimate, allowing a wide margin of approximation, in 1896-98 gave a total of gross agricultural products of about 2,751,000,000 of Italian lire, to which must be added 90,000,000 lire for the forest land, and 1,500,000,000 lire for cattle; amounts that perhaps those who are informed will consider less than the reality as regards the amount of savings and the number of the agricultural population, which, considering the inhabitants employed in other occupations, amounts to 40 per cent. of the whole, while 19 per cent. are employed in manufacturing industries, and 4¾ per cent. in commerce.

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*An Italian lira is equal to a little less than 20 cents.

Although the agricultural protectionism was counterbalanced by the industrial protectionism which developed after 1887 and was followed by a period of depression, there may be seen a noteworthy progress in the principal lines of production. The value of fuel for industrial use has increased, the power of steam engines and other motors, among which hydraulic and electric motors take the lead, increases in proportion to the increasing requirements of labor. The production of silk has grown remarkably, especially in the last 10 years, so has the cotton crop, especially the inferior grades; great perfection has been attained in the tanning of leather; and there has been a great increase in the chemical industries.

The bulk of international commerce, which, in the two years of 1890 and 1891 was represented by an average value of 2,100,000,000 lire a year, increased in the two years 1904-05, to an average of 3,649,000,000 lire a year. A small portion of this increase may be attributed to variations in price, and since then we cannot say that there has been any diminution in internal commerce. The indications are significant, and besides, agree with so many others that we may draw conclusions, for example, as to the increase in railroads, postal business, telegraphs, deposits in banks and savings banks, etc. But it is certain that the bulk of Italian foreign commerce is small compared with the foreign commerce of England, France, or Germany.

An industrial increase may be noticed; but the greater part of these factories are of small production. The average number of employes or operatives in each factory rose to 25 in 1876 and 38 in 1903, allowing naturally for differences in the different branches according to the relative technical requirements.

There are few large fortunes in Italy. Nitti made a calculation that there are from 1,500 to 1,600 millionaires; while in Germany there are about 11,000; in France, 15,000; and more than 30,000 in England. Every year minor inheritances of about 2,000 lire compose more than three-fourths of the total number; and those not exceeding 50,000 lire 98 per cent. The general wealth of 54,000,000,000 lire in 1885-90 rose to 65,000,000,000 lire in 1902-03.

In regard to the conditions of the laboring classes, the Bureau of Statistics has shown that in 1871 the wage per hour on an average might be estimated at 0.171 lire and in 1903 at 0.265. Taking into account the price of grain it would have taken a laborer 183 hours of toil during the first period to enable him to buy a quintal of grain; and during the second period, only 91 hours. According to the researches of Signori Geisser e Magrini, the average increase in actual wages in the usual industries was from 86 per cent. in 1862, to 192 in 1903, an increase, therefore, of 123 per cent. The variations, however, are many; and if we maintain that to-day the expert operative commands wages as high as 7 to 8 lire a day, the condition of the inferior workmen is a sad one, especially those that are not organized and who belong to domestic service. According to a census of workmen taken by the Umantaria at Milan, out of more than 122,397 persons who on 1 July, 1903, complained of their wages, 62,201 or 71.45 per cent. of the operatives received a wage of one to three lire a day, and out of these 41,389 operatives, equal to 91.31 per cent., less than one to one and one-half lire. In agricultural labor the wages were ascertained in 1901; the average wages, except for temporary increases, are even less than in the industries mentioned, and are reduced, according as there is a lack of work, which so often happens in Italy particularly with agricultural labor.

The increasing emigration, which comprises for the most part agricultural laborers, must not be looked upon as an indication of absolute poverty, but is rather a symptom of the difference between Italian and foreign wages. It has to a certain extent aided in eliminating the enormous excess of births over deaths, and has promoted savings which go to augment the national capitalization; it has also helped to establish certain forms of agricultural contracts, but it certainly has deprived Italian industry of valuable energy and changed the special demographic constitution of some of the southern countries.

The social legislation makes provision almost exclusively for disabled workmen (pensions for the old and infirm, and for extraordinary emergencies obligatory insurance against the accidents incident to labor), while they hardly make any provision for well workmen, nor even for women and children. In regard to this class of workers more extensive provisions have been made to prevent the employment of young children and to shorten the hours of labor; but the inspection is not sufficiently rigorous, so that the legal regulations are almost systematically violated. However, a course of instructive studies was instituted by the Labor Bureau (1904) and there began to be a more rigorous application of the protective laws, which is always more readily brought about by the solid organization of the labor federations. If strikes are still of frequent occurrence, there are not lacking instances of a peaceful settlement of the disputes between employers and employes and the arrangement of mutual contracts.

It is certain that the progress in industrial civilization and the production of wealth is greater in Northern Italy than in the central and southern provinces, which is probably owing to intellectual and moral causes. There is less illiteracy in the northern provinces than in the general average of the kingdom or in the southern provinces. While in the province of Turin 86.25 per cent. of the population above six years of age knows how to read, in the province of Cosenza—which represents the highest degree of illiteracy—only 20.82 per cent. can read. And as to the criminality, in Sicily and Sardinia the crime of homicide attains its highest figure, more than double that of the rest of the kingdom, and is very frequent in Campania and Calabria; while in Lombardy and Venetia it is at about the same rate as in the most progressive countries of Europe—2.55 and 2.62 in 100,000 of the population in Venetia and Lombardy, and 29.11 in Sicily, in 1902. But between 1880 and 1889 statistics showed a decrease of 30 per cent. in homicides in Calabria and Campania; and in the southern provinces, more open to traffic and changes, the proportion of the decrease is greater than in the northern provinces; thus it is 12.91 in 100,000 in the province of Bari and 9.3 in that of Lecce.

From the fragmentary notes here given, it may be seen that in Italy wealth and capital, although small compared with that of the more important countries of Europe and America, has greatly developed; that industry has made remarkable progress, more in some regions than in others. Also the wages of the laboring classes, while inferior to those of workmen in other countries more advanced in civilization, have nevertheless almost doubled in 30 years, although this amelioration does not extend to all branches of the working class. Social legislation is always very incomplete, but even here there is more than a beginning of building up and more effectual application of the law. It is only by degrees that the labor unions are including less skilled workmen and women workers, and that legislative provisions will be made for the rank and file of laborers from which the whole class of operatives will also derive an ulterior benefit.

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27. **Italy — Agriculture.** *Horography.* — Italy, by reason of its geographical situation, although in the Temperate Zone, gives us a synthesis of the vegetation of Europe. Next to Switzerland it is the most mountainous country in Europe. Two-thirds of its surface, comprising 288,588 square kilometres,* are covered by the mountain chain of the Alps (6,000,000 hectares), and by the Apennines (11,500,000 hectares*); and of these two-thirds, 56,000 square kilometres are unproductive of any vegetation, from natural causes. The remaining portion is only partially cultivated, and is only fairly productive in certain portions.

Italy contains the great plain of the basin of the Po, which covers an extent of more than 4,000,000 hectares, and the smaller plains which extend along the Mediterranean, in the Pisan, Grossetan, Roman, and Campanian territory; along the Adriatic in the tableland of Apulia (1,300,000 hectares); and also along the Calabrian, Sicilian and Sardinian sea coast, where they are smaller.

Climatology.—Sicily and Lower Italy, as regards the rainfall, have an absolutely littoral climate, with a minimum of rain in summer, and a maximum in winter. The valley of the Po, on the contrary, has an inland climate with two maximums of rain, in spring and in autumn, and two minimums, in summer and in winter. Central Italy has an uncertain climate, but resembles more that of the sea coast, with a maximum of rain in November and a minimum in July. On the Mediterranean slopes the rainfall is much greater than on the Adriatic side. In the Continental portion of Italy, the climate is much colder in winter, and much warmer in summer. The peninsula portion is warmer in the central part, because the climate is tempered by the vicinity of the Mediterranean, which does not, however, temper the heat of summer. The insular portion has a warm, invariable, dry climate, although with a high degree of absolute humidity; it is serene, has little rain, and is intensely dry in summer.

Hailstorms are most frequent in the Alpine Zone, extending to the foot of the Rhetian Alps, the Carinthian and the Julian Alps; and in a Tyrrhenian belt extending from the Arno to Calabria; and less frequent in a Paduan belt beginning at the Maritime Alps, the Cotian Graie and Pennine Alps, and extending to the east as far as the mouths of the Po; and in an Adriatic belt which extends from the marches to the Salentine peninsula and to Sicily.

Agricultural Regions.—The agricultural regions of Italy may be divided into five: (1) The acid fruit region; (2) the olive regions; (3) the vine-growing region; (4) the chesnut region; (5) the forest region, which it is hard to define exactly.

Agriculture presents itself under the most different aspects, as it partakes of the character of northern as well as southern cultivation. Rye, buckwheat, potatoes, chestnuts, are principally cultivated in the Alps, in the Apennines, and their spurs. In the rolling country and in the central belt, wheat, maize, grapevines, legumimous seed plants, hemp, and flax are grown. In the plains, and in the hilly regions of the most southerly portions, olives, almonds, and sour acid fruits thrive, and at one time, in the extreme edge of the peninsula, and in Sicily, cotton was a favorite crop.

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* In reducing Italian measures to the equivalents in common use in Great Britain and the United States, a "hectare" equals 2.471 acres; a "kilogramme" equals 2.204 pounds; a "kilometre" equals 5 furlongs; 8k. equals 5 miles; a "metre" equals 3 ft. 3 in.

Extent of Cultivation.—Italy is lacking in reliable recent Agricultural statistics, and it is therefore difficult to determine with relative precision the changes that have taken place in the extent of cultivation, and the sum of production. From the reports of the Superintendent of Agriculture, published in 1894, which refer to 1892, and those given out by V. Stringher in 1905, relating to 1902, the following statistics are given concerning the distribution of cultivation and the variations of agriculture from 1893-1902. According to the reports published in 1894, the unproductive lands measured 4,694, 204 hectares, of which the improvable portion would have measured 500,000 hectares; the sterile, or non-productive lands, 3,878,187 hectares; reclaimable land about 1,000,000 hectares.

PRODUCTIVE LANDS (HECTARES).

	1892.	1902.
Land under cultivation	15,267,509	15,662,000
Chestnuts	412,491	412,500
Forests	4,092,731	3,500,000
Alpine pasture lands	358,776	360,000
Total	20,131,507	19,934,500

CULTIVATED LANDS (HECTARES).

	1892.	1902.
Wheat	4,529,574	4,760,000
Maize	1,903,233	1,753,000
Rice	197,820	188,600
Barley	313,152	297,500
Rye	143,633	143,633
Oats	450,418	473,700
Beans	413,451	416,500
Potatoes	194,221	200,000
Grapevines (specialized cultivation)	500,000	700,000
Olives (specialized cultivation)	500,000	500,000
Acid Fruits	70,000	70,000
Hemp	100,794	100,000
Flax	51,588	52,000
Leguminous vegetables	200,000	200,000
Meadowland	5,519,539	5,564,000
Kitchen gardens, orchards, flower gardens	150,000	150,000
Tobacco	4.157	4,700
Sumac	25,649	25,649
Sugar Beets	——	50,000

In the 10 years under consideration there was a considerable increase of the area of cultivation, about 400,000 hectares, *i. e.* 40,000 hectares a year. During this period, what might be called a new plant came into the Italian rural economy, the sugar beet, in consequence of the high protective tariff which the government placed on the manufacture of native sugar, with the grave injury to the exchequer, and no advantage to the consumer, the advantage accruing to the speculator alone, and not to the national budget.

Agrarian Products.—Since 1894 the Minister of Agriculture has restricted his reports concerning agrarian production to approximate statistics only in regard to the six harvests; wheat, maize, rice, grapes (wine), olive oil, and acid fruits, and these are published only until 1903.

We must add to these the cultivation of beet sugar, which covered about 50,000 hectares, with an average production of 250 cwt. a hectare; and that of tobacco, much hampered by fiscal exactions, which in 1893-1894 covered 4,313 hectares (65,994,829 plants), and in 1904-1905 covered 4,780 hectares in the Campagna with 79,635,749 plants.

In spite of the relative inaccuracy in the statistical figures given, they still show an undoubted progress in Italian agriculture which is especially noticeable in the last 10 years, and this progress was much more marked in Northern Italy (particularly in Venetia and Emilia);

AGRARIAN PRODUCTION FROM 1890—1894.

CROPS	*Area* Hectares	PRODUCTION		
		Unit of Measure	Average per Hectare	Total
Corn (wheat)	4,513,849	hectoliters	10.08	45,488,667
Maize	1,908,360	"	13,37	25,509,610
Rice	182,449	"	34.08	6,217,228
Barley	315,810	"	10.01	3,161,335
Rye	142,633	"	10.90	1,554,992
Oats	455,158	"	14.15	6,442,530
Beans, peas and lentils	441,477	"	(a) 3.09	1,365,161
Lupines, chick-peas, etc	419,614	"	(a) 8.10	3,398,654
Potatoes	189,487	quintals	38.92	7,375,008
Wine	3,445,257	hectoliters	(a) 9.20	31,680,165
Olive Oil	1,038,686	"	(a) 2.42	2,514,698
Acid fruits (1)	16,667,466	fruits	(tree) 206	3428,009,143
Chestnuts	411,553	quintals	6.56	2,698,090
Hemp	104,294	"	6,95	724,382
Linen	52,561	"	3.61	189,939
Silk cocoons (2)	1,168 481	kilograms	34.93	40,817,493
			(per oz.)	4) 53,800,000
Wool (3)	"	"	"	9,729,846
MILK FOODS:				
Cheese	"	"	"	75,801,219
Butter	"	"	"	16,047,389
" milk-cheese	"	"	"	12,130,274
Different milk foods	"	"	"	6,097,057
Leguminous forages	"	quintals	"	82,684,585
Natural meadows grass	"	"	"	60,599,964
hay	"	"	"	62,233,057

(a) Promiscuous cultivation—(1) Approximate number of trees—(2) Number of ounces (of grams 27) which were in incubation—(3) From 1891 to 1894—(4) Ciphers given by the "Associazione dell' Industria serica Italiana."

HARVEST OF THE YEAR 1902.

CROPS	Area Hectares	PRODUCTION		
		Unit of Measure	Average per Hectare	Total
Corn	4,760,000	hectoliters	11.82	56,280,000
Maize	1,753,000	"	18.54	32,500,000
Rice	188,600	"	50.27	9,480,000
Wine	3,917,000	"	10.91	42,750,000
Olive Oil	1,083,000	"	2.81	3,040,000
Acid fruits	16,925,000	fruits	(a tree) 268	4,530,000,000
Silk cocoons		kilograms		54,500,000

HARVEST OF THE YEAR OF 1903.

Corn	4,850,000	hectoliters	13.40	65,000,000
Maize	1,688,000	"	18.58	31,360,000
Rice	186,000	"	51.94	9,660,000
Wine	4,010,000	"	8.75	35,100,000
Olive Oil	1,089,000	"	2.99	3,260,000
Acid fruits	16,700,000	fruits	(a tree) 314	5,250,000,000
Silk cocoons		kilograms		44,000,000

NOTE—The notes of the preceding table apply to the tables of **1902** and **1903**.

it was less noticeable in Central Italy; and there was little or no improvement in Southern Italy and the islands.

Forestry.—According to the Italian Bureau of Forestry the area of forests is 4,093,000 hectares, but according to the reports in 1904 the area of forest land is as follows: Forests existing in 1870, 4,300,000 hectares; forests cleared and destroyed before 1877, 160,000 hectares; forests cleared and turned into pasture land, 800,000 hectares; the entire remaining area of forest land is 3,200,000 hectares, from which are obtained the following products: Wood for charcoal and fuel, 5,800,000 cub. met.; hardwood for building and manufacture, 250,000 cub. met.; softwood for building and manufacture, 450,000 cub. met.

The planting of trees proceeds slowly. This was done at government cost, or with its aid, from 1867 to 31 Dec. 1904, and amounted to 24,504 hectares; those grown from seeds and little plants covered 15,656 hectares, making a total of a little more than 40,000 hectares.

Breeding of Domestic Animals.—Cattle exceed probably 5,000,000 head, and they continue to increase, especially in Upper and Middle Italy. Of the Italian breeds the most general is that with the gray saddle which occupies the centre and south of the peninsula. The comes the great Piedmont breed and the red saddle cattle of Emilia.

The islands also have their special breeds. The Sicilian cattle with red saddle are a modicana breed. The other breeds are either mixed, or are propagated and *nuancés* from the Alpine stock of Savoy, of Switzerland, or Austria, and these inhabit the spurs of the Alps in the Po valleys and also the plain. Whilst the cattle raisers of the Lombardy plain make a considerable profit in return for the care given to their milch cattle, those of Romagna devote themselves, to producing a breed that can be used for labor and for beef. The Alpine mountaineer seeks to put his mountain slopes to a good use by grazing cattle, and the Sicilian cattle raiser experiments with forage plants suitable to the hot and dry climate of the island.

The improvement in breed may be explained by better judgment in the selection of breeding animals by the more rational manner of feeding, and by the importation of high-bred foreign stock, among which the brown saddle Swiss cattle from Canton Schwyz, and those with the spotted saddle from Simmenthal predominate.

The exportation of cattle forms a considerable item in commerce. Switzerland, in 1903, imported over 30,000 head. But the increase in production provides also for the growing demand for home consumption. In 1903 there were 1,492,369 head of oxen.

Cheese and Butter.—The manufacture of cheese is of growing importance. In 1890, 57,000 cwt. of cheese was exported; in 1905 171,000 cwt. Of butter in 1895, 44,000 cwt. was exported, and in 1905 more than 60,000 cwt. The Swiss cheese, Emmenthal brand, which are imported in large quantities from Switzerland, are now manufactured largely in Italy, as a result of the study of Prof. Moreschi, and are of the finest quality, and have become an export.

Breeds of Horses.—There are a numerous variety of breeds which, while not losing entirely the characteristic of the stock from which they are derived—and Italy is famous for its horses—have acquired new characteristics from their environment. In upper Italy the horses are bred indoors; in Tuscany, in the south, and the islands they breed in the open. The number of horses must be over 741,739 head, according to the enumeration made by the War Department in 1900.

In 1905, 652 government stallions, and 755 private ones were employed for breeding and were registered; altogether 1,387 stallions covered 53,448 mares. In 1889 there were enumerated 415 government stallions and 819 belonging to private owners, altogether 1,234 that covered 33,777 mares. In this way the stallions that private persons had employed for breeding were removed from observation, and it may be estimated that the mares used in breeding exceeded 60,000. The number of foals born annually are about 30,000. As the army drew on the resources of the country, private persons imported from outside about 40,000 head; chiefly from Austria-Hungary.

Sheep.—Italy, like all the European states sees a gradual decrease in its flocks of sheep, owing to the extension and amplification of agriculture. A few years ago, in 1890, it was estimated that Italy produced about 12,000,000 kilogrammes of wool (worth 21,000,000 lire), with fewer than 7,000,000 sheep.

The breed of sheep deserving mention are: the Bergamasca, or giant sheep; the Vissana, which inhabit Latium, the Marches, and Abruzzo; the gentile di Puglia; and lastly, the Merinos, and the fat-tailed sheep, or «barbaresca,» which are to be found in the islands, and especially in Sicily.

The flocks of Central and Southern Italy summer in the Apennines, and pass the winter in the plains of the Maremma, of Latium, of Apulia, of Salermitano, and along the banks of the Ionian Sea. Better results in production and a heavier weight of wool have been obtained by breeding with the Merinos of the Rambouillet stock.

In Latium and Sardinia cheese made of goat's milk is an important product. Latium makes an industry of altering young lambs (abbachi). The number of sheep castrated up to 1903 was 4,273,582 head. The export of sheep reaches about 40,000, of which almost all go to Switzerland.

Swine.—There has been a great increase in swine, which are made more productive by mating with the Yorkshire boar. In the south, and particularly in the Campania, the prize breed of Casertana is predominant. In the central and northern provinces the swine of Celtic type, with long snout, convex spine, with long legs, adapted to wandering across the meadows, are to be found. It may be affirmed that there are at least 2,000,000 swine. The castrated swine amounted in 1903 to 1,504,427.

The raising of pigs is now a flourishing industry, and produces an important commercial export. In 1905, 95,000 head (worth 8,896,758 lire) were exported directly to Switzerland and Austria-Hungary.

Poultry Breeding is in a primitive state. There are a few successful raisers, but most industrial attempts at poultry breeding have failed. The valuable breeds of poultry are those of the Valley of the Arno, of the Polverara, of Padua, of Martinafranca in Leccese; but it may be said that every province has some that are valauble.

In 1905 about 93,000 cwt. of poultry were exported (worth over 130,000,000 lire); of eggs there were exported in the same year over 331,000 cwt. worth about 65,000,000 lire.

Pigeons.—Large pigeons for food are produced in considerable numbers, especially in the provinces of Emilia.

Commercial Value of Agricultural Products.—Taken altogether the difference is very small between the total value of the Agrarian products imported and of those exported.

During the year 1905 the importaions gave a total, as high as 2,078,379,958 lire; and the exportations amounted to 1,707,368,145 lire (precious metals excepted). Were it not for the importation of grain of every sort, the balance would be very favorable.

GRAINS IMPORTED.

	Average. 1900-1904. lire.	1905. lire.
Hard and soft wheat	181,444,487	205,331,260
Rye, Oats, Barley	8,298,228	8,612,145
Maize	30,843,162	20,998,600
Total	230,585,877	234 942,005

The principal agrarian products which were exported are:

	Average. 1900-1904. lire.	1905. lire.
Unhusked Rice and Raw Rice.	2,042,924	3,362,760
Prepared Rice	13,650,971	18,310,985
Chestnuts	2,456,175	2,991,040
Potatoes	2,683,082	4,780,260
Vegetables, Greens and Fresh Tomatoes	10,814,995	11,546,236
Dried Vegetables	6,669,190	9,024,960
Oranges, Lemons, Limes	25,915,784	26,001,330
Fresh Grapes	4,877,789	6,274,380
Fresh Fruits (dates included)	12,099,858	15,274,380
Almonds, Nuts, Hazel-Nuts	29,095,272	39,771,130
Dried Figs	4,539,484	3,985,890
Raw Hemp	40,732,525	39,696,870
Sumac	7,138,033	5,816,007
Different kinds of Wine in casks,	46,091,545	23,973,655
Every kind of Wine in bottles,	7,633,058	11,258,850
Tartar or Dregs of Wine	12,349,367	14,194,720
Purified Olive Oil	44,057,166	39,282,079
Preserved Vegetables, Fruits and Greens	10,898,272	11,679,870
Preserved Tomatoes	2,493,333	4,163,360
Essences of Orange, Mandarin, Bergamot and Lemon	8,596,481	11,722,060
Essence of Straw	7,638,486	8,844,760
Cattle (oxen and cows)	15,334,121	13,086,745
Pigs	3,629,189	8,896,758
Fresh Meat, Salt and Cured Meat	6,149,814	7,694,570
Poultry (live and dead)	11,148,532	13,268,457
Hens' Eggs	44,572,660	54,685,620
Butter (fresh and salt)	14,957,568	14,297,625
Cheese	20,178,549	26,332,300

Irrigation and Improvements.—Whilst in Northern Italy irrigation has from ancient times been carried on, in the other portions it is more recent, and not so complete, in others again it is entirely lacking, owing not alone to natural obstacles such as the rugged, topographical aspect of the region, and the perennial drought, but also to the persistence of obsolete methods of cultivation. In fact, whilst the Valley of the Po is extensively irrigated (over 1,464,969 hectares); in Piedmont 340,724 hectares; in Lombardy, 644, 513 hectares; in Venetia, 98,269 hectares; in Emilia, 68,221 hectares, and the Valley of the Serchio to a great extent, the valleys of the Arno and the Tiber remain neglected. Similarly, whilst the beautiful plain of Sulmona takes advantage of the waters of the tributaries, of the Pescara, lower valleys of this and the adjacent littoral regions are parched in summer.

The total area of land under irrigation in the Kingdom, including vegetable gardens and orchards, is estimated at 1,465,000 hectares, of which about 82,000 are irrigated by the government canals connected with the river Po (the Cavour Canal and its branches). The lands that may be irrigated with economic advantage are estimated at over 800,000 hectares.

Through the application of the laws in force, the improvements completed and in progress through government aid, up to 31 Dec. 1903, in the various sections of the country were:

	No. of Impts.	Extent of Area (hectares) Unimpv'd.	Impv'd.
Northern Italy	20	365,939	293,600
Central Italy	19	86,342	50,745
Southern Italy	50	247,727	143,832
Sicily	2	709	697
Sardinia	4	1,930	1,920
Kingdom	95	702,647	490,795

According to the allowance of public waters for agricultural purposes the area improved by works of improvement and irrigation during the period between 1885 to 30 June 1901, amounts altogether to 211,100 hectares.

Indications of Agricultural Progress.—Some of the important indications of the progressive movement in Italian argiculture are the importation of fertilizers; the increasing use of chemical fertilizers, particularly in Northern and Central Italy, and the importation of agricultural machines and implements. The entire imports of fertilizing material which in 1901 amounted to 2,848,646 cwt. (1,421,090 cwt. of mineral phosphates, fertilizers; Thomas Gilchrist, 254,760 cwt.), at a cost of 23,562,819 lire, rose in 1905 to 4,435,197 cwt. (2,401,440 mineral phosphates; Gilchrist fertilizer, 674,590 cwt.), at a cost of 32,523,853 lire. The use of phosphates as land fertilizer increased from 3,000,000 cwt. in 1900 to 5,000,000 cwt. in 1905.

Agricultural Associations.—The work of agricultural associations, the combined acquisition of agricultural materials, has aided largely in introducing and spreading the employment of chemical fertilizers and agricultural machinery.

The Italian Federation of Agricultural Associations, founded in 1892, consisted in 1900 of 229 agricultural associations, and 348 members, and the consignation of goods imported amounted to 3,806,789 lire. In 1905 the federated associations numbered 468, and the membership 472, and the value of the imports had risen to 9,389,188 lire.

Not all the agricultural associations are members of the federation; many are branches affiliated with the Agrarian Associations and Committees. The Committee of Purchase for the Agricultural Association of Friuli (Udine) gives the following figures: In 1905, nitrate of soda distributed 4,000 cwt.; in 1906, 7,800 cwt.; orders for 1907, 15,000 cwt. In 1905 they distributed 150,000 cwt. of phosphates; in 1906, 200,000. Orders for 1907, 350,000 cwt.

In 1896 there were imported of various machinery 17,536 cwt., at a cost of 1,578,240 lire; in 1900, 40,637 quintals at a cost of 4,266,885 lire; in 1905, 66,931 cwt. for 6,358,445 lire.

The «Federazione Italiana des Consorzi Agrarii» gave to its associates during the year 1901 agrarian machines for an amount as high as 185,156 lire; in 1902 for 550,000 lire; in 1903 for 1,952,000 lire; in 1904 for 2,062,410 lire; and during 1905 for 2,260,183 lire.

Agricultural Classes: Hemography, Economical Reports and Hygienic Conditions.—According to the census of 10 Feb. 1901, the agricultural population was numbered 16,836,551; of whom those above 15 years of age, namely the adult people employed in rural works, were divided as follows:

Farmers who cultivate their own lands	2,305,795
Metayers (partners)	1,731,546
Tenants—farmers and lease holders	659,489
Stewards and rural agents	28,881
Countrymen, ploughmen, etc., at regular work	828,434
Rural laborers. at no regular work	2,423,336
Herdsmen and shepherds, etc.	172,382
Gardeners and cultivators of acid fruits	77,599
Total	8,227,462

A total 413,509 higher than in the year 1881. The persons employed in agriculture between the ages of nine and fifteen years of age up to 10 Feb. 1901 comprised 9,611,003 individuals.

The number of males employed in agriculture (6,411,001) is double that of females (3,200,002). To every 100 males employed in agriculture, there are, in Piedmont, 77 women; in Liguria, 65; in the Marches and Abruzzi, 64; 56 in Venetia; 53 in Lombardy; 52 in the exduchies of Emilia, and only five in Sardinia; 13 in Sicily, and 31 in Apulia.

The highest percentage of male agriculturists who worked their own land or that of their family was in Piedmont, Liguria, and Abruzzi; the lowest was in Romagna, Calabria, Sicily, and Tuscany. Tenant farms are found in notable numbers only in Latium, Apulia, and Campania. Farms abound more particularly in Venetia, Campania, Basilicata, and in the Emilian ex-duchies. They are rarer in Umbria, Latium, the Marches, Tuscany, Sardinia, Romagna, and Sicily. Farming on shares is customary in the Marches, in Tuscany, Umbria, and Romagna, and rare in Apulia, Basilicata, Piedmont and Sardinia. The countrymen paid for regular work are found especially in Lombardy, Basilicata, in the ex-duchies of Emilia, and in Sicily; those paid by the day, in Apulia, Sicily, Calabria, Sardinia, and Latium.

As regards agricultural contracts, as Jacini observed, the Italian nation has shown great discernment. One can see clearly that the character of the existing contracts to-day, was owing, not to chance, but to local conditions. Every form of contract would be more or less successful, according to the character of the contracting parties, and as they corresponded or not to the physical and economic conditions of the particular locality.

Hygienic Conditions—Malaria.—By reason of its conditions of soil and climate, Italy, of all countries in Europe, offers the largest field for malarial disease. Levy estimated, many years ago, the number of victims of malaria at 60,000; but since 1881 Sormani shows these figures to be exaggerated. From the Statistics on Causes of Mortality it is seen that during the period of 1887-1902, there was a maximum of 21,033 cases in 1887 and a minimum of 9,910 in 1902. The work of improvement, the preventive and curative means employed to combat the malady have contributed to lessen the rate and the intensity of the disease. The miasmatic belts were, in 1906, 3,349, distributed over the territory of 2,654 communes (the Kingdom consists of 8,262), of which 938 are considered totally malarial. The only provinces free from malaria are Ancona, Arezzo, Cuneo, Florence, Piacenza, Genoa, Lucca, Macerata, Parma, Pesaro, Urbino, and Porto Maurizio. Malaria has been fought by the government through a series of laws, the principal one being the distribution of quinine by the government. In 1905-1906 the government sold 18,712 kilogrammes of quinine; the mortality was 7,838.

Pellagra.—It has now been ascertained that pellagra is caused by a toxic poison induced by the eating of maize, and there is no pellagra where maize is not used for food. From the investigation instituted by the government in 1899 into the nature of the disease it was found that there are 40 provinces (all in upper and middle Italy) more or less severely afflicted by this endemic disease. Abruzzi, Molise, Campania, the

Apulias, Basilicata, the Calabrias, Sicily, and Sardinia may be considered entirely free from the disease. The census of 1881 showed that in a population of 6,386,504 persons (which did not include all the provinces afflicted with this malady) the number of those suffering from pellagra was 104,067; while the census of 1899, made by the Interprovincial Pellagralogical Committee of Udine gave 72,603 among a population of 7,033,440 inhabitants. In the 15 years from 1890-1894 the annual average rate of mortality from Pellagra reached 3,767. By the middle of the 15 years, 1900-1904, it was 2,846.

Civic Customs.—In Italy, besides the Collective Property Ownership, which varies in origin and form, there exist private landed property and communal landed property over which the community has the rights of forestry, grazing, and agriculture, etc.

Collective Property is an institution here and there in all districts, and is especially common and of great extent in the ex-pontifical States, and in Emilia, where it covered an area of 106,000 hectares in 1905 (77,800 of wooded and pasture land, and 28,200 agricultural and other land) and had an approximate value of 24,000,000 lire, and was held, altogether, by 60,000 families (about 280,000 individuals) united in associations as Communes.

The government domain of the southern provinces and Sicily is also for public use, a survival of the laws of the feudal system, which represent another typical form of collective ownership, the legal authority over which is vested in the Commune, whilst the profits derived from it belong to the citizens. These domains cover about 636,000,000 hectares, not all, however, as yet of benefit to the population, for the reason that they have been in part taken possession of by private individuals or by religious bodies who hold them as their patrimony.

Closely related judicially to the institution of goverment domain is that of the *beni exademprivili* of Sardinia, which covers at present an area of about 180,000 hectares.

The *Tratturi* are grassy roads which extend from the mountains of Abruzzi across the slope of the sub-Apennines to the tableland of Apulia, as if the mountain pastures should extend to the Tavoliere, to the Murge, to the Salentine peninsula. These grazing lands will always exist, and will preserve their character as public property, and hence unrestricted inalienable, always renewable. Without them the migrations of the flocks and herds would not be possible, as the summer pastures are hundreds of kilometres distant from the winter pastures. The *tratture, tratturelli* and *bracci* are 83 in number, of varying area, the four largest of which cover collectively more than 790 kilometres, and in all their length about 111 metres wide, and with a total length of 3,062 kilometres.

The number of head of cattle in the 10 provinces gathered together in these networks or roads (Aquila, Chieti, Teramo, Benevento, Campobasso, Avellino, Potenza, Bari, Lecci, and Foggia) amount to about 2,720,000, of which 1,120,000 are nomadic grazers, and 1,600,000 are stationary. 528,000 head of sheep and 30,000 cattle and horses still make use of the *tratturi* of the government domain, to travel to the plain of Apulia, and the other 321,000 head of sheep migrate to the Roman territory.

Mortgages.—Until a few years ago it was claimed that the interest-bearing mortgages that burdened the Italian landed property exceeded 9,000,000,000 lire. Instead of that, according to the results of the first investigation—made by the general administration of demesnes—on 31 Dec. 1903, the entire capital burdened by mortgages amounted to 3,042,402,793 lire, the number of titles to 829,259 with an average value of 3,669 lire. Of the 829,259 mortgages, 407,997 were on land alone (797,023,194 lire); 184,232 were on manufactories (783,664,586 lire); and 241,030 on lands and factories (1,460,815,013 lire).

The 65 per cent. of mortgages among private individuals did not exceed a rate of 5 per cent. interest; 31 per cent. of the same an 8 per cent. rate of interest. Four per cent. of the mortgages at 8 per cent. interest were principally in the following provinces: Abruzzi and Molise, 20.5 per cent.; Campania, 9 per cent.; Apulia, 14.2 per cent.; Basilicata, 15.2 per cent.; Calabria, 15.9 per cent.; Sicily, 8.5 per cent.; and Sardinia, 9.6 per cent.

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28. Italy—International Commerce. As the present kingdom of Italy was only established in Sept. 1870, we cannot go back further than 1871, in considering the progress of the Italian commercial movement. We shall therefore begin to consider the foreign commerce of Italy from 1871.

The import trade of Italy greatly exceeds her export trade, which fact depends on two principal causes: on the manner in which the customs officials appraise the merchandise; and on the fact that the enormous rush of foreign visitors to the country brings in a great quantity of money, which makes possible an infringement of the fundamental principle of an exchange of products.

In the 35 years, lasting from 1871 to 1901, the excess of imports was not uniform, and these great fluctuations depended on general causes.

From the year 1896 to 1900 there was a period of increase of imports, which was still more marked in 1900 and 1901, when the rate of increase was maintained at three hundred and twenty millions of lire.* But the entire commercial movement represents an increase from twenty-nine hundred to three thousand seven hundred and forty-five millions. The characteristic, therefore, of the present commerce of Italy, as shown by the Custom House statistics, is a constant excess of imports.

Finally, there is the period of rapid rise which lasted for eight years, and which, accompanied by so many other indications of the growing commercial activity of the country, gave an assurance that this sign of prosperity was founded on a solid basis. Here are the relative figures, given in millions:

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* Five lire represent a little less than one dollar in United States currency.

1898	1,413	1902	1,775
1899	1,506	1903	1,861
1900	1,700	1904	1,913
1901	1,718	1905	2,078

The periods of greater exportation are as diverse as the causes that determined them. There was a long time—17 years—from 1871 to 1887, during which the fluctuation was barely perceptible; Italian export trade remained steady at the million mark, very gradually diminishing during the three years 1881-83, when there was a fall in exports.

In 1888 the new general tariffs and the new treaties of commerce, but above all the application of the tariff of reprisal between Italy and France, brought about a period of unusual depression, which lasted 10 years before the export trade resumed its previous figures. But dating from 1898, there began a period of prosperity which is noteworthy and gives the highest figures in all the 35 years:

1895	1,203	1902	1,472
1899	1,431	1903	1,517
1900	1,338	1904	1,017
1901	1,374	1905	1,707

The division of Italian commerce into the five great groups into which we usually divide the various products, denotes the nature of her commerce; and as we desire to bring our comparison up to as late a period as possible we will continue them through the years 1905 and 1906. In 1905 the variations between imports and exports gave the following figures in millions of lire:

	Imports.	Exports.	Diff.
First class raw material	822	252	570
Partly finished material	428	618	190
Manufactured articles	463	417	46
Foodstuffs	363	418	45

Comparing now the statistics of 1896 with those of 1901 for the same articles we find:

	Imports.	Exports.	Diff.
First class raw material	457	181	276
Partly finished material	214	332	110
Manufactured articles	248	226	32
Foodstuffs	252	320	18

It was, therefore, 10 years ago that we found the same remarkable increase in the exports of the first class, agricultural products; but the foodstuffs increased in importation as well as in exportation; so that on the whole they exceeded the trade in manufactured articles, notwithstanding the fact that within 10 years the imports of grain rose from 110,000,000 to 205,000,000 lire, the group of foodstuffs shows an increase of 45,000,000 lire, hence a growth of 113,000,000 lire of exports, as against a growth of 68,000,000 lire in the import trade of the same group.

Thus the third and fourth groups are hardly balanced in 1896 by the increase of trade of the second group, but they do not balance all the growth in imports of the raw material. This increase in the trade of the groups mentioned, within the decennium, can be estimated more accurately by following the rates:

	1896.		1905.	
	Impts.	Expts.	Impts.	Expts.
	(Per cent of the whole.)			
Raw material	38.96	17.29	39.60	14.83
Partly finished material	18.28	31.61	20.60	36.23
Manufactured articles	21.21	20.61	22.33	24.44
Foodstuffs	21.55	30.49	17.47	25.50
	100.00	100.00	100.00	100.00

These tables show that in the last 10 years the imports have increased 1.36 per cent. in proportion to the whole in first-class merchandise, and the exports have decreased at a greater rate—that is 2.46 per cent.; that the merchandise of the second group was imported in an increase of 2.32 per cent. of the whole, and the exports increased even more, that is, 4.62 per cent.; that manufactured articles were exported in an increasing ratio of 3.83 per cent. above 1896, and hardly reached 1.22 per cent. in imports; that the trade in foodstuffs showed a decrease of 4.08 per cent. from that of 1896, and finally decreased 5.99 per cent. Taking altogether the improvement in trade in the groups we find that while there is an absolute growth in the trade in foodstuffs, there is a noteworthy decrease in the trade of other groups.

Let us now take up the principal divisions of each group, both imports and exports, and see what advance they have made.

The statistics of the Italian Department of Commerce separate all merchandise into 16 categories, of which we here give a table, covering imports and the exports, for the first two and last two years of the decennium 1896-1905.

From this brief summary we may draw three conclusions. (1) An increasing development of national industries, which demands an increasing quantity of articles of the first class, and will enlarge the sphere of the export trade; (2) a greater degree of prosperity of the country which increases the demand for home consumption of manufactured articles and foodstuffs; (3) a transformation of the agricultural industry, which is losing ground in some of its exports and gaining ground in others.

	1896.		1905.	
	Imports.	Exports.	Imports.	Exports.
	(Three ciphers omitted.)			
Spirits, beverages and oils	28 613	116,869	55,187	92,536
Spices, sugar, groceries	77,360	7,723	46,253	13,150
Tobacco, chemical products, drugs	42,717	39,147	77,243	55,551
Paints, dyes and tan bark	27,481	13,813	34,752	7,363
Hemp, flax, jute, etc	24,587	55,555	34,563	66,760
Cotton	132,796	30,981	272,447	119,519
Wool, hair, pelts	74,006	13,547	102,191	33,868
Silk	113,317	321,800	231,829	612,098
Wood and straw	43,564	55,812	104,240	80,152
Paper and books	13,830	9,879	32,211	20,216
Hides	50,563	25,201	71,333	35,599
Minerals, metals and tools	140,654	30,217	308,031	48,452
Stone, earth, pottery, glass and crystal	107,903	55,826	228,996	87,885
Cereals, flour, macaroni and vegetables	172,095	120,824	284,743	203,732
Animals and their products	107,352	134,226	156,553	193,269
Miscellaneous articles	17,326	20,561	37,712	37.204
	1,180,172	1,052,099	2,078,379	1,707,368

Country.	1896. (Three ciphers omitted.)			1904. (Three ciphers omitted.)		
	Imports.	Exports.	Difference.	Imports.	Exports.	Difference.
Austria-Hungary	131,891	121,351	+ 10,540	189,525	137,166	+ 52,358
Belgium	27,904	18,651	+ 9,253	46,795	30,330	+ 16,465
France	133,708	153,128	— 19,420	200,026	181,933	+ 18,093
Germany	144,757	159,786	— 15,029	254,116	210,208	+ 43,908
Great Britain	229,889	109,588	+ 120,301	319,661	133,787	+ 175,874
Holland	5,937	11,206	— 6,269	10,621	12,987	— 2,366
Roumania	19,960	1,345	+ 18,615	27,504	5,585	+ 21,919
Russia	124,836	12,783	+ 112,053	158,304	12,388	+ 145,916
Spain	9,545	12,881	— 3,336	30,883	13,195	+ 17,688
Switzerland	44,654	170,326	—125,672	61,401	270,557	—209,156
European Turkey	22,000	16,000	+ 6,000	29,483	49,149	— 19,666
English Possessions in Asia	66,667	25,509	+ 41,158	123,550	33,846	+ 89,704
China	14,145	867	+ 13,278	74,668	3,270	+ 71,398
Egypt	5,764	14,197	— 8,432	16.479	46,091	— 29,612
United States	123,570	86,456	+ 36,014	238.892	190,498	+ 38,394
Brazil	4,999	13,494	— 8,595	13 774	14.306	— 632
Argentine	27,377	57,375	— 29,998	35,664	129.589	— 83,925
Tunis	....	....	....	10,343	7.886	+ 2,457
Japan	....	....	....	11,369	1,042	+ 10,327
Sweden and Norway	....	....	....	12,295	3,704	+ 8.591
Greece	....	....	....	3,487	10,531	— 7 044
Malta	....	....	....	1,398	10,575	— 9.177
Asiatic Turkey	....	....	....	9,653	17,448	— 7,795

We must observe, however, that commercial exchange with other countries is greatly facilitated at the present day; that the principle that «Products can be exchanged for products» is less applicable in the transactions between one government and other separate governments; and that we can see more readily than ever before that there is a noteworthy equilibrium of commercial exchange between one country and another. But as the commercial treaties, in modifying the ultra-protectional character of the general tariffs, aim at improving those commercial relations, which tend to equalize the value of the imports and the exports between every country, it is interesting to note this side of international commerce.

The statistics since 1904 by which the value of the imports as compared with the exports between Italy and the principal foreign countries are lacking.

But in the case of those countries with which the Italian import or export is to the value of 10,000,000 lire, or more, there is evidence of a fair equilibrium; a few are excepted, which will be specially mentioned. Great Britain, in 1904, exported an excess of 175,000,000 lire to Italy, but if we consider that 143,000,000 of lire represents the hard coal which she sold to Italy, the difference is reduced to 32,000,000 lire, a comparatively small figure. Russia exports to Italy 145,000,000 lire more than she imports from that country, and this is accounted for by the 135,000,000 of lire of grain which she sold to Italy. The British possessions in Asia export an excess of 89,000,000 lire to Italy, 60,000,000 of which represents raw cotton in bulk, which Italy imports from India. The 71,000,000 lire of excess of importation from China comprises 65,000,000 lire of raw silk in bulk. The excess of 38,000,000 in imports from the United States is owing to raw cotton, of which Italy imports 146,000,000 lire.

The principal exports of Italy are to Switzerland, which buys from her over 160,000,000 lire of raw silk in bulk, and to European Turkey and Egypt where the excess of her exports is owing to cotton and silk textiles, which Italy sells to those countries. In conclusion the excess of imports from Italy to the Argentine Republic is owing to wine, olive oil, and cotton textiles, which she sells to that State.

The balance of trade is less in her favor, for various reasons in her commercial relations with Austria Hungary, France, Germany, and not the least of these reasons are the unsatisfactory Custom Duties, which are more rigorous in regard to imports than to exports in which the amount and value are estimated, as a simple form, and without any special benefit to the administration.

We will now consider the effect of the attempt that Italy is making to find fresh markets for her products. We have already seen that she has increased her exports to Egypt and Argentina to the amount of from 14,000,000 to 46,000,000 lire in the former, and from 57,000,000 to 129,000,000 lire in the latter instance, and we observe the export movement towards Belgium, European Turkey, Sweden, Norway, Greece, and Malta.

This brief summary of the foreign commerce of Italy will now be completed by a few figures relating to the trade in precious metals. Although we know that the proposed customs duties are more unsettled than ever, and that they do not represent commercial value, or exchange, we will simply give the figures relating to the imports and exports of raw gold, gold and silver coin, in 10 years, 1896-1905. The table will show that Italy is slowly gaining in wealth:

	Impts. (Millions of lire.)	Expts.
1896	10.2	19.9
1897	8.6	23.0
1898	3.4	19.6
1899	5.5	15.8
1900	7.2	16.5
1901	11.7	16.3
1902	34.7	9.9
1903	156.7	6.7
1904	44.5	9.7
1905	169.5	8.2

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29. **Italy—Finance.** The public debt of Italy, its origin and development, reflects on the difficulties Italy experienced in becoming a great nation. The new nation took upon itself the obligations of the various territories out of which it grew and respected all the engagements made by them.

When Italy was united in one great nation and when the province of Venice and the Province of Rome were united to the Italian nation, the interest charges on the public debts of the ex-states were formed as follows: Bonds bearing 5.4 and 3 per cent. interest—

CONSOLIDATED—5 PER CENT INTEREST.

Sardinian States	57,937,695.05
Lombardian	7,351,387.81
Venetian	7,370,551.00
Modenian	780,508.99
Parma	610,453.95
Bologna	121,500.00
Consolidated Pontificial States	1,323,725.75
Redeemable	1,982,153.18
Tuscan	1,657,054.00
Neapolitan	25,648,375.00
Sicilian	6,800,000.00
Amounting to	111,583,407.73

***Note.—An Italian "lira" is equal to nearly 20 cents.**

Capital amounts equal to............2,231,668,154.60

CONSOLIDATED—4 PER CENT. INTEREST.

Sardinian States	1,739,280.00
Lombardy	179,797.72
Venice	41,909.00
Naples	355,257.50
Capital amount equal to	2,316,244.22

CONSOLIDATED—3 PER CENT.

Sardinian States	4,159,280.00
Tuscany	4,208,730.00
Modena	14,025.43
Equal to a capital value of	276,607,169.19

Therefore the inherited public debts amounted nearly to the sum of 2,516,000,000 lire, so there remained only the obligations at 5 per cent. and 3 per cent.

At this time the public debt of Italy was divided into three groups: Public Debts,—administered by the general direction of public debts; Public Debts,—administered by the general direction of foreign countries; and the different passivities. The essential part of these passivities is formed by those which are administered by the Director of Public Debt. When the Organic Law of 1861, No. 94, was passed, it was aimed to give a solid form to the public debt. They also ordered and formed the «Big Book,» in which they could describe the parts written in an authentic form and the guarantees and privileges of the law. A new series of public laws was formed, in order to recognize sufficiently the debts of the different states, by which the main portion of those debts were recognized. Italian obligations were inscribed in the «Big Book.»

In enrolling the formation of Italian public obligations we find that the forms of public duties handled by the general administration are classified in the three following categories: (1) Consolidated obligations; (2) Obligations entered separately on the Big Book; (3) Obligations not entered in the Big Book, or special bookkeeping accounts.

Regarding the obligations separately entered on the Big Book, they are equally redeemable as the perpetual ones. This perpetual debt especially found its origin in the debts of the former state of Modena to private persons, and from the income promised for the support of the Vatican. These passivities bear 5 and 3 per cent. interest. The redeemable debts were also caused by obligations of railroads assumed by the states of Tuscany and Parma and by obligations established by the Italian State to supply the expense of special railroads in Piedmonte, and to be added in this transcendental operation by the conversion of the ecclesiastical properties. Some parts of the redeemable obligations were greatly reduced, 30 June 1906. The following amounts represented the duties enclosed separately in the Big Book:

PERPETUAL OBLIGATIONS.

For support of the Pope	3,225,000.00
Obligations and other expenses for Modena	15,384.20
Total	3,240,384.20

REDEEMABLE OBLIGATIONS.

Obligations on railroads of Tuscany and Parma	2,048,663.14
Catholic loans for the ex-states of the Pope	1,578,450.00
Obligations 5 per cent. of the ecclesiastical rules	2,929,950.00
Obligations 5 and 3 per cent. for some special railway lines on the Piedmonte	3,847,316.00
Total	10,404,379.14

According to the above figures we have a total sum of 13,644,763.34 lire of interest derived from bonds, and bonds redeemable separately enclosed on the book.

Duties not named and not enclosed separately on the Big Book, handled by the general direction of the Public Debts, are more interesting.

Their origin was found in the laws for redeeming the precedent debts, or from the law of new rules, which were required by the establishment of the Big Book. Therein are enclosed various works, generally for economical purposes, *i. e.* development of means of communication, or for hygienic purposes or for the coast defenses or accommodations of the big cities. These are divided into the five following classes:

1. Obligations to redeem the railroad lines and canals, already built. Similar obligations, 3 and 5 per cent. for the Society of Roman Lines. (Lines of Livorne, Luca, Pistoia, Central Tuscany, Apiano, Grosseto and Rome) and those for redeeming the Cavour Canal.
2. Obligations regarding the new building of specified lines, such as the 3 per cent. of the Turin lines, Savoia, Acqui, 5 per cent. of Genoa, Voltri of the Udine, Contello lines, the societies of the lines of Monferrato, and the lines along the Turreno Sea.
3. Obligations for completing the principal lines, and for supplying the capital necessary to increase the patrimonial property (for increasing the stations, and lines, the iron stock, wheels, etc.). Similar obligations of 3 per cent. of the societies for renting the Mediterranean, Adriatic, and Sicula lines.
4. Obligations to protect Rome from the waters of the River Tiber, for the works regarding the course of cleaning water conducts in Rome and Naples.
5. Different capitals not profitable.

The complete duty of the State of the above obligations were on 30 June 1906, 48,372,648.60 lire over a capital of 1,416,575,607.20.

These forms of duty handled by the direction of the public duty were also administered by the general direction of the treasury, and various forms of duties and passivities. Having pecuniary importance on the first acception, and of the yearly account duty due until the year 1968 to the society of the Southern Railroad and of Austria to redeem the lines of the North of Italy for the total amount of 25,631,548 lire, leaving a capital of 925,201,302.04 lire.

Of equal importance with the Italian Public Debt are the railroad obligations which are directly contracted by the state, or guaranteed by the state to provide for the constructions and for repairs or to complete the railroads, and more often, together with contracting societies, to obtain enough money for their own works and for which they indebted themselves to the state.

A railroad debt (or bond) to the amount of 1,468,814,140.00 lire was authorized for that purpose, but the capital actually realized was less than that amount.

These shares were issued at the following terms: 500 lire and 250 lire, redeemable in 50, 60 and 90 years.

A more thorough observation would enlighten the meaning of their singular organizations and would reveal the real income, by the companies, through them and to the State which succeeds them for particular titles. The first attempt at redemption was made in 1891 by the minister of treasury, Louis Luzzatti, who instituted serious economies; especially by suspending the emission of the obligations for construction of railways.

During 1894 and 1895 another and more efficient impulsion to this economy was created by the minister of treasury Sidney Sonnino, forming two new types of consolidated 4.50 and 4 per cent. net.

The various attempts at a reduction of the Italian national indebtedness and particularly of the high interest charges on the same culminated in the successful conversion studied and prepared by Louis Luzzatti while minister of the treasury in the cabinet of Sonnino, and presented 29 June 1906 by Minister of the Treasury A. Mojorana of the (present) Giolitti cabinet.

The conversion was in reference to the consolidated 5 per cent. gross, and to the consolidated 4 per cent. net. The first, of 30 June 1906, amounted to a capital of 7,903,545,040, and the other, to the sum of 196,889,800. Both capitals amounted to 8,100,434,800.

By the said law of 29 June 1906 (No. 262) the Ministry of the Treasury was authorized to abolish the 5 per cent. gross, and the 4 per cent. net, offering to the holders thereof one hundred lire or the payment of the entire certificate at a loss of two lire, on 1 Jan. 1905, and the exchange of the actual rents 5 per cent. gross, 4 per cent. net with a new creation of titles on half yearly payments with a profit of 3.75 per cent. per year, to be exempt from any present or future charge from 1 July 1907 to 1 July 1912, and of 3.50 per cent. per year, with the same exemption from 1 July 1912.

The result was a complete success. The payments on exchange amounted only to the sum of 4,889,700. Of this amount 3,027,800 was on the exterior, and 1,661,900 on the interior, for the capital to be converted only on the ratio of 0.056 per cent. Regarding the charge of the conversion for general expenses, for commissions, etc., they amounted to 9,637,163.62, corresponding to almost 12 cents for every hundred lire of nominal capital to be converted, at 0.87½ per cent. the compartition of the medium terms at the disposition of both institutions to resist against all the eventualities. On the other hand the profit for the national finances, under the influence of the reduction of the interest, was very considerable. In fact, from 1 July 1907 until 1 July 1912, it will be a saving of 20,254,017 each year. From 1 July 1912 until the year 1920 a double saving will be attained, and in 13 years a sum of this amount will produce a saving of four hundred million entries and expenses.

The public expenditures are naturally largely influenced by the receipts from taxes. These are chiefly the tax on real estate, on buildings and on rents. There is also a considerable tax on the transfer of real estate, and a tax on commerce, as well as on insurance and other commercial comparations.

Besides the contributions direct and indirect on business, real estate, rents, etc., there are the various well known forms of taxes, *i. e.* the taxes of succession, taxes of registration, taxes on loans, custom house receipts, profits on sale of salt, profits of the tobacco, and lottery monopolies, etc.

In accordance with this, the national receipts of the year 1905-1906 were 1,945,955,181.75 lire and the expenses were 1,860,514,249.30; the difference between the two entries showing a surplus of 8,544,093,942. The construction of railroads caused a loss of 1,422,866,800 lire, as shown by the ministry of public works.

There has been an actual surplus for the past nine years, a solid evidence of the prosperous conditions of the Italian finances.

Considering the public expense and regarding its purposes we note the division of the effective expenses (ordinary and extraordinary) for each one of the ministers distributing them to cover constitutional purposes, as payments of interests, collection of taxes, and especially for the purpose of the administration.

The effective expense (ordinary and extraordinary) consequently including the capital movement is divided by the ministers as follows:

	LIRE.
Treasury minister	736,277,017.36
Treasury of the finances	257,853,176.96
Treasury of the thanksgiving justice and customs	43,883,684.42
Treasury of the exterior affairs	17,258,546.83
Treasury of the public instruction	68,696,551.47
Treasury of the interior	106,356,174.61
Treasury of the public works (enclosed) the constructions of railways	104,265,813.58
Treasury of mails and telegraphs	96,896,305.81
Treasury of war	296,773,725.31
Treasury of marine	128,376,537.34
Treasury of agriculture, industry and commerce	18,105,483.62
And consequently the effective expenses amounted to	1,874,742,917.31

This large sum can be divided as follows:

I. CONSTITUTIONAL EXPENSES.

Donations and presents	16,050,000.00
Expenses of the chamber of legislation	2,514,444.87
Expenses of the high personages of the states (President of the council, of the Ministers, the counts cour and the State counsel)	2.762,411.76
Total	21,326,856.63

II. EXPENSES OF THE ADMINISTRATION OR EXPENSES FOR THE ADMINISTRATION OF THE FINANCES.

For the administration of public money and for collecting the contributions,	259,914,462.98
For the public safe and bookkeeping. The duty for the support of the employers are excluded but enclosed on the expenses of the administration	714,542,482.72

The administration named the public security and consequently for:

The war and marine	425,150,262.65
The diplomacy	17,258,546.83
For justice and penal punishment and prisons	72,285,165.33
Police, defending the interior administration	51,238,277.59
Total	565,932,252.40

For the public prosperity and consequently for:

The public instruction	68,696,551.47
The public health	2,755,386.30
The beneficience and provisions	24,446,826.24
Public works and means of communication	201,162,119.39
For the industries	15,964,978.18
Total	313,025,861.58
The total amounting to	1,874,742,917.31
The effective debts results amounting to	1,874,742,917.31

Deriving the expenses for the public prosperity, it is only of 16.90 per cent., the rest being absorbed by the constitutional expenses (1.12 per cent.) by the expenses for collecting the contributions and taxes (13.68 per cent.) by the representation on the exterior (0.90 per cent.) and by the expenses for the intern security (6.09 per cent.).

On the other hand a consideration of the entries, expenses and the financial power of the entries and a form of the balance of the entries of 1905-1906 can be divided in the following manner:

ORDINARY ENTRIES.

	Lire.
Patrimonial rents of the state	95,357,509.08
Entries of public services (mails, etc)	129,642,085,11
DIRECT CONTRIBUTIONS.	
Contributions for the lands	95,926,482.96
Contributions for the buildings	93,151,611.48
Contributions for the rents of movable property	305,250,307.62
Contributions for affairs	259,588,996.63
Contributions for consummation and (brevetto) patents	873,427,096.71
Surplus and concourse on the expenses and various entries	79,023,699.51
Total of ordinary entry	1,931,367,789.10
The extraordinary entry independent of the movement of capitals	14,587,392.63
Total of the effective entries	1,945,955,181.73

Popular Discount Banks.—A study of the Italian system of banking is of importance for the reason that with its finances it is found possible to dispose of a large stock of the capital in order to assist commercial operations.

In general the Italian system of banking has no marked difference from the various systems of the European continent, especially from the French and Spanish standpoint. Recourse may be taken to a pyramid. The popular banks are at its base, and various institutions of less import; the societies of credit are higher, terminating with the «Bank of Italy,» superior to all, aided by two institutions; the Bank of Naples and the Bank of Sicily. The Societies of Actionists maintain the popular banks, and have only a limited responsibility. Their system is one of co-operation, loaning money to members only and sharing profits among themselves.

In 1902 there were 163 banks with a capital of 255,000,000 lire.

The emission institution, the «Bank of Italy,» «Bank of Naples,» and «Bank of Sicily,» the first of which is a society with a capital of 240,000,000 lire, form the main body of this system of banking; the others being moral bodies.

This rule is principally based upon the guaranty of the circulation by a metallic reserve, as provided by law. The maximum and normal limit of the circulation of the above Institutes is fixed at 1,010,000,000 lire. Of these 732,000,000 at the Italian Bank of Italy, 226,000,000 at the Bank of Naples; 51,700,000 at the Bank of Sicily. The reserve being 4 per cent. of the note circulation.

The emissionary institutes are subject to supervision of the government, who proceed by ordinary and extraordinary inspections. The director of the Bank of Italy is confirmed in his charge by the government. Those of Naples and Sicily are directly appointed by him.

To complete this brief account we may state that the circulation of bank notes payable to bearer was, in 1905, for the Bank of Italy, 929,990,560,416 lire; Bank of Naples, 29,824,979,722 lire; for the Bank of Sicily, 67,480,711.11. The metallic reserve was, on 31 Dec. 1905, for the three institutes, 1,076,418,372 lire in gold; 805,877,224 in silver; 108,208,903 on foreign security and 133,241,062 on Italian securities.

Hon. Giulio Alessio,

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30. Italy—Emigration. The remarkable development of Italian emigration gives an altogether general interest to this sketch, which will deal principally with the 30 years (1876-1905) of which alone there are official statistics. Even outside of Italy there is an ample statistical bibliography in regard to Italian emigration; the most valuable works are those of Senator Luigi Bodio, who for many years was Director-General of the government statistics, and there are also very interesting articles concerning emigration published in the *Bulletin de l'Institut international de Statistique*, of which Institute Professor Bodio was general secretary from its inception (1885) to 1906. There is lacking, however, a complete and recent account of Italian emigration, and of its various phases within the last 10 years. Worthy of record are, among others, the works of Nitti, Villari, Bosco, Tammeo, Adolfo Rossi, and in general the *Bollettino della Emigrazione*, published by the Commissioner of Emigration in the Ministry of Foreign Affairs.

Italy in the 19th century only had a remarkably large emigration after it became an independent kingdom. She had, it is true, the political exodus of 1815, 1821 and 1831; but those people did not leave any traces worthy of mention, except that among a great number of emigrants who were recruited to fight for the liberation of Italy there were scientists and geniuses of the highest rank who exalted the Italian name and made it honored in foreign lands. In the *Annuario Statistico Italiano*, published in the middle of the last century by a Master of Italian Statistics, Cesare Correnti writes:

«There are a very large number of Italians residing, or wandering outside of their own country. Italian families have been settled for centuries in the Islands of Quarnero at Fiume, in Dalmatia. Fugitive adventurers, merchants, Italian doctors are found scattered in almost all the ports of the Levant. In the Algerian colonies about 15,000 Italians have settled during the last 10 years. The United States received another 10,000; and there are more than three times as many who are merchants, farmers, or industrial workers in Argentina, Uruguay, Brazil, and the other countries of South America. Recently an Italian colony has tried its fortune in Mexico, and some Ligurian vessels weighed anchor with Italian emigrants for Australia.» But after that period the progress of the emigration has been continuous.

Official statistics give following table of Italian emigration to foreign countries:

EMIGRATION IN THE YEARS 1886-1900.

YEARS.	Permanent.	Temporary.	Total.
1886	85,355	82,474	167,829
1887	127,748	87,917	215,665
1888	195,993	94,743	290,736
1889	113,093	105,319	218,412
1890	104,733	112,511	217,244
1891	175,520	118,111	293,631
1892	107,369	116,298	223,667
1893	124,312	122,434	246,751
1894	105,455	119,868	225,323
1895	169,513	123,668	293,181
1896	183,620	123,862	307,482
1897	165,429	134,426	299,855
1898	126,787	156,928	283,715
1899	131,308	177,031	308,339
1900	153,209	199,573	352,782

In the last five years (1896-1900) the total emigration closed with an increase of almost 50,000 emigrants, and it is noteworthy that the increase is due to the temporary emigration; for the permanent was rather on the decrease. And we must also nevertheless notice the fact that the regular emigration increased when the economic conditions of the country began to show improvement. But, in reality, the temporary emigration which took place, particularly in the provinces of Northern Italy, took the place of those emigrations of laborers, which have for a long time been customary in Central and Southern Italy, and which have certainly increased in the last 20 years owing to the greater facilities of communication and transportation.

EMIGRATION IN THE YEARS 1901-1905.

YEARS.	For Trans-Oceanic Countries.	For Europe and Mediterranean States.	Total.
1901	279,674	253,571	533,245
1902	204,654	246,855	531,509
1903	282,435	225,541	507,976
1904	252,366	218,825	471,191
1905	447,083	279,248	726,331

Altogether in the 30 years from 1876-1905, of which we have the figures given by official statistics, 8,029,353 persons emigrated; and the periods that we have been considering are summed up in the following figures:

EMIGRATION.

YEARS.	For Trans-Oceanic Countries.	For Europe and Mediterranean States.	Total.
1876—1885	427,953	886,736	1,314,689
1886—1895	1,393,636	998,603	2,392,239
1896—1900	809,507	742,666	1,552,173
1901—1905	1,546,212	1,224,040	2,770,252
Totals in the 30 years from 1876 to 1905.	4,177,308	3,852,045	8,029,353

There are, hence, more than 8,000,000 emigrants, of whom more than 4,000,000 went to trans-oceanic countries within 30 years. And these figures may be taken to be lower than the fact, owing to the inevitable inaccuracies in statistical investigations. If the calculation had been made regarding permanent emigration, and temporary emigration, the latter would have shown figures somewhat larger than those given by the emigration to Europe and the Mediterranean States; and, on the other hand, somewhat smaller for permanent emigration than those given for trans-oceanic emigration. We see that in the last five years, 1901-1905, the emigration, taken altogether, exceeded that of all other periods, even the 10 year periods, of the 30 years; and that the figures for trans-oceanic countries are almost double those of the preceding five years 1896-1900.

A cursory glance given to the distribution of emigrants from the various regions of Italy shows us that temporary emigration is greatest in those northern regions of Italy the nearest the confines of the country; and hence emigration in those parts holds the same place that migration from one portion of the country to another held in the other regions. The permanent emigration, on the other hand, prevails in the south of Italy, and especially in Abruzzi, Basilicata and Calabria, which are, economically considered, the least progressive regions. In Liguria, which has had an industrial revival within the last few years, the emigration is very small.

Among the regions which show a great increase in emigration are: the Marches, which, in 1905, out of a population of 100,000, had 1,934 trans-oceanic emigrants; Calabria, which had 4,335 emigrants; Latium, 1,020; Abruzzi, 3,526; Sicily, 2,640, etc.

And taking the individual provinces in the various regions we find that in 1905 the trans-oceanic emigration was greater in the provinces of Caserta, Palermo, Cosenza, Catanzaro, EMIGRATION IN THE YEARS 1903-1905.

REGIONS.	1903.		1904.		1905.	
	Permanent.	Temporary.	To Trans-Oceanic Countries.	To European and Mediterranean Countries.	To Trans-Oceanic Countries.	To European and Mediterranean Countries.
Piedmont	16,332	27,403	22,167	30,671	30,987	37,409
Liguria	4,302	762	5,252	1,302	6,324	1,908
Lombardy	7,749	29,124	12,481	32,278	16,211	45,845
Venetian	4,679	95,599	8,942	70,776	12,571	95,453
Emily	4,673	20.312	6,822	22,833	9,921	28,659
Tuscany	6,709	18,530	9,193	17,053	10,497	21,123
Marches	10,076	6,943	11,632	7,093	21,131	10,788
Umbria	1,374	3,939	1,231	5,452	2,464	7,435
Latium	2,414	5,744	5,386	1,181	13,116	1,586
Abruzzi	39,933	6,416	26,284	5,875	52,020	6,909
Campania	47,294	23,224	45,876	4,987	79,728	4,588
Apulia	9,177	6,611	9,243	4,605	16,541	4,809
Basilicata	13,354	48	11,462	394	16,475	534
Calabria	33,121	878	34,116	1,366	60,777	1,573
Sicily	29,646	29,174	42,016	8,646	97,874	8,329
Sardinia	8	2,428	263	4,309	441	2,360
Totals	230,841	277,135	252,366	218,825	447,083	279,248

Messina, Reggio-Calabria, Avellino, Salerno, Chieti and Potenza.

As for the emigration to Europe and the Mediterranean countries, Venetia takes the lead of all other regions with 2,965 out of each 100,000 inhabitants; Emilia follows with 1,140; Piedmont with 1,105; Umbria with 1,073; Lombardy with 1,030; the Marches with 988; and Tuscany with 800 emigrants. The smallest quota was given by Calabria, with 108 emigrants. The emigration for Europe and the Mediterranean countries (an especially temporary emigration) takes places more particularly from the northern and central provinces; while in the southern provinces the trans-oceanic and more permanent emigration is much larger.

Male emigrants predominate and the adults are in excess of the children. These two characteristics are common to the emigrants from other countries. In the three years, 1903-1905, 83 out of 100 emigrants were males, and 17 per cent. women; and of the total number of emigrants about 11 per cent. were not above 15 years old. The great predominance of males has noteworthy demographic consequences, both in the country from which they emigrate, and in the country whither they are bound.

The emigration to the United States in 1905 was nearly one-half (43.62 per cent.) of the entire number of emigrants. The number of emigrants for the United States increased gradually in the 30 years 1876-1905. In 1881 we find it at 11,842; ten years later it had quadrupled (47,952 in 1890, 44,359 in 1891), rising to a little more than 30,000 in 1894. But it soon increased again, and in a few years was over 100,000, and with a jump in 1901 to 1902 it rose from 121,139 to 193,772; the following year it increased again to 197,855. It was 168,789 in 1904, and almost doubled in 1905, with 316,797 emigrants.

But what strikes one particularly is the scanty emigration to Eritrea and other Italian possessions and protectorates in Africa, even to Tripoli; although to ensure a better future for Italian colonial politics it would be truly necessary and desirable that numerous swarms of laborers should emigrate to those regions.

But it is difficult to determine precisely the number of Italian emigrants who return to their own country, because many return by land, *i. e.* by rail, and one can get no reliable figures in regard to them; and the others who return by sea do not include all those who return home from trans-oceanic countries; a certain number of these disembark in foreign ports and continue their journey by rail.

The Italian passengers of the third class who disembarked in Italian ports were: In 1904, 168,379, of whom 129,231 came from the United States; in 1903, 96,156, of whom 68,821 came from the United States.

As for the emigrants who return home by way of land, the estimate of the Bureau of Statistics places their number at 434,807 in 1905; and 202,268 in 1904. Without attaching much value to these figures, which are only approximate, we note also that in 1904, 252,366 persons declared to the authorities their desire to leave their commune and return again to the trans-oceanic countries; and in that year 182,359 individuals were stricken off the register of the population, as they were to become permanent emigrants. In 1905, on the other hand, the former corresponding figures were 447,083, and the latter 264,670. Out of 100 emigrants, from 36 to 40 were considered, in the last four years, as emigrants for an indefinite period and were therefore stricken off the register of the population, it being understood that they had transferred their habitual domicile to a foreign country.

The great increase in emigration, whether to trans-oceanic countries, or to Europe and the Mediterranean basin, gives rise to the necessity for investigation as to what may be the causes of this tremendous emigratory movement.

There are conditions which doubtless favor, or stimulate emigration. Thus, the near neighborhood of the boundaries of a country render it easy to leave the country, even on foot, and to betake oneself to some other state to seek for work. Even the mountainous character of various regions induces migrations in the interior of the country, from hill to plain, and in great part to the emigration to foreign countries of mountaineers who are more disposed to move about than citizens of the plains; and often they are even compelled to leave their mountain homes in the winter season in order to make a living.

But an accurate investigation into the causes should distinguish between the physical, demographical, economic, psychological, historical, administrative and tributary causes. It is impossible, here, to undertake such an investigation. Suffice it to note that malaria is a physical cause that cannot be overlooked, that the density of the population is in some cases a co-efficient of some importance, together with the high birth rate and hence the increase in the number of inhabitants, owing to the excess of births over deaths. Calabria has a very large emigration although she has not only a low density of population (91 inhabitants to the square kilometre), but has also a low birth rate and an excess of births over deaths. Liguria with a high density (204 inhabitants to the square kilometre), has a comparatively small emigration: 720 per 100,000 inhabitants, of whom 560 go to trans-oceanic countries and 160 to European and Mediterranean states.

We may certainly say that, not infrequently, where the population is least dense, the emigration is even greater; for the same causes that determine the low density—as, for instance, a lack of the means of subsistence—promote also emigration.

The demographic factors, taken by themselves, cannot be held responsible for the constant increase of emigration, as there are regions with a high birth rate, and a large excess of births over deaths, and yet with a small emigration. It is the economic conditions which give a determining power to the demographical factors, and for this reason we may say that emigration in Italy is the consequence of a superabundance of population only in the sense that they have not yet found that perfection in the conditions of existence and of labor that suffices to keep them all in their own country, especially when compared with the conditions that they find in other lands.

Although Sardinia has one of the poorest regions, she has nevertheless a small emigration (341 in 100,000 inhabitants in 1905; while the average for the kingdom is 2.161). This must be attributed to the low density of population (33 to the square kilometre) and to the conditions peculiar of the island, which are not yet influenced by the social life of Italy, and to the fact that its inhabitants are passionately attached to their native soil.

In the southern provinces, both poverty and the unprogressive character of agriculture, the low wages, the oppressive fiscal taxes, and the antiquated and almost feudal characteristics of the relations between the proprietor of the soil and the laborer, which is specially noticeable in agricultural contracts, are the causes that help to promote emigration.

To these causes must be added those of the intellectual condition in this sense, that wherever there is the greatest amount of illiteracy, as in the southern provinces, there may be found also the greatest amount of ignorance and credulity to those who cry up the far superior conditions of labor, and wages in trans-oceanic and European countries.

Having thus examined the principal causes which help to determine emigration, there still remains to note the consequences which follow from them. And it is easy to understand that the increase in population, in consequence of the tide of emigration, must have a limit. In some regions one can notice either a decrease in the whole population, or a partial decrease, *i. e.* in a greater or lesser number of communes. The Basilicata, for instance, between 1881 and 1901 (the last two censuses) has diminished; and similarly also several districts of Calabria (Rossano, Castrovillari); of Sicily (Corleone, Termini); of Venetia (Rovigo, Massa Superiore); of Piedmont (Salluzzo, Cuneo, Pinerolo, Aosta). But it is particularly the composition of the population that shows the effect of the enormous emigration. Thus, by the predominance of males who emigrate over females, the numerical equilibrium of the two sexes is changed, so that women predominate over men in the regions from which there is the largest emigration. In Southern Italy, according to Professor Bosco ('L'emigrazione del Mezzogiorno' in the Giornale degli Economisti di Roma, April 1906, p. 328) there are communities where the greater part of the population consists of women, children and old people, out of all proportion to the normal distribution of sex and age. And another sign that the emigration in abnormal numbers of the strongest members is beginning to have an effect on the physical constitution of the population is given in the remarkable number of conscripts who are refused on account of sickness, or physical imperfections, in several portions of Southern Italy.

In regard to the economic consequences, it is certain that owing to emigration Italian labor has been better paid, that it has resulted in higher wages for those who emigrated; and the proof is in the savings sent back to the mother country in considerable sums, which, altogether, are calculated at over 200,000,000 lire a year. A considerable portion of these savings is employed to support the family at home; another portion is used to defray the debts incurred by the emigrant before leaving, or on the occasion of his departure; a third portion sometimes assists parents or friends to emigrate, and hence, serves as a stimulus to emigration; finally, one portion of the savings is invested in house or land, or in some form of economic activity. We must not forget that emigration in reducing the supply of labor has tended to raise wages, and that it has procured in other countries a numerous «clientele» for Italian producers, and has procured for the mercantile marine, through its transportation of emigrants, a source of wealth which would be still greater if in this trans-oceanic movement the foreign flag was not superior in prestige to the Italian.

But as there are advantages, so there are also disadvantages arising from emigration, and among these may be mentioned, not alone the lack of labor, and the consequent neglect of land cultivation (and this may be partly remedied by migrations to the country itself), not alone the withdrawal of much of the young, active, and therefore productive element; not alone the breaking up of families, from many of which the head is absent; but also the habit of dissipation in alcoholics, particularly among the returned emigrants. And sometimes there has also been noticed a physical degeneration among individuals: the diseases arising from bad economic conditions, it is true, have decreased; but those caused by vice in all its forms have increased. (Consult Pasquale Villari, 'L'emigrazione italiana e le sue consequenze'; in the Nuova Antologia. Rome 1 January, 1907.) Delinquency has decreased in some forms, but has increased in other special forms, so that we may say that emigration, rather than diminishing crime, has changed the form of the delinquency.

The Italian government is beginning to occupy itself with the control of emigration according to the law of 1888, which we owe to Francesco Crispi, and which was intended to prevent the frauds and abuses of emigration agencies. It was more of a primitive character than anything else and it was soon found that the intervention of the government could not be restricted to these terms, but that it must exercise an efficient control, both in the country and during the voyage, and when possible in the countries whither the emigrants were bound and where they landed. Through the special efforts of the Honorable Luzzatti, Pantano and Visconti Venosta, Minister of Foreign Affairs, the parliament sanctioned a new law 31 Jan. 1901, by which the phenomenon of emigration is truly controlled by an administrative organization, and with provisions of various character which will, if amended, give better and more complete results.

This law in its essential provisions has reference to trans-oceanic emigration only, and although Art. 29 points out that the legislation has been forced to recognize the need of protecting the other emigrants from any possible deplorable occurrence to their injury, it is nevertheless certain that the emigration to the countries of Europe and the Mediterranean have not had the legal and social guardianship they had expected. In order to study the problems in relation to these matters two congresses have already been held; one at Udine in 1903, and one at Milan, January 1907.

Many and serious were the problems that previously confronted Italy in the first years of the present century, in regard to the phenomenon of emigration. All her material, moral, and political life was at stake; and no doubt all the conditions of Italian life must improve before emigration may be restored to proportions that are not abnormal; different from those that it has assumed in the last five years of the thirty, which we considered with the aid of official statistics. It may be done, on the one hand, by not permitting the country in certain regions, especially in the south, to be depopulated of its laborers; and on the other, it may be arranged that emigration shall acquire all those qualities which serve to procure for it economic power in foreign lands, a moral authority and a just appreciation of the benefits that it confers on the countries of its destination. RICCARDO DALLA VOLTA,

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31. Italy—Italians in America. From the early days of American colonization up to recent times, the influx of Italian population to the United States was insignificant. There came to the United States, in round numbers, 500 Italians in 1865; 3,000 in 1875; 13,000 in 1885; 35,000 in 1895; 220,000 in 1905; in other words, Italian immigration to the United States from 1821 to 1905 was about 6½ per cent. of the whole inflow; in 1905 more than 25 per cent. There are to-day in the United States nearly 1,500,000 Italians, half of whom came during the last five years, at the rate of (returns accounted for) 150,000 per annum. The federal office of statistics has adopted a system of division of this immigration (northern and southern) under the racial headings Celtic and Iberic. The second type, that from the South, furnishes the largest numbers, 84 per cent., 'is largely illiterate (illiteracy rate as high as 50 per cent.),' generally poor, but not pauperistic in fact or in tendency. Eighty per cent. of the Italian immigrants are male and range between 14 and 45 years of age. Fully 70 per cent. stop in or not far from the great cities, chiefly the seaports. This tendency to gravitation is the most pronounced of the whole influx. New York has as many Italians, on a rough estimate, as Rome; Philadelphia over 100,000; in Chicago, Boston, New Orleans, San Francisco the numbers are rising daily. Since the date of the census record it is certain that the Italian-born population in all American cities has increased more or less through the influx of immigration. The first employment at hand for the average Italian on landing is offered in the cities of the North Atlantic coast or on the steam and electric railway lines, on roads, docks, trenches, basements and other public and private work which goes under the heading of unskilled labor, although most of the men who undertake it had experience at home in gardening, farming, or other home industries.

Professional occupations include actors, clergymen, editors, engineers, lawyers, musicians, physicians, sculptors, teachers; the numerical prevalence being largely of physicians and lawyers.

Trades and industries account for bakers, barbers, blacksmiths, brewers, butchers, carpenters, clerks, engravers, gardeners, ironworkers, jewellers, locksmiths, machinists, mariners, masons, mechanics, millers, miners, painters, plumbers, printers, saddlers, seamstresses, shoemakers, stonecutters, tailors, tanners, tinners, tobacco manufacturers, watchmakers, weavers and spinners. Under the heading of Sundry Occupations the Italians register bankers, agents, factors, hotelkeepers, merchant dealers, personal domestic servants.

The Italians had practically the control of the fruit trade until the advent of the Greek, both in street peddling and in the small store business; the larger trade remains in Italian hands. There is no large city in the country in which Italian progress is not marked; the advance in New York is particularly noteworthy. The economic situation of the Italian colony in New York may also be found representative of conditions throughout the country. The 450,000 Italians there own $16,000,000 in the savings banks; $35,000,000 in real estate, etc.;

10,000 shares worth $7,000,000; and their wholesale business amounts to $8,000,000 per annum; the total value of Italian property in New York—amounting to over $75,000,000—is mostly in the hands of the men who made it. New York has prominent Italian banks; an Italian Chamber of Commerce and a great number of representatives of the liberal professions, as well as a local Italian press. Most of this progress has been accomplished under severely trying conditions, in the teeth of competition, of objection and of misjudgments which too often characterize the national dealings with the problem of Italian immigration.

The rising demand for Italian immigrant labor testifies to its efficiency and desirability. The farms and plantations of the South would seem to offer good openings for profitable employment; and special opportunities in the line of market-gardening are noticeable, this last form of agriculture being very successful throughout the United States whenever attended to by Italians. But there is still to be met frequently in the South the idea that the Italian workman is something between the white man and the negro, and until this is destroyed it is obvious that the influx to the South must suffer from the prejudice. The adaptability of the Italian for cotton, rice and sugar-cane culture has already been remarked upon by experts. In other lines the extension of grape and olive-growing; the strawberry culture of Independence, Louisiana, the vineyards and wineries of the West, the flourishing agricultural colonies throughout the South and Southwest show clearly what Italian immigration might be and, in fact, what it ought to be.

Development along these lines would naturally solve the problem of congestion and answer satisfactorily the legitimate call for a better distribution, «systematic, comprehensive, and sustained.»

The high average physical vigor of the Italian immigrant, the comparatively low death rate under the new circumstances, the remarkable immunity from disease outside of the congested centres, coupled with an exceptional power of resistance and recuperation; on the other hand, the sobriety and all-round temperate mode of life, the thriftiness, the keen appreciation of what is good in American institutions, the obvious fitness for assimilation and capacity for civic education are the salient characteristics of the Italian immigrant as seen in this country. Italy is officially represented in America by the Embassy at Washington; by a Consulate General in New York; by consulates in all important centres of Italian immigration and by consular agencies in minor cities wherever required.

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Italy, Free Church in, a reformed religious sect founded by Alessandro Gavazzi in 1870 (see GAVAZZI, ALESSANDRO). In 1874 a confession of faith was formulated, an ecclesiastical constitution framed under a General Assembly; and the title of «Free Church in Italy» assumed. The confession scarcely does more than echo those of the Protestant Churches, and the constitution is based on the government by elders, like that of the Presbyterians, though the several congregations are practically uncentralized, as with the Independents. In 1891 by royal decree, the title «Chiesa Evangelica Italiana» was given to this body. The schools of the church in Florence are partially supported by the state. According to recent statistics the General Assembly legislates for 30 congregations represented in it, of which there are 14 ordained ministers and 1,831 communicants.

Itasca Lake, farthest source of the Mississippi, in northern Minnesota. The ground has a substratum of sand and gravel, mingled with large boulders; the surface is spongy and swampy. This basin has been made a national park of about 7 by 5 miles, containing 19,701.69 acres (30.78 square miles). In the centre, fed by sources so permanent and with a flood plain so small that it has actually risen in dry seasons (though it receded some feet during the 19th century), lies Itasca, a giant among the small ponds around it, but having an area of only 1,130 acres, or 1¾ square miles. It is composed of a centre running east and west about a mile, whence extend north and south an east and a west arm about 1½ miles long each, and another northward about a mile, the width varying from ⅙ to ¾ of a mile. It has a shore line of 23,000 yards (over 13 miles). Depth, 4 to 50 and 60 feet; average, 20 to 35. The Mississippi flows from its north arm; a strong brook called by Nicollet the «Infant Mississippi» flows into the west arm. See MISSISSIPPI RIVER.

Ita'ta Case, 1891, an important international imbroglio, resulting from the *coup d'état* of Balmaceda (q. v.) and the revolt of the constitutional party in Chile. The latter through an agent had bought a quantity of arms and ammunition in New York, which were shipped to San Francisco and then sent by a schooner to the southern coast, where it was met by the insurgents' vessel, the Itata, and the cargo transferred. The vessel had a few soldiers and a little artillery on board. The attorney-general issued a writ of detention on the ground that she was violating our neutrality laws; and this failing, our cruiser Charleston was sent in pursuit, overhauled and captured her, and placed her on trial before the United States district court at San Diego. The courts discharged her as not having been guilty of such violation. The real interest of the case was political. It was notorious that our government and many of its civil and naval representatives sympathized with Balmaceda against the insurgents, and it was charged with going out of its way in order to cripple the latter; while the other party were ready to make war on the Chilean constitutionalists for defying our authority.

Itch, a contagious disease of the skin (scabies) due to its invasion by the itch-mite (*Sarcoptes scabiei*), now rather rare in civilization. Even the adult mite is so small as to be barely visible, the female being about one sixteenth of an inch long and not quite as wide, while the male is still smaller. It has eight legs, two on each side of the head, to which suckers are attached, and four behind. (See MITE.) The female burrows into the skin and deposits her eggs, about 50 in number, and dies after a period of six weeks. After the eggs hatch out, the young make their way to the surface, and the impregnated females again burrow into the skin, so keeping up the process. The most frequent sites selected by the bugs for their burrows are the web between the fingers, the front of the wrists, the umbilicus, the genitals in men, and the under side of the breasts in women. The first sign of the disease is itching, which forces the patient to scratch, particularly at night, as the warmth of the bed increases the itch. The skin soon becomes inflamed from scratching, and the discomfort is increased. Close examination may show the tiny burrow like a reddened pin-scratch about half an inch long. Many remedies are used with success but sulphur in the form of an ointment is the most common. As the bugs cannot be killed while still in the skin, a good plan is to take a hot bath with brisk rubbing, apply the ointment night and morning for three days, continuing to wear the same clothing and sleep in the same bed-clothes; at the end of that time another bath is to be taken, all clothing and bed-clothes changed, and another series of rubbings started. This must be continued as long as fresh burrows are found.

Ithaca, N. Y., city and county-seat of Tompkins County, on Cayuga Lake, and on the Lackawanna and the Lehigh Valley R. R.'s; 70 miles southeast of Rochester. It derives water power from Fall Creek and has manufactories of autophones, glass, typewriters, drop forgings, calendar clocks, firearms, salt, wall paper, agricultural implements, iron castings, machinery, etc. The city is best known as the seat of Cornell University (q.v.) and the Cascadilla Preparatory School; and also as a popular summer resort. There are two national banks, trolley connection with East Ithaca, large farming trade with Tompkins, Tioga, Cortland, and Seneca counties; and an assessed property valuation exceeding $7,000,000. In the immediate vicinity are numerous gorges and waterfalls, the most noted of the falls being Triphammer, Ithaca, Taughannock, and Buttermilk. The Taughannock is 215 feet in height and is the highest waterfall east of the Rocky Mountains. There is here the Cornell Free Library containing 21,000 volumes, the Ithaca Conservatory of Music and Renwick Park. Under the charter of 1888, the government is vested in a mayor and city council elected every two years. Ithaca was first settled in 1787 and was called at different periods, «Sodom,» «The Flats,» and «the city,» until 1806, when Simeon Dewitt gave it the name it bears. It was incorporated as a village in 1821. Pop. (1890) 11,097; (1900) 13,136.

Ito, Hirobumi, hē-rō-boo'mē ē'tō, **Marquis,** Japanese statesman: b. in Choshiu province, 1840. When the officer of the deck of the United States S. S. Mississippi, at midnight on 25 April 1854, heard the cry «American, Amer-

MARQUIS HIROBUMI ITO,
Ex Premier of Japan.

ican!» he found two Japanese gentlemen who had blistered their hands in rowing a fisherman's boat from the shore to get on board the American warship, hoping to be taken to America. Their clothing was stuffed full of writing paper and materials on which they expected to note down what they saw in foreign countries. One of these was Yoshida Shoin, who had long believed in breaking up the hermit policy of Japan and opening his country to human intercourse. Against his own sympathies, and despite their piteous appeal, Commodore Perry, keeping his word of honor, put the two men ashore. Seized as a prisoner, Yoshida was kept in domiciliary confinement in Choshui for five years, finally suffering decapitation and political martyrdom in Yedo, 31 Jan. 1859. He had for his pupils Ito Hirobumi and Inouye Kaoru. Thus early instructed, Ito determined to see the great world. Getting secretly on board a foreign ship, he reached Shanghai. While his other companions went to Europe by steamer, he and Inouye worked their way before the mast. In London he saw and learned much amid varied experiences, meanwhile making up his mind that Japan must change her entire civilization, cease being Oriental and become modern, or else go the way of India and the conquered Asiatic nations. Hearing that his feudal lord, having erected batteries commanding the straits of Shiminoséki, was about to defy the combined fleets of Great Britain, France, Holland, and the United States, he hastily left for Japan, but at home his efforts did not prevent that bombardment of 5 Sept. 1864 which so enlightened the eyes of the Choshui men, leading them to sink their clan feuds and join with Satsuma, Tosa, Echizen, and others for the restoration of the emperor's power and the unity of all Japan. Active as one of the younger men in the revolution of 1868, he saw the necessity of a uniform coinage. Visiting the United States, he studied American financial history, and on his return the decimal system of money and a mint at Osaka were established. He was one of the first to propose the abolition of feudalism, and in 1872–3 went round the world in the embassy to obtain from the Powers revision of the treaties. As minister of public works he established a college of engineering and secured the building of the railway from Yokohama to Tokyo. After serving as head of the Home Office he visited Europe in 1876 to study the constitutions of the various countries with the idea of forming a written constitution, in fulfilment of the emperor's oath of 1868 to create representative government. He became an intense admirer of the Bismarckian methods and system, and on his return inaugurated a radical plan for altering social customs. As minister president of state, he reconstructed the government, eliminating men of the older traditions and putting in men of modern training. He carried out drastic reforms in economy, besides reconstructing law and codes which, departing widely from those hitherto built on Chinese models, were made in harmony with the jurisprudence of Western countries. In 1888 there was a conservative reaction, and Ito retired to prepare, with three others, the constitution, which was finally promulgated 11 Feb. 1889. Though astonishingly liberal in matters of conscience and personal liberty, it follows the Prussian model in making the ministers responsible not to the Diet but to the emperor, against which provision the Liberals, eager to follow American and English precedents, have made unceasing protest. This struggle is the key to Japanese politics. Ito wrote a volume of commentaries on the constitution, translated into English by Ito Myoji. Again called to the premiership, he averted a political crisis at home and directed the diplomacy of the Chino-Japanese war of 1894–5. Resigning the premiership, he traveled in Europe, and on his return was again called by the emperor to form a government, and besides working for the Anglo-Japanese alliance, sent 21,000 fully equipped soldiers to join the allies and relieve the legations at Peking. In 1901, after the fall of his «coalition cabinet,» he was succeeded by Katsura and went abroad for travel. In the United States for health, he received at Yale University the degree of LL.D. In 1904 he was the emperor's special envoy in Korea to consummate the alliance of the two countries. Enjoying the full confidence of his sovereign, he is, despite his opportunist proclivities, probably the best all-round statesman in Japan's modern history, incarnating, as he does, her past, present, and future.

WILLIAM ELLIOT GRIFFIS,
Author of ‹The Mikado's Empire.›

Iturbide, ē-toor-bē'dā, **Augustin de**, emperor of Mexico: b. Valladolid de Michoacan (now Morelia), Mexico, 27 Sept. 1783; d. Padilla, State of Tamaulipas, 19 July 1824. In 1810 he was lieutenant in the provincial regiment of his native city, but on the breaking out of the troubles in Mexico joined the royalist party, and in this cause displayed such valor and ability that in 1816 he rose to the command of what was called the northern army, which occupied the provinces of Guanaxuato and Valladolid. In 1820 the imprudent acts of the Spanish cortes produced so much exasperation among the clergy and the partisans of absolutism in Mexico, that these persons united to effect the independence of their country, selecting Iturbide as their agent, and appointing him commander of the army in the south. He quickly bore down all opposition, and became so popular that he had himself proclaimed Emperor of Mexico, in July 1822, under the name of Augustin I. The Congress declared the throne hereditary in his family, and voted him a yearly allowance of $1,500,000. His troubled reign came to an end in less than a year, by his abdication in March 1823. Congress granted him on his abdication a yearly pension of $25,000 on condition of his leaving the country, making sufficient provision for his family in case of his death. He resided in Leghorn for about a year, when he was induced to make an attempt to recover his lost crown. He landed with but a single attendant at Soto la Marina, and was arrested and shot. His family settled in Philadelphia, where his widow died in 1861. Several of his sons subsequently held positions under the Mexican government, the eldest, Prince Angel, dying in the City of Mexico in 1872, the youngest, Prince Augustin, dying in Paris in 1873. Prince Angel's son, Augustin, b. 1864, was adopted by the Emperor Maximilian as his heir, Maximilian himself being childless. The collapse of the second empire, however, destroyed his chances of a throne.

Iuka, Miss., a small village on the Memphis & Charleston railroad, in the northern part of the State, about 115 miles east of Memphis, was the scene of a severe engagement during the Civil War. Early in September, 1862, it was occupied by a small Union regiment as an outpost. On the morning of 13 September Gen. Sterling Price, moving north from Tupelo with a force of 14,000 men, to prevent Grant from sending reinforcements to Gen. Buell in Kentucky, drove the Union regiment from the village and occupied it, and on the 19th was about moving to Rienzi on the Mobile & Ohio Railroad to form a junction with Earl Van Dorn's army preparatory to an attack upon Corinth. Gen. Grant had been closely watching the movements of Price and Van Dorn, and when he heard that Price had occupied Iuka he determined to attack and cut him off before he could effect a junction with Van Dorn. Gen. Rosecrans, who was near Corinth with 9,000 men, was ordered to move south to Rienzi and Jacinto, then eastward, and, marching on the roads from Jacinto and Fulton, to attack Iuka from the south. Gen. Ord, with 6,500 men, was to move along the Memphis & Charleston Railroad to Burnsville, thence by roads north of the railroad, and to attack on the north and west of Iuka. Grant accompanied Ord, who reached Burnsville on the 18th, and encamped within six miles of Iuka, which he proposed to attack early in the morning; but Grant, hearing that Rosecrans had been delayed in his movements and would not probably be up in time to attack next day, instructed Ord not to move to the attack until the sound of Rosecrans' guns was heard south of Iuka. Rosecrans, with the two divisions of Hamilton and Stanley, moved from Jacinto at 5 o'clock in the morning of the 19th and, after a march of 18 miles, at 4 P.M. his advance division (Hamilton's), about two miles south of Iuka, encountered Little's division of Price's command, Maury's division remaining in the north of Iuka, to confront Ord. Little had about 4,000 men, with which he attacked Hamilton vigorously before the latter could complete his lines. After a very severe fight, Hamilton was driven back some 600 yards, abandoning nine guns; but, receiving three regiments of Stanley's division as a reinforcement, he rallied and regained part of his lost ground, when darkness ended the fighting. Gen. Price reports: "The fight began, and was waged with a severity I have never seen surpassed." Price prepared to renew the battle in the morning; but, convinced by his subordinates of the critical position he was in with Rosecrans in his front and Ord in rear, retreated southward by the Fulton road, which Rosecrans had failed to close as was intended. Ord did not hear the sounds of battle on the 19th, but, advancing on the morning of the 20th, found that Price had escaped. Price retreated southward and reached Baldwyn 23 September. Rosecrans and Ord returned to Corinth. Rosecrans reported a loss of 144 killed, 598 wounded, and 40 missing. Price reported a loss of 86 killed and 408 wounded; Union estimates placing it much higher. Consult: 'Official Records,' Vol. XVII.; Greene, 'The Mississippi'; the Century Company's 'Battles and Leaders of the Civil War.' Vol. II.

E. A. CARMAN.

Ivan, ē-vän', the name of several rulers distinguished in Russian history. The most celebrated are the Grand Dukes Ivan III. and Ivan IV., who laid the foundations of the Russian Empire, the latter (b. 1529; d. 1584) being commonly known as Ivan the Terrible. (See RUSSIA.) Ivan VI. was son of the Grand-princess Anna and of Antony Ulrich, duke of Brunswick-Wolfenbüttel. The Empress Anna, 1740, declared him her successor, and her favorite Biron was to be his guardian and regent. Biron caused the oath of allegiance to be taken to the prince, and when he was banished the parents of the child assumed the reins of government until the daughter of Peter I., Elizabeth, ascended the throne. The young Ivan was taken from his cradle by soldiers, and shared the fate of his banished and imprisoned parents.

I'vanhoe, the title of one of Sir Walter Scott's most famous novels, written and published in 1819. The manuscript is now at Abbotsford. Immediately after its appearance, 'Ivanhoe' became a favorite, and now ranks among the most brilliant and stirring of romantic tales. The scene of the tale is England in the reign of Richard I.

Ives, īvz, **Brayton**, American financier: b Farmington, Conn., 1840. He was graduated from Yale in 1861, served in the Union army in the Civil War, attaining the rank of colonel, 5th Connecticut infantry, and brevet brigadier-general, in 1867–89 was a broker of New York, and in 1878–9 president of the New York Stock Exchange. At one time president of the Northern Pacific railway, he later was chosen to the presidency of the Metropolitan Trust Company of New York.

Ives, Frederic Eugene, American inventor: b. Litchfield, Conn., 17 Feb. 1856. He received a public school education; was director of the photographic laboratory at Cornell University in 1874–8, and has lectured before scientific societies in this country and in England. Among his inventions are the process of half-tone photo-engraving (1878); and the three-color printing process in the typographic press. He has published: 'Isochromatic Photography with Chlorophyll' (1866); 'A New Principle in Heliochromy' (1889); etc.

I'vory, properly the substance of which the tusks of the elephant consist, though the similar substance constituting the tusks of the hippopotamus and the horn of the narwhal is also so called. There is also a wholly different substance known as vegetable ivory (q.v.). Ivory is prized for its beautiful color, the fineness of its grain, and the high polish it is capable of receiving. That of the African elephant is most esteemed by the manufacturer for its density and whiteness. It is used as a material for knife-handles, pianoforte keys, combs, the backs of brushes, billiard balls, chess-men, carved figures, and ornamental articles of various kinds. Thin plates of ivory are used as panels for miniature paintings, and etchings are sometimes executed on such plates. The ivory of the hippopotamus is preferred by the dentist. The shavings and sawdust of ivory, by burning in a crucible, are converted into a black powder, from which is prepared a pigment known as ivory black. Ivory may be stained or dyed. The use of ivory was well known in very early ages. The ancients were acquainted with the art of sculpturing in ivory, of dyeing and inlaying it, and they often employed it in statuary. Some of the most famous Grecian statues were chryselephantine, that is, were overlaid with plates of gold and ivory in conjunction. To provide the world's supply of ivory it is estimated that 9,000 to 12,000 elephants are killed annually. The medium weight of a tusk is about 60 pounds, but some are found weighing as much as 170 pounds.

Ivory-bill, the great black-and-white, scarlet-crested woodpecker (*Campephilus principalis*), formerly numerous and greatly admired throughout the Southern States, but now surviving only in a few of the most secluded cypress swamps of the Gulf coast. Its extermination was begun by the Indians, who valued highly its splendid head-feathers as an ornament for warriors; and completed by sportsmen and plume-hunters. The books of Wilson, Audubon and early writers on American animals give many interesting facts as to its habits.

Ivory Palm, a South American palm-tree yielding corozo-nuts,— large white seeds called «vegetable ivory» (q.v.).

Ivory, Vegetable. See VEGETABLE IVORY.

Ivy, a popular name for various climbing, creeping, and drooping herbs and shrubs, the most widely known of which are the following: Common or English ivy (*Hedera helix*) is a tall climbing evergreen shrub of the order *Araliaceæ,* widely planted in Europe (where, as in Northern Africa and Eastern Asia, it is native), and in the warmer parts of the United States, its ornamental, abundant foliage being highly valued for covering walls, rocks, and trellises. Its small and inconspicuous greenish, perfect flowers appear late in the autumn and the small black fruits (three to five seeded berries) ripen the succeeding year. The fruits, which are devoured by birds, are bitter and pungent, and were formerly in medicinal repute, The gummy juice obtained from the stem, as also the fruit, contains the bitter principle hederin and the hederic acid characteristic of the plant. It has been used in making varnish. Contrary to popular opinion, ivy is not parasitic upon such trees as support it. It merely clings to them by its numerous hold-fast roots produced along the entire length of its stems. Such trees as it injures are killed by constriction. The other popular notion that it makes the walls and houses upon which it climbs damp and unhealthy is also erroneous; in reality it dries them, the roots abstracting such water as reaches the wall through the dense foliage; yet exceptional cases of damage occur. It has numerous horticultural varieties which differ mainly in the form, color and markings of the leaves. These succeed best in rather moist, rich soils and shady positions and are not usually found to be hardy much farther north than New York unless well protected from the winter sun, as upon the north side of buildings, etc. As a cool greenhouse and a house plant it is very popular. Ivy leaves and ivy berries were formerly administered for various medicinal purposes, but they have been long out of use. The leaf and habit of the common ivy are so characteristic that reference is often made to them in the specific names of other plants, «ivy-leaved» being common as a designation. The plant takes a prominent place in mythology and folk-lore.

Japanese or Boston ivy (*Ampelopsis tricuspidata*) and its near relative Virginia creeper (*A. quinquefolia*) of the order *Vitaceæ,* are probably the next best known species to which this name is applied. The former is the more graceful, and is gradually gaining in general favor over the latter, which demands more attention to keep it looking presentable. Both climb by means of tendrils, but the Boston ivy clings better to walls. It has three-lobed leaves; its rival, five-lobed. Both have brilliant autumnal colors in the north, where the Virginia creeper is the more hardy.

Among the herbaceous ivies Kenilworth ivy (*Linaria cymbalaria*), German ivy (*Senecio mikanoides*) and ground ivy (*Nepeta glechoma*) are best known in America. They are all popular greenhouse plants and are frequently planted in hanging-baskets because of their graceful habits. Poison-ivy or poison-oak is a climbing sumach whose leaflets somewhat resemble those of Virginia creeper, but are in threes instead of fives (see POISON-IVY).

Iwakura, Tomomi, Japanese reformer and statesman: b. in Kioto in 1825 of illustrious ancestry, one of the Kuge or court nobility, chamberlain of the imperial household, and at first in favor of the expulsion of foreigners. He never saw a foreigner until he was 43 years old. Becoming a Progressive, he was banished into exile and shaved his head, but his real aim was to restore the lustre of the imperial throne by the overthrow of the Yedo Shogunate. Entering into communication with the leaders of the confederation of southern daimios, he became the link between court nobility and the progressive samurai or gentry, and took a prominent part in the Restoration of 1868. He was one of the first to send his three sons to be educated under Verbeck and to America. He received high office and salary, and in 1870, as envoy of the mikado to the recalcitrant Satsuma leaders, led in the movement to abolish feudalism, and was prominent in securing the formation of a new national army. As minister of foreign affairs and junior premier, he was visited by his sovereign. He went to Europe and America as head of the great embassy of 1872. He admired greatly the government at Washington. He left a powerful impress on the nation and the sovereign, and received the highest honors due to a subject. Escaping all attempts at assassination, he died quietly in his bed 20 July 1883. Of his children, a son, Prince Iwakura Tomosada, of the House of Peers, is special attendant upon the emperor, and the other, a daughter, is at the head of the Red Cross work in Japan.

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Ixion, ĭks-ī'ŏn, in Greek mythology, king of the Lapithæ in Thessaly, son of Phlegyas. He married Dia, daughter of Deioneus. He became enamored of Hera, and attempted to seduce her. Zeus made a cloud in the shape of Hera, and carried it to the place where Ixion had appointed to meet her. Ixion was caught in the snare, and from his embrace with the cloud were born the Centaurs. (See CENTAURS.) Zeus banished him from heaven;

struck him with his thunder, and ordered Hermes to tie him to a winged or fiery wheel in Hades.

Iyar, the eighth month of the Jewish year, corresponding, at the earliest, with April; but it may be as late as May; it has only 29 days.

Iz'ard, George, American general: b. Richmond, Surrey, England, 1777; d. Little Rock, Ark., 22 Nov. 1828. He was a son of Ralph Izard (q.v.). He was graduated from the College of Pennsylvania in 1792, and after a tour in Europe was appointed in 1794 a lieutenant in the regiment of artillerists and engineers in the United States army. Upon the breaking out of the War of 1812 with Great Britain he served as colonel of the 2d artillery, and was successively promoted to be brigadier-general and major-general. At one period of the war he held chief command of the northwest frontier. In 1825 he became governor of Arkansas Territory, in which office he died.

Izard, Ralph, American statesman: b. near Charleston, S. C., 1742; d. South Bay, near Charleston, 30 May 1804. He was educated at Christ's College, Cambridge, England, and, inheriting an ample fortune, established himself in 1771 with his family in London, whence the troubled condition of American politics induced him in 1774 to retire to the continent. He subsequently endeavored to impress upon the British ministry the ill-advised nature of the course they were pursuing, but without effect. In 1780 he returned to the United States, and found occasion to serve the country in various ways, having been instrumental in procuring the appointment of General Greene to the command of the southern army, and having once pledged his whole estate as security for funds needed in the purchase of ships of war in Europe. In 1781 he entered the Continental Congress, of which he remained a member until the peace; and upon the adoption of the Federal constitution he was elected a United States senator from South Carolina. As a legislator he was able and eloquent and in the senate possessed the confidence of all parties. The ‘Correspondence of Ralph Izard from 1774 to 1804, with a Short Memoir,’ was published by his daughter (1844).

Izard, the chamois (q.v.); so called in the Pyrenees.

J

J the tenth letter of the English alphabet, was unknown to the ancient Latins and Greeks as an alphabetic character and representative of a vocal sound.

Till the 16th century the Latin and other alphabets of western Europe had only the letter i to represent both the vowel sound i and the consonant sound now represented by j: at least in fonts of type of that century, and till the end of that century or later, the character i served to represent both the vowel and the consonant, though a distinction was made between them in manuscripts of the previous century by continuing the stroke of the i a little below the line when it stood for the consonant. This letter j from the first represented in English the sound of dzh, in French that of zh; in German and other languages its value is that of the consonant y; for example, Julius, pronounced yulius, jacio, pronounced yacio.

For speakers of the modern European languages the j in Latin has usually the same value as in their native tongues. But though for Spaniards j in Latin is equal to y, in their own speech j is a strong guttural aspirate that might be represented in English by kh. The sound of j in English is always represented in Italian by g: the French and English journal is in Italian *giornale,* the Latin *judex,* English judge is in Italian *giudice.*

The sound of dzh is represented in English not only by its proper letter j, but also by g and by dg: jest, gem, edge.

Jabiru, jab′ĭ-roo, a large species of stork (*Mycteria americana*), somewhat resembling the adjutant, found nearly throughout South America and northward into Mexico and Texas. It is about five feet high, with stilt-like legs, and massive, slightly upcurved beak; the plumage is white and the naked head and neck black. In habits it resembles the other storks (q.v.). Several related Oriental species have received the same name.

Jaborandi, a Brazilian shrub (*Pilocarpus pennatifolius*) of the order *Rutaceæ,* which yields a volatile oil from which is derived a principle (pilocarpin) in the form of an amorphous white powder having properties similar to atropine. It is the basis of the drug jaborandi, which is diaphoretic and sialagogic in its effects. Other «jaborandis» are obtained from species of *Serronia, Aubletia* and *Piper.*

Jac′amars, a group of small, gaudy, South American birds of the family *Galbulidae,* and related to the puff-birds and woodpeckers. Their plumage is highly colored, reds and bronzy greens and blues predominating. They live mostly along the outskirts of forests, and feed upon large insects caught in flight. White eggs are laid in holes in earthen banks; and a whistling song is given during the breeding season.

Jaçanas, zhä-sä′nä or jă-kā′nạ, a group of birds (*Parridæ*) related to the rails, and remarkable for the extraordinary length of the toes, which are further extended, especially the hallux, by long, slender claws. There are four genera and about a dozen species, most of which inhabit the Old World — Africa, India, and Australia. The genus *Parra* is American, and one Mexican species (*Parra spinosa*) enters Texas. The beak is plover-like and the bend of the wing bears a stout and acute horny spur; the plumage is of a rich purplish brown with the wings green and black. The great spread of the toes enables these birds to walk with ease on the floating leaves of water lilies and similar plants, otherwise their habits are much like those of rails (q.v.).

Jacaran′da, a genus of tropical American trees of the Bignonia (q.v.) family. One (*B. brasiliana*) yields the wood called jacaranda wood, or blue ebony, which is very hard and capable of receiving a fine polish. The name is carelessly applied to several other South American woods used in cabinet-work.

Jacaré, zhä-kä-rā′ or jăk′ạ-rĕ, a South American name for an alligator of the genus *Caiman,* of which the large black species (*C. niger*) reaches a length of 20 feet and is called on the upper Amazon jacaré-nassu, while the jacaré-tinga (*C. trigonatus*) is only six feet long, and has a slender muzzle and black-banded tail. See Cayman.

Jack, a pike; in the United States, the common eastern pickerel (q.v.) is most usually meant. The wall-eyed pike (q.v.) is called «jack salmon» in some parts of the West. Several marine fishes are known as jack fish, amber jacks, etc., especially among the lively sea-bass, groupers, amber-fish and the like. The term, as in other cases, implies a quality in the animal exciting friendly interest and admiration.

Jack, or **Jack-tree** (native name *Jaca*), a tree (*Artocarpus integrifolia*), related to the bread-fruit (q.v.), a native of India and south-eastern Asia. The fruit grows to a larger size than the bread-fruit of the Southern Pacific islands, often weighing more than 30 pounds, and containing from 200 to 300 seeds, each of them four times as large as an almond. The seeds or nuts are eaten after being roasted or boiled, and the sweet fleshy pulp of the fruit is also eaten. When the tree is young the fruit grows from the twigs; in middle age it grows from the trunk; and when the tree gets old, from the roots. It forms a great part of the food of the natives in some portions of India, Ceylon, etc. The yellowish timber is used for almost every purpose, being strong and ornamental, and yields a yellow dye.

Jack and the Beanstalk, an English nursery tale relating to the heroism of a boy. Its analogue occurs in many national folk-lore legends. It is supposed to represent in a figure the restoration to the earth of those fertilizing and elemental activities, which are necessary to human life. The harp is the wind, which drives the ships and turns the mills to grind the wheat. The bags of treasure are the raindrops that scatter wealth and plenty. The red hen is the sun that brings life to birth by its fostering heat.

Jack and Jill, the first words of an old nursery rhyme, of considerable folk-lore interest. Jill is a corruption of the French Julienne, once common in England under the form Gillian. It also appears in the legend of St. Kilian, where Geilana vindictively causes the good bishop's death. This incident of Jack and Jill is probably based on one of the moon myths of Scandinavia. The Norse peasant sees in the spots on the moon the two children rescued by the moon from their father, who had forced them to draw water all the day.

Jack the Giant Killer, the hero of an English nursery story, which reflects triumph of skill over strength and bulk such as makes the point of the story in David and Goliath, Ulysses and Polyphemus, etc. The English form is based upon the legend that St. Michael's Mount, in Cornwall, was once the fortress or castle of a giant, who was dislodged by the valor of an English knight. In adapting the story so as to claim the sympathies of children the knight is made to take the shape of a child.

Jack Horner, the first words of an old nursery rhyme. The rhyme is said to be based on a historic fact. Horner was the messenger whom the abbot of Glastonbury sent to Henry VIII. with the deeds of certain manors involved in the dissolution of monasteries. Horner obsequiously handed the parcel to the royal spoliator, but first of all managed to abstract the deeds of the manor of Wells, a «plum» indeed, and the abbot was afterward punished on the charge that he had withheld them.

Jack-in-the-Pulpit, or **Indian Turnip,** a perennial herb (*Anisœma triphyllum*) of the arum family (see *Araceœ*). Its name is derived from its spadix, which is upright, with the spathe surrounding and arching over it, suggesting a preacher in an old-fashioned pulpit with a sounding-board. It is common in the United States, east of the great plains, in damp, shady woods and in moist garden soil; and when the spathe falls away in early summer, the red berries are prominently shown in the form of a dense ovoid head. Its acrid tuber or corm is valued for its medicinal properties, and may be made edible by boiling.

Jack-snipe, a gunner's term for a shore-bird, also called grass or meadow snipe, which is in reality a sandpiper, named in books the pectoral sandpiper (*Tringa maculata*). The perversion of names is due to its somewhat game-like habits of lying to a dog and flushing correctly from the grass, like a true snipe which render it an attractive object of pursuit; beside which, in the fall it becomes very fat, and it is then excellent eating. Unlike most sandpipers, it does not flock, at least to any extent, being oftenest found scattered singly or in pairs. In the United States it is chiefly, if not wholly, a bird of passage, breeding in Canada and wintering in the tropics. It is nine inches long, clay-colored, striped with blackish above; breast ashy and sharply streaked; belly white. Consult authorities mentioned under shore-birds.

The English «jack-snipe» is a true snipe (*Gallinago gallinula*) of very small size, and therefore also known as «half-snipe.»

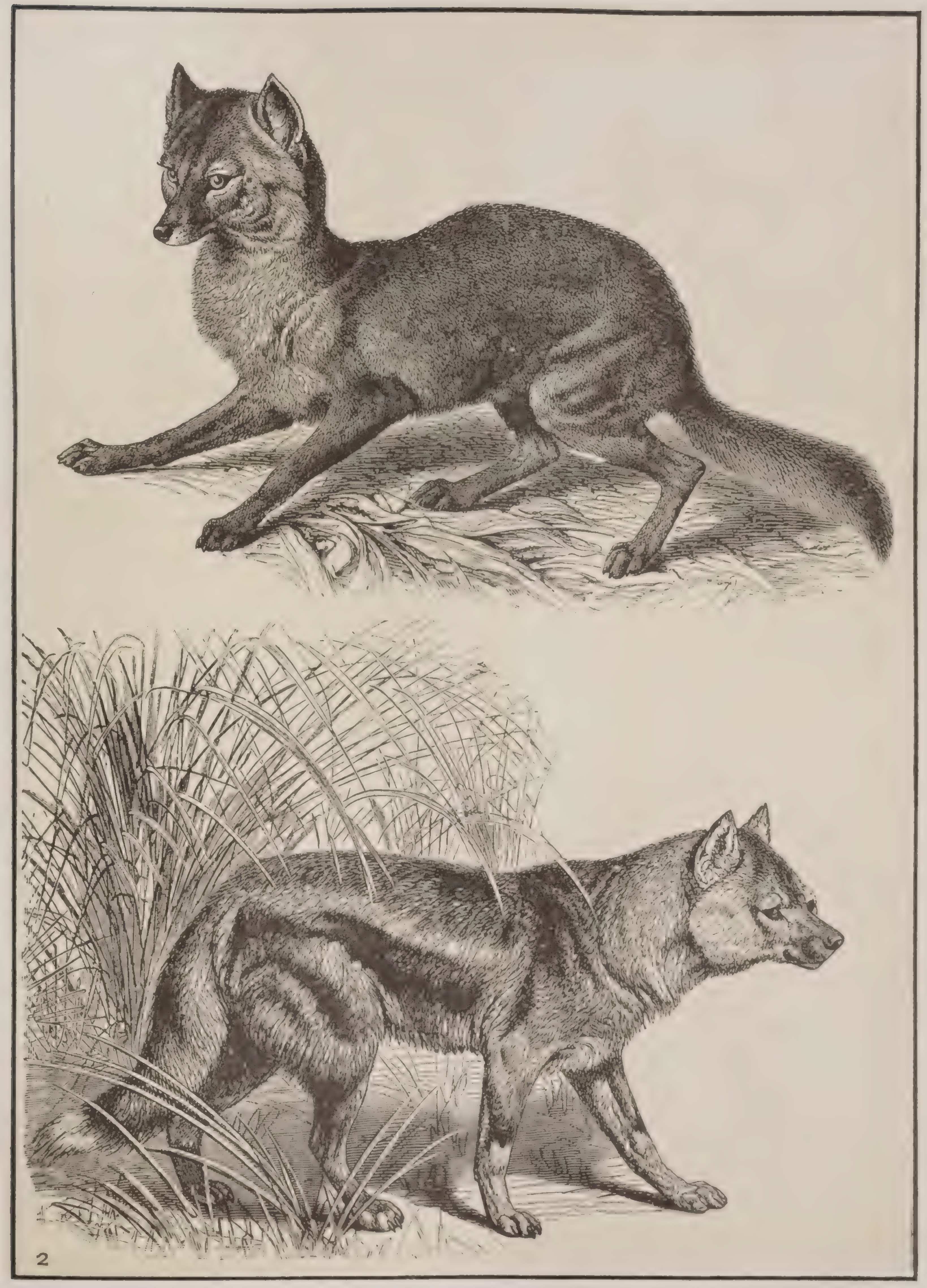
Jack'al, a small active wild dog or wolf of the warmer regions of the Old World, found in southeast Europe, Africa, Syria and southern Asia. The common jackal averages about 2 or 2½ feet in length, and about 14 inches in height, with a bushy tail about 8 inches long. The eyes are small, and the pupil is round. The general color of the body is a dirty yellow or brown, lighter on the throat and belly. Jackals inhabit holes and burrows whence they come forth in the evening to hunt in packs. Their cry consists of a series of prolonged howls, followed by shorter yelps, much like that of the American coyote. The jackal subsists largely upon carrion, often that left after the repast of the fiercer and larger carnivora; but it also kills prey for itself, a pack hunting down antelopes, deer, or other animals, besides getting much small fare, as mice, lizards, insects and the like. They also eat certain kinds of vegetable food, and sometimes they do considerable damage to sugar and other plantations. The jackal is susceptible of being tamed, but its odor makes it by no means a desirable domestic animal. It is believed to be exceedingly cunning, and in many Eastern tales, especially among the people of India, plays exactly the same part as the fox does in those of Europe. It is probable that jackals have contributed frequently to the commingled stock represented in our domestic dogs, some of which betray very jackal-like points. They inter-breed with domestic races.

The common jackal (*Canis aureus*) is the most widely distributed species; but another species, found mostly in southern Africa, is the blackbacked jackal (*C. mesomelas*). This latter form has the back and end of the tail black, the other parts mostly red or yellowish-red. A third species of jackal found in South Africa is the canduc (*C. adustus*), marked by a light stripe on the sides. Consult: Mivart, ‹Dogs, Jackals, Wolves and Foxes› (London 1890).

Jackass Kingfisher, or **Laughing Jackass,** the name of a large inland kingfisher (*Dacelo gigas*) of Australia, given by the colonists in allusion to its loud, hoarse cry. It is about 17 inches long, brown in general color, does not frequent water or catch fish, but lives on insects, small reptiles, etc., and lays its eggs in a hole in a tree.

Jack'daw, a small, black European crow (*Corvus monedula*), with black legs and feet

JACKALS.



1. Common Jackal. 2. Side-striped Jackal.

and grayish neck. They inhabit towers, spires, and like elevated situations, and even in towns and populous cities are present and breed freely. The nests and eggs are like those of other crows (q.v.) which they resemble in general habits. Jackdaws are easily tamed, learn to pronounce many human words, and are most amusing pets, but are mischievous and thieving, like magpies.

Jack'man, Wilbur Samuel, American educator: b. Mechanicstown, Ohio, 12 Jan. 1855; d. 28 Jan. 1907. He studied at Allegheny College (Meadville, Pa., 1880–2), was graduated from Harvard in 1884, and later became dean of the school of education in the University of Chicago, and head of the natural science department of the school. In 1899–1900 he visited Holland, France, and Germany for the study of educational methods. Besides many articles on pedagogical topics, he published: ‹Nature Study for the Common Schools› (1891); ‹Number Work in Nature Study› (1893); ‹Field Work in Nature Study› (1894); ‹Nature Study Record› (1895); ‹Nature Study and Related Subjects› (1898); and ‹Nature Study for the Grammar Grades› (1898).

Jackrabbit. See HARES.

Jack'son, Abraham Valentine William, American Indo-Iranian scholar: b. New York 9 Feb. 1862. Graduated from Columbia in 1883, he was Fellow in letters there (1883–6), instructor in Anglo-Saxon and the Iranian languages (1887–90), and, after study at Halle (1887–9), adjunct professor of English language and literature (1891–5). In 1895 he was appointed professor of Indo-Iranian languages at Columbia. By way of recognition of the instruction given by him in their ancient books, the Parsees made to the Columbia library the gift of an important manuscript collection of Zoroastrian works. He appeared also as a public lecturer, became one of the directors of the American Oriental Society, and in addition to numerous contributions to the ‹Journal› of that society and other learned periodicals, wrote: ‹A Hymn of Zoroaster, Yasna XXXI.› (1888); ‹An Avestan Grammar› (1892); ‹An Avestan Reader› (1893); ‹Zoroaster, the Prophet of Ancient Iran› (1899).

Jackson, Abraham Willard, American Unitarian clergyman and author: b. Portland, Maine, 7 April 1843. He was graduated from Colby University (Waterville, Maine), entered the Union army as private in the 8th Maine volunteers, became captain in the 33d United States colored troops, in 1872 became pastor of the Unitarian Church at Peterboro, N. H., and subsequently of that at Santa Barbara, Cal. In 1894–5 he was acting professor of philosophy in the Meadville Theological School. Among his writings are: ‹The Immanent God› (1889); ‹James Martineau: a Biography and Study› (1900); ‹Deafness and Cheerfulness› (1901).

Jackson, Andrew, seventh President of the United States: b. Waxhaw settlement, N. C., 15 March 1767; d. near Nashville, Tenn., 8 June 1845. He was of north of Ireland ancestry, his father emigrating to America from Carrick Fergus in 1765. As a boy Jackson was reckless, impetuous, quarrelsome, and passionate in temper; thoroughly disinclined to learning of any sort, his favorite pursuits were racing, gaming, and cock-fighting, but he was possessed of invincible determination, dauntless courage, and excelled in marksmanship and riding, qualities which later served him well. After some desultory law study in Salisbury, S. C., he became in 1788 public prosecutor of the Western District of North Carolina (that is Tennessee). In 1791 he married Rachel Robards, both supposing the latter's husband, Lewis Robards, had secured a divorce by act of the Virginia legislature. This proving not to be the case, they were remarried in 1794. This incident was frequently used against Jackson in his political campaigns, but his only fault was in not ascertaining more surely the exact terms of the Virginia act. A member of the Knoxville convention which drafted a constitution for Tennessee, Jackson was elected the first Federal representative of that State after its admission to the Union, June 1796. Appointed U. S. Senator in 1797 he resigned in April 1798 to become judge of the Tennessee supreme court, holding the position until 1804 when he retired to devote himself to settling his private affairs which had become heavily involved in debt. Between 1806–11 he led the life of a planter, storekeeper and private citizen without noticeable incident. Upon the outbreak of the war of 1812 Jackson, then major-general of Tennessee militia, promptly offered his services with those of 2,500 volunteers. New Orleans being considered a probable objective of the enemy, Jackson was sent there, 7 Jan. 1813, but was soon ordered to dismiss his troops and return. Thoroughly enraged, he hired transportation on his own authority and marched his men home in a body, refusing to disband them without pay or rations, five hundred miles from home. In June the government reimbursed him for the expenses incurred. It was during this expedition his soldiers bestowed on him the affectionate name of «Old Hickory.» On 30 Aug. 1813, the massacre of the garrison and refugees at Fort Mims, at the junction of the Alabama and Tombigbee rivers occurred. Tennessee at once voted men and money to aid in suppressing the Indian outbreak. Jackson, though one arm was badly wounded from a pistol-shot, took the field, and in a whirlwind campaign completely crushed the Creeks at Horseshoe Bend, Alabama, 27 March 1814. On 14 March 1814, he ordered John Wood to be shot for insubordination and assaulting an officer, the first of the military severities afterward brought up against Jackson during his Presidential campaigns. On 31 May 1814 he was appointed major-general of the United States army, commanding the department of the South. In November, without orders from Washington he marched against the English at Pensacola, easily stormed the town and compelled their withdrawal. Proceeding to New Orleans he began energetic preparations for its defense, amid the greatest difficulties and wholly lacking in proper means and materials. On 23, 28 Dec. 1814 and 1 Jan. 1815 he gained minor successes against the British. On 8 Jan. 1815, General Pakenham with 10,000 veteran troops delivered a grand assault upon Jackson's works. The result was a complete defeat and rout of the British, they losing over 2,600 in killed, wounded and prisoners, while Jackson's loss was seven killed and six wounded. The treaty of peace had been signed at Ghent 24 Dec. 1814, but Jackson did not learn of it until 6 March 1815. Accordingly he relaxed none of his vigilance, but kept the city under martial law, during which his characteristic highhandedness brought him into sharp conflict with the civil authorities. For disciplinary reasons six soldiers were court-martialed and shot on 21 February. But Jackson's brilliant and unexpected victory, the one great land success of the War of 1812, set the country afire with enthusiasm. From an obscure planter he immediately became the most popular man in the country. Resolutions of thanks and praise poured in on him from State legislatures; Congress voted him its thanks and a gold medal, and his exploit was the political salvation of the tottering administration. During the Seminole war Jackson was ordered to take command in Georgia, December 1817. Within five months he broke the Indian power completely, established peace on the border, and practically conquered Florida. His hasty measures, undertaken on inadequate facts and information, caused considerable anxiety and discussion in the government. His invasion of Florida and capture of St. Marks, a Spanish possession, and his summary execution of Arbuthnot and Ambrister, two British subjects, seemed likely to raise delicate diplomatic situations. Upon the acquisition of Florida Jackson was appointed its first territorial governor, April 1821, with almost the powers of a Spanish captain-general, but, disgusted with the office, he resigned in October. Parton describes his conduct while governor as «arrogant and disgraceful.» In 1823 he declined the mission to Mexico, and was an unsuccessful candidate for the presidency in 1824. But in 1828 backed by the powerful influence of Van Buren in New York and his own popularity in Pennsylvania, which thus assured him the support of the two largest eastern states, Jackson was triumphantly elected President, the first representative of the new West and the masses. In 1832 he was re-elected by a larger electoral vote than in 1828. His first cabinet was composed of almost unknown men. For advice and counsel he relied chiefly on a group of personal friends and intimates, among them being Wm. B. Lewis, Amos Kendall, a representative of all that was vicious in American political methods, Duff Green and Isaac Hill, partisan editors, and later Francis P. Blair, who edited the ‹Globe› in Jackson's interest. This group formed what came to be known as the «Kitchen Cabinet.» In 1830 Jackson endeavored without success to enforce the social recognition of the wife of his secretary of war, John H. Eaton. The chief features of his administrations may be briefly summarized. That to him is due the shackling of the spoils system upon the country may be seen from the fact that between 1789 and 4 March, 1829, there were only 74 removals from office, while during Jackson's first official year there were some 2,000. He vigorously opposed the second bank of the United States, and vetoed the bill renewing its charter, 1832. He put a prompt end to South Carolina's nullification proceedings by his proclamation of 10 December 1832, declaring nullification contrary to the Constitution and incompatible with the existence of the Union, and his active preparations to execute the laws, by force if needful. In 1834, as a result of his action in ordering the secretary of the treasury to cease making deposits of government funds in the Bank of the United States, the Senate censured him for usurpation of powers not conferred by the laws or Constitution. His Specie Circular of 11 July 1836 directing that only gold and silver be taken at the land offices in payment for public lands was an important factor in the causes leading to the financial crash of 1837. His foreign policy was firm and successful. The disputes with Great Britain over the northeast boundary and the trade between the United States and British colonies, and with France over the indemnity for spoliations committed on American commerce early in the century, were dealt with shrewdly and with success.

Opinions will always be divided regarding Jackson's character. For thirty years he was a popular idol and the typical man of the «Fourth of July» period in American history. His countrymen easily forgave his faults and warmly admired his incontestable virtues. Extraordinarily illiterate, irascible in the highest degree, intensely patriotic, absolutely honest, terrible in the inflexibility of his purposes, faithful and devoted in his domestic life, a firm friend and implacable enemy, reckless and unflinching in the performance of what he conceived to be his duty, restless under any restraint calculated to hamper him in the discharge of that duty, an autocrat by nature yet a sincere lover of the common people,— such are some of the qualities which will always make Andrew Jackson one of the most picturesque figures in American history.

Bibliography.— Numerous biographies of Jackson exist. The best is still that by James Parton (3 vols., New York 1861); the life by Prof. W. G. Sumner in the ‹American Statesman Series› is a careful study of his career as a public man (Boston 1883); the lives by John H. Eaton (Philadelphia 1817), and by Amos Kendall (New York 1843) have value as being written by men who knew him intimately. An excellent working bibliography for the study of Jackson's life and time will be found at the end of Professor Sumner's work.

W. N. C. Carlton,
Librarian, Trinity College, Hartford.

Jackson, Charles Thomas, American scientist: b. Plymouth, Mass., 21 June 1805; d. Somerville, Mass., 28 Aug. 1880. He was graduated at Harvard Medical College in 1829, and practised for a time in Boston. He claimed to have been the first to indicate, in 1832, the applicability of electricity to telegraphic use, and also claimed, in 1842, to have been the discoverer of the anæsthetic effects of the inhalation of ether. He received the monthly prize of 2,500 francs from the French Academy of Sciences in 1852. He published a ‹Manual of Etherization, with a History of its Discovery› (1861), and several ‹Reports.›

Jackson, Edward Payson, American educator and author: b. Erzerum, Turkey, 15 March 1840. He was educated at Amherst College; served in the Union army during the Civil War as private of the 45th and lieutenant of the 5th Massachusetts; was principal and superintendent of various educational institutions, and in 1877 was appointed master in the Boston Latin School. His works include:

ANDREW JACKSON,

SEVENTH PRESIDENT OF THE UNITED STATES.

‹Mathematical Geography› (1873); ‹A Demigod› (1886), a story published anonymously, and at first attributed to various well-known authors; ‹The Earth in Space› (1889); and ‹Character Building› (1892), to which was awarded a prize of $1,000, offered by the American Secular Union, jointly with N. P. Gilman's ‹The Laws of Daily Conduct,› with which it was also published in the volume, ‹Conduct as a Fine Art› (1894). He also became the editor of ‹The Bohemian,› a Boston magazine of short fiction.

Jackson, Frederick George, English Arctic explorer: b. Alcester, Warwickshire, 1860. He was educated at Denstone College and the University of Edinburgh, made journeys across the Australian deserts and the Great Tundra of Siberia, in 1894–7 was leader of the Jackson-Harmsworth expedition to Franz Josef Land, and during the second Boer war was in command of a company of mounted infantry. During his stay in Franz Josef Land he mapped the region, which he proved to be a collection of islands, and made valuable magnetic and meteorological observations. He was awarded the gold medal of the Paris Geographical Society in 1899, and wrote: ‹The Great Frozen Land› (1895); ‹A Thousand Days in the Arctic› (1899).

Jackson, Gabrielle Emilie Snow, American writer for young people: b. New York 13 Oct. 1861. Among her many publications are ‹Denise and Ned Toodles (1897); ‹The Colburn ‹Prize› (1899); ‹Pretty Polly Perkins› (1900); ‹Laddie and Lassie› (1900); ‹Mother and Daughter› (1905).

Jackson, George Anson, American Congregational clergyman: b. North Adams, Mass., 17 March 1846. He was graduated from Yale in 1868, from the Andover Theological Seminary in 1871, was ordained to the Congregational ministry, and in 1872–97 held pastorates successively at Leavenworth, Kan., Southbridge, Mass., and Swampscott, Mass. In 1897 he became librarian of the General Theological Library of Boston. He wrote: ‹The Apostolic Fathers› (1879); ‹Fathers of the Third Century› (1881); ‹Post-Nicene Greek Fathers› (1883); ‹Post-Nicene Latin Fathers› (1883); ‹The Son of a Prophet› (1894), a historical novel.

Jackson, Helen Maria Fiske Hunt, «H. H.,» American novelist and poet: b. Amherst, Mass., 18 Oct. 1831; d. San Francisco, 12 Aug. 1885. At 21 she married Captain Edward Hunt (d. 1863) of the United States army, and began the wandering existence of an army officer's wife. From 1867 to her death, 16 years later, her pen hardly rested. She wrote verses, sketches of travel, essays, children's stories, novels, and tracts for the time, generally over the pen-name «H. H.» Her life in the West after her marriage to W. S. Jackson, a banker of Colorado Springs, revealed to her the wrongs of the Indian, which she set herself at once to redress. Newspaper letters, appeals to government officialism, and finally her ‹Century of Dishonor› (1881), a sharp arraignment of the nation for perfidy and cruelty towards its helpless wards, were her service to this cause. Her most popular story, ‹Ramona,› (1884), a romance whose protagonists are of Indian blood, was also an appeal for justice. This book, however, rose far above its polemic intention; the beauty of its descriptions, its dramatic movement, its admirable characterization, and its imaginative insight entitling it to high rank. Two novels in the ‹No Name Series›—‹Mercy Philbrick's Choice› (1876) and ‹Hetty's Strange History› (1877) — show the qualities that infuse her prose: color, brilliancy of touch, grace of form, certainty of intuition, and occasional admirable humor. She had not the gift of construction, and lacked the power of self-criticism; so that she is singularly uneven. It is no doubt chiefly her poems which have gained for «H. H.» a place in literature. They reveal genuine lyrical power, although at times marred by defective technique. Among books of hers not already named are: ‹Bits of Travel› (1873); ‹Glimpses of Three Coasts›; ‹Sonnets and Lyrics.› To her have often been attributed the noted ‹Saxe Holm› stories.

Jackson, Henry Rootes, American diplomat and soldier: b. Athens, Ga., 24 June 1820; d. Savannah, Ga., 23 May 1898. He was graduated at Yale in 1839, admitted to the bar in Georgia and for several years was district attorney. He served in the Mexican War, became judge of the superior court, and in 1853 went to Vienna as *chargé d'affaires,* and the following year was made minister resident there. Before the outbreak of the Civil War he seceded from the Charleston Convention and, when his state seceded, commanded the state troops. He eventually resigned, and joined the Confederate forces. Near the close of the war he was made a brigadier-general in Hood's army and was captured with his whole command at Nashville after the battle of Franklin. In 1885 he was appointed United States minister to Mexico. He was the author of ‹Tallulah, and Other Poems› (1850).

Jackson, Howell Edmunds, American jurist: b. Paris, Tenn., 8 April 1832; d. West Meade, Tenn., 8 Aug. 1895. He was graduated from the University of Virginia in 1854, from the law department of Cumberland University in 1856, began practice in Jackson, and later in Memphis, and upon the organization of the Confederate government became receiver for property in West Tennessee confiscated to the purposes of the Confederacy. Subsequent to the war he became a member of the court of referees of Tennessee, a tribunal which acted as a provisional supreme court in the hearing of cases that had arisen during the war period. Elected to the State legislature in 1880, he took his seat in the United States Senate in 1881, afterward left the Senate to become United States circuit court judge for the West Tennessee district, and in 1893 was appointed an associate justice in the United States Supreme Court.

Jackson, James, American soldier and statesman: b. Moreton Hampstead, Devonshire, England, 21 Sept. 1757; d. Washington, D. C., 19 March 1806. He emigrated to America with his father in 1772, and studied law in Savannah. In March 1776 he aided in repelling a British attack upon that town, and subsequently was appointed brigade major of the Georgia militia. In 1781 he aided in the capture of the fort at Augusta, and was left in command of the place, and upon the evacuation of Savannah by the British in 1782 was appointed by General Wayne to receive the keys of the town. In 1789 he was chosen a representative in Congress, and from 1792 to 1795 was a member of the United States Senate. He had the principal share in the framing of the Georgia constitution of 1798, and upon its adoption was elected governor of the State, and held that office until his reelection in 1801 to the United States Senate.

Jackson, James, American physician, brother of Charles Jackson (q.v.): b. Newburyport, Mass., 3 Oct. 1777; d. 1867. He was graduated at Harvard College in 1796; studied medicine in London, and on his return to Boston in 1800 commenced practice there, devoting himself entirely to medical practice, to the exclusion of surgery and other branches. In 1803 he became a member of the Massachusetts Medical Society. In 1810, with Dr. John C. Warren, he brought before the community a proposition for establishing a hospital in the city of Boston. The first result of this was the organization of the asylum for the insane at Somerville, then included in Charlestown, and afterward of the Massachusetts General Hospital in Boston. Dr. Jackson was the first physician, and Dr. Warren the first surgeon, to this institution. In 1810 he was chosen professor of clinical medicine in Harvard, and in 1812 professor of theory and practice, becoming professor emeritus in 1835. His principal publications were: ‘On the Brunonian System’ (1809); ‘Remarks on the Medical Effects of Dentition’; ‘Letters to a Young Physician’ (1855). Of the last work several editions were printed.

Jackson, Patrick Tracy, American merchant, brother of Charles Jackson (q.v.): b. Newburyport, Mass., 14 Aug. 1780; d. Beverly, Mass., 12 Sept. 1847. At the age of 15 he was apprenticed to a merchant of Newburyport, and subsequently established himself in Boston in the India trade, in which he acquired a handsome fortune. In 1812, at the invitation of his brother-in-law, Francis C. Lowell, who had recently examined the process of the cotton manufacture in England, he engaged in a project to introduce the power loom, then newly invented, and the mode of constructing which was kept secret, into the United States. After repeated failures they succeeded in 1812 in producing a model from which a machine was subsequently constructed by Paul Moody. In 1813 they built their first mill at Waltham, near Boston, the first in the world that combined all the operations for converting the raw cotton into finished cloth. In 1821 Jackson made large purchases of land on the Merrimack River near the Pawtucket canal, on which a number of mills were constructed by the Merrimack Manufacturing Company, a corporation organized under his auspices. This settlement formed the germ of the present city of Lowell. He procured in 1830 a charter for a railroad between Lowell and Boston, the construction of which he directed until its completion in 1835.

Jackson, Samuel Macauley, American church historian: b. New York 19 June 1851. He was graduated from the College of the City of New York in 1870, from the Union Theological Seminary in 1873, and after further study at Leipsic (1873–6), held the pastorate of the Presbyterian Church at Norwood, N. J., in 1876–80. In 1895 he became professor of church history in New York University. He was assistant editor of Schaff's ‘Bible Dictionary’ in 1878–80, associate and managing editor of the ‘Encyclopædia of Religious Knowledge’ in 1880–4, and edited ‘A Concise Dictionary of Religious Knowledge’ (1891). He also prepared the first important bibliography of foreign missions (1891), wrote ‘Huldreich Zwingli’ (1901), the first original English biography of its subject, and was chosen secretary of the church history section of the American Historical Association.

Jackson, Sheldon, American educator: b. Minaville, N. Y., 18 May 1834. He was graduated at Union College in 1855, at Princeton Theological Seminary in 1858; was ordained to the ministry of the Presbyterian Church in the latter year; and was missionary to Western Wisconsin and Southern Minnesota in 1859–69. In 1869–82 he was superintendent of Presbyterian missions in western Iowa, Nebraska, the Rocky Mountain territories, Wyoming, Colorado, New Mexico, Arizona, Utah, and Montana, and from 1877 in Alaska. In 1885 he became United States general agent of education in Alaska, and in 1887 organized the Alaskan society of natural history and ethnology at Sitka. He aided in founding a Christian college in Utah in 1896, was moderator of the Presbyterian General Assembly in 1897, and wrote: ‘Alaska and Missions on the North Pacific Coast’ (1880); ‘Education in Alaska’ (1881); annual reports on ‘Education in Alaska’ from 1886; and annual reports on the ‘Introduction of Domestic Reindeer into Alaska’ (1891–1901).

Jackson, Stonewall. See JACKSON, THOMAS JONATHAN.

Jackson, Thomas Graham, English architect: b. Hampstead 21 Dec. 1835. He was educated at Oxford University and became the pupil of Sir George Gilbert Scott (q.v.) (1858–61), making a specialty of the Gothic style. He has designed most of the new buildings in Oxford, Cambridge, Eton, Westminster School, Rugby, Harrow, etc., and has restored Great Malvern Priory and Bath Abbey, besides building many new Gothic churches. He has written: ‘Modern Gothic Architecture’ (1873); ‘Wadham College, Oxford: its History and Buildings’ (1893); ‘The Church of St. Mary the Virgin, Oxford: its History and Architecture.’

Jackson, Thomas Jonathan, commonly called «STONEWALL JACKSON,» American general: b. Clarksburg, Harrison County, W. Va., 21 Jan. 1824; d. near Chancellorsville, Va., 10 May 1863. Lieutenant-General Thomas Jonathan Jackson was one of the most unique, romantic characters of the War between the States, and crowded into the two years in which he served more brilliant achievements which won him wider fame than any other soldier on either side. Descended from Scotch-Irish stock and inheriting many of the qualities of his ancestry, he was left a penniless orphan when three years old, and soon showed «the stuff of which heroes are made,» in his manly self-reliant efforts to

THOMAS JONATHAN ("STONEWALL") JACKSON.

support himself. Learning of a vacancy from his Congressional District in the military academy at West Point, he determined to make the journey to Washington and seek the appointment, and set out at once — traveling a part of the way on foot — appearing before the member of Congress from his district in his suit of homespun, and with his leathern saddlebags over his shoulders. The Congressman presented him to the secretary of war, who was so much pleased with the youth's determination that he at once made out his appointment to West Point. He was very badly prepared to enter the academy and barely «squeezed through» on his entrance examination, but by persevering work he gradually rose in his grade until in July 1846 he was graduated No. 17 in a brilliant class containing such men as McClellan, Foster, Reno, Stoneman, Couch, Gibbon, A. P. Hill, Pickett, Maury, D. R. Jones, Wilcox, and others; and one who knew him intimately expressed the confident belief that if the course had been longer «Old Jack» would have graduated at the head of his class. He immediately reported for duty in Mexico, and serving in the artillery won distinction on every field, always seeking the post of danger, being made first lieutenant at the siege of Vera Cruz, brevetted captain at Contreras and Churubusco, and major at Chapultepec, rising to this rank in seven months, and being promoted more rapidly than any other officer of his grade in the Mexican War. He was frequently and honorably mentioned in the official reports, and John B. Magruder, his immediate superior, wrote of him: «If devotion, industry, talent, and gallantry are the highest qualities of a soldier, then he is entitled to the distinction which their possession confers.» In the City of Mexico, after its capture and occupation, he had under the influence of that earnest Christian soldier, Colonel Taylor, become deeply concerned on the subject of personal religion and made a profession of faith in the Lord Jesus Christ. At West Point he had adopted as his motto: «You may be whatever you resolve to be,» and now he added to this motto the saying of the great Apostle: «I can do all things through Christ which strengtheneth me.» These two mottoes were the keynotes of his life and led the penniless orphan boy to become one of the immortals.

On the earnest recommendation of his old comrade, D. H. Hill, whose brother-in-law he afterward became, Jackson was elected, in 1851, professor of natural science and instructor of military tactics in the Virginia Military Institute, Lexington, Va., being elected over McClellan, Reno, Rosecrans, and G. W. Smith, whose names were submitted by the faculty at West Point. He made little reputation as a professor, for while thoroughly acquainted with his subject he lacked that «aptness to teach» so essential to a successful teacher, and the cadets were always playing pranks upon him, and laughing at his eccentricities. But he became one of the most consecrated active members of the Presbyterian Church, and left his impress as a Christian upon the community. From his habit of instructing his own servants in Scripture lessons every Sunday afternoon grew his famous negro Sunday school to which he devoted so much time and thought, to which he contributed so liberally of his moderate means,— sending his pastor checks for it in the midst of his most active campaigns,— and which made such an impress upon the negroes and gave Jackson so warm a place in their affections that the first contribution to his monument was made in 1887 by the negro Baptist Church of Lexington. Jackson was a Union man, opposed to secession as a remedy for Southern wrongs, though thoroughly believing in the abstract right of a State to secede, and greatly deprecated the war which he predicted would follow; but when the news reached the quiet little town of Lexington that Mr. Lincoln had called for 75,000 troops to coerce sovereign States, and that the Union Convention of Virginia had passed an ordinance of secession, Jackson said in a speech before a public meeting: «I have longed to preserve the Union and would have been willing to sacrifice much to that end. But now that the North has chosen to inaugurate war against us, I am in favor of meeting her by drawing the sword and throwing away the scabbard.» Governor Letcher, his old neighbor and friend, who had a high estimate of his abilities, commissioned him colonel in the Virginia forces; but his brilliant record in Mexico had been forgotten — he was only thought of as the quiet, eccentric professor, and when his name was presented to the Virginia convention, a prominent member arose and asked: «Who is this Major Jackson, anyway?» and it required all the eloquence of the Rockbridge delegates to secure his confirmation.

Marching the corps of cadets to Richmond where he remained for a brief season assisting in organizing and drilling the raw recruits in the «Camp of Instruction,» he was ordered to Harper's Ferry on 3 May, where the skill he showed in reducing the high-spirited rabble who had rushed to the front at the first sound of the bugle to the respectable Army of the Shenandoah, which he turned over to the command of General J. E. Johnston 23 May, showed clearly that he was a soldier. Placed in command of the Virginia brigade which afterward became so famous, he met the advance of General Patterson at Falling Waters on 2 July, gave them a decided check, and captured a number of prisoners. Soon after he received his commission as brigadier-general in the following characteristic letter from General Lee:

> RICHMOND, 3rd July, 1861.
>
> MY DEAR GENERAL:— I have the pleasure of sending you a commission of brigadier-general in the Provisional Army; and to feel you merit it. May your advancement increase your usefulness to the State.
>
> Very truly,
>
> R. E. LEE.

But it was in the battle of first Manassas (Bull Run) that Jackson won his new name and fame, and the ringing words of the gallant Bee: «There stands Jackson like a stone wall,» changed the name of «Thomas Jonathan» into the immortal «Stonewall» Jackson. He was wounded in the hand but refused to leave the field, and while the surgeons were dressing his wounds President Davis rode on the field, and Jackson, pushing aside the surgeons, tossed his cadet cap in the air and exclaimed: «Hurrah for the President. Give me ten thousand men and I will be in Washington to-night!» In September he was made major-general, and was sent on 4 October to command the «Valley District» and enter in the early part of 1862 on that famous «Valley Campaign,» which is now studied in military academies in Europe as illustrative of able strategy, rapid movements, and heroic fighting. In March he fell back before Banks' army of 35,000 men, and Banks reported him «in full retreat from the valley» and started a column to cross the mountains and attack Johnston in flank as he was falling back from Manassas, when Jackson suddenly turned, marched 18 miles in the morning, and with 2,700 men fought at Kernstown, near Winchester, 8,000 of the enemy, and though sustaining the only defeat that ever befell him he accomplished his purpose in recalling the column which was moving on Johnston's flank, quietly moved up the valley and took a strong position in Swift Run Gap from which he could easily defend himself or strike the enemy if he attempted to move on Staunton. Ewell's division coming to take his place, he left this grim soldier to watch Banks, and moved so secretly that neither friend nor foe had divined his plans until he thrilled the Confederacy and sent terror to the North by the following laconic and characteristic despatch:

> Valley District, May 9th, 1862.
>
> GEN. S. COOPER:— God blessed our arms with victory at McDowell yesterday.
>
> T. J. JACKSON, Major-General.

He had defeated the advance of Fremont under Milroy and driven it back in great confusion. Then followed in rapid succession the uniting of Ewell's division with his at Luray, the driving in of Banks' flank at Front Royal, the cutting of his retreating column at Middletown, and on 25 May the rout of Banks' army from the heights of Winchester, and driving him pellmell across the Potomac. He was about to cross the Potomac into Maryland in pursuit of Banks when he learned that Fremont from the West, and Shields, the head of McDowell's column, from the East, were marching to form a junction in his rear at Strasburg. He at once put his army in motion and by forced marches (one of his brigades marched 52 miles in one day) he reached the point of danger in time to hold Fremont in check with one hand and Shields with the other until his whole army, prisoners, and immense wagon trains loaded with captured stores passed on in safety. He then moved leisurely up the valley, burning the bridges over the Shenandoah to prevent a juncture between Fremont and Shields — his rear being protected by that chivalrous knight and brave soldier, General Turner Ashby, who filled the valley with the fame of his brilliant achievements, and whose fall in a severe fight near Harrisonburg on 6 June was sadly lamented as a great calamity to the Confederate cause. On 7 June, at Cross Keys, Ewell badly defeated Fremont, and on 8 June, at Port Republic, on the opposite side of the river, Jackson routed Shields, and the armies sent to «crush» him were soon rapidly retreating down the valley, while «Stonewall»— that name will cling to him, but «Thunderbolt,» «Tornado,» or «Hurricane,» would be more expressive of his character,— remained master of the situation. This campaign may be thus summarized: In 32 days Jackson and his «foot cavalry» had marched nearly 400 miles, skirmishing almost daily, fought five battles, defeated three armies, two of which were completely routed, captured 20 pieces of artillery, 4,000 prisoners, and immense quantities of stores of all kinds, and had done all this with a loss of fewer than 1,000 men killed, wounded, and missing, and with a force of only 15,000 men, while there were at least 60,000 men opposed to him. He had spread consternation throughout the North and had neutralized McDowell's 40,000 men at Fredericksburg, who were about to march to the aid of McClellan in investing Richmond. Jackson now rested for a brief season, was reinforced from Lee's army, made the impression on the enemy that he would advance down the valley again, and managed matters so secretly that Banks at Strasburg was busily engaged in fortifying against an expected attack from him at the very time he was thundering on McClellan's flank at Richmond over 200 miles away. The part he bore in the Seven Days around Richmond, the second Manassas campaign, and the Maryland campaign was so conspicuous and so important that it would be, indeed, to write the history of the army to give it in detail. His skill and daring in the Seven Days battles, his defeat of Pope's advance under Banks at Cedar Run, his flank march to Pope's rear, and the pertinacity with which he held him at bay along the Warrenton road until Lee could come up with Longstreet and drive him into the fortifications around Washington, his capture of Harper's Ferry with 11,000 prisoners, 13,000 stand of small arms, 73 pieces of artillery, and large quantities of provisions and stores of every description, and his conduct on the field of Sharpsburg, all added greatly to the fame of Stonewall Jackson and his grand old corps of «Foot Cavalry.» It was the privilege of the writer of this sketch to be under Jackson during the whole of his brilliant career, and it may not be amiss to describe him as he appeared at the head of his victorious legions: About 37 years old, six feet high, medium size, gray-blue eyes, light brown hair, a rough mouth, iron jaw, and nostrils as big as a horse's. He wore a plain gray uniform which soon became faded and soiled, cavalry boots, and an old gray cadet cap with its rim tilting on his nose. He rode a raw-boned sorrel horse which the men said «could not run except toward the enemy,» but whenever he appeared among the troops they would begin to give the Confederate yell, and he would take off his cap, put spurs to «Little Sorrel» and gallop away from them as rapidly as possible. This was so well understood that, when cheering was heard, some soldier would say: «There comes old Stonewall, or an old hare, one,» and it was said that «the appearance of those personages never failed to elicit the genuine old Confederate yell.» On 10 Oct. 1862 he was made lieutenant-general, and his corps made to consist of his old division, under W. B. Taliaferro, Early's division, A. P. Hill's division, and D. H. Hill's division, Colonel Brown's regiment of artillery, and numerous light batteries. At Fredericksburg, 13 Dec. 1862, he held the extreme right of Lee's army, and defeated with great slaughter Franklin's attack upon him. The following winter and spring Jackson spent in improving the organization, discipline, and efficiency of his corps, and as, in his judgment, a most important means of accomplishing this, he labored to have chaplains in every regiment and missionaries to visit the army, and did everything in his power to promote the religious welfare of his soldiers. It was largely through his influence that a chaplains' association was formed, and he had regular prayer-meetings at his headquarters during the weeks and preaching on Sundays. But the end hastened on, Gen. Hooker threw Sedgwick across the river below Fredericksburg the latter days of April 1863, crossed the bulk of his army above and strongly fortified his lines at Chancellorsville in the confident hope that Lee would either retreat on Richmond, or attack him in his strong position, where a crushing defeat would await him. But instead of doing either of these things Lee left Early to watch Sedgwick, moved up to Hooker's front, and sent Jackson with 22,000 men to make a march to Hooker's flank and rear. This was brilliantly executed and Jackson routed that flank of Hooker's army, and was proceeding to cut him off from his line of retreat and take a position where Hooker would have been compelled to attack him, when in returning from one of those bold reconnoissances which he so frequently made, his party was mistaken for the enemy and fired on by his own men and he was very severely wounded. His left arm was amputated, his other wounds dressed, and he was doing well and gave every promise of recovery, when pneumonia, brought on by exposure before the battle, set in and he died at a quarter past three P.M., Sunday, 10 May 1863.

The great soldier had fought his last battle, won his last victory, and gone to wear his glittering «crown of rejoicing.» He was buried as he had requested, in «Lexington in the valley of Virginia»; a beautiful bronze statue marks his grave; on the hill at the Virginia Military Institute has been reared the stately «Jackson Memorial Hall,» and in the capitol square of his native State stands the noble bronze statue, the gift of English admirers. Lee spoke his fittest eulogy when he wrote him after hearing that he was wounded: «Could I have dictated events I should have chosen for the good of the country to have been disabled in your stead.»

J. Wm. Jones, *Author and Lecturer.*

Jackson, William Hicks, American soldier and stockman: b. Paris, Tenn., 7 Oct. 1836; d. Nashville, Tenn., 30 March 1903. He was graduated from West Point in 1856, entered the Confederate army in 1861 as captain of artillery, and rose to be brigadier-general. Subsequent to the war he was proprietor of the Belle Meade stock-farm, near Nashville, Tenn., which sent to the races some of the greatest running horses of the American turf. He was president of the National Agricultural Congress, and high in the councils of the southern Democracy.

Jackson, Mich., city and county-seat of Jackson County; situated on the Grand River, about 37 miles south of Lansing and 76 miles west of Detroit, and on the main line of the Michigan Central Railroad. It is the termini of the Air Line, the Grand River Valley, and Jackson, Lansing & Saginaw railroads, branches of the Michigan Central; of the Toledo and Fort Wayne branches of the Lake Shore & Michigan Southern; the Cincinnati Northern, a branch of the Big Four, and the Michigan Air Line, a branch of the Grand Trunk railroads; and is connected with Detroit, Battle Creek, and Kalamazoo by traction lines.

Manufactures, Industries, etc.—Jackson is situated in a rich agricultural region and carries on an extensive trade in fruits, grains, and vegetables. Its chief manufactures are sewer pipe, flour, soap and starch, automobiles, pianos, oil stoves, corsets and underwear, wheels, engines and motors, locomotives, foundry products and agricultural implements. The car shops of the Michigan Central railroad, employing 1,200 men, are located here. Among the important industries are carriage- and wagon-making, manufacture of textiles, iron and steel, cigar-making, Portland cement, and mining, together employing about 6,000 hands, and with a yearly output of over $10,000,000. Coal and clay, the latter useful for pottery, are found near by.

Banks.—There are four banks, with a combined capital of $450,000, surplus and undivided profits of $275,000, and deposits of over $4,000,000.

Churches and Educational Institutions.—Nearly all denominations are represented and worship in 28 church edifices. The school system is exceptionally fine, there being two high schools and 17 graded public schools. There are also three Catholic schools.

Public Buildings, etc.—Among the prominent buildings are the Michigan State prison, Carnegie Library, the United States government building, Elks Temple, Masonic Temple, courthouse, and City Club. The city also has a hospital and two sanitariums, and Young Men's and Young Women's Associations.

Newspapers.—There are two morning and two evening dailies, with an aggregate circulation of 12,000, two semi-weeklies and three weeklies, one of which is German.

Government, Public Works, etc.—The executive authority is vested in a mayor and a council of 16 members, elected for a term of two years. The city is lighted by gas and electric light, and owns and operates its waterworks. It has a fire department with four well-equipped engine-houses, and an excellent police department. There is also an electric trolley system operating about 10 miles of track.

History.—The first permanent settlement was made by Horace Blackman in 1829, and was first called Jacksonburgh in 1830. In the same year a post-office was established and named Jacksonapolis. In 1831 the township of Jacksonburgh was formed, and remained such until 1838, when the name was changed to Jackson. When the Michigan Central Railroad was constructed through the southern part of the State, in 1841, Jackson grew rapidly, became a village in 1843, and an incorporated city in 1857.

Population.—The inhabitants are mainly native born, though about one third are of foreign descent, Irish, German, Polish, and Italian predominating. Pop. (1890) 20,798; (1900) 25,180; (1905) 28,000.

Thomas A. Wilson.

Jackson, Miss., capital of the State, county-seat of Hinds County; on the Pearl River, and on the Yazoo & M. V., the Illinois C., and the Alabama & V. R. R.'s; about 40 miles east of Vicksburg, on the Mississippi. The first permanent settlement was made in 1828 or 1829, and it was incorporated in 1840. In 1863 it was occupied for some time by Union forces under Gen. Grant, and the ruins of the fortifications erected at the siege are still in existence.

The city was nearly destroyed in 1864, by Gen. Sherman.

Jackson is situated in an agricultural region in which a large amount of cotton is raised. It is the commercial centre for a large section. The good railroad facilities and the advantage of traffic on the Pearl River are stimulating the increase of marketable agricultural and manufactured products. The chief industrial establishments are cottonseed-oil mills, fertilizer factories, sash, door, and blind factories, foundries, brick-yards, a cotton-compress, a plow and harrow factory, a broom factory and cooper shops. Some of the principal public buildings are the State capitol, State charitable institutions for the blind, insane, deaf and dumb, the State library, and the James Observatory. Among the private educational institutions of learning are the Millsaps College, founded in 1892 under the auspices of the Methodist Episcopal Church; and the Bellhaven College for young ladies. Pop. (1890) 5,920; (1900) 7,816; (1903) 12,000.

Jackson, Ohio, city, county-seat of Jackson County; on Salt Creek, and on branches of the Baltimore & O. S. W., the Hocking V., and the Ohio S. W. R.R.'s; about 100 miles east of Cincinnati and 70 miles southeast of Columbus. Jackson is located in the vicinity of the early routes of travel from the Ohio River to the interior of what is now the State of Ohio, and on to the Great Lakes. The first permanent settlement was made in 1795, but it was not incorporated until 1847, several years after the limits of Ohio were decided. It is situated in a coal and iron mining section, but there is a large amount of good farming land in the vicinity. The chief industrial establishments of the city are foundries, machine-shops, furnaces, woolen-mills, a tannery, and lumber-yards. The coal and iron ore-mining of the vicinity contributes largely to the industrial wealth of the city. Pop. (1900) 4,672.

Jackson, Tenn., city and county-seat of Madison County, situated about 80 miles northeast of Memphis, on the South Fork of the Forked Deer River, and on the Illinois C., Mobile & O., and Nashville, C. & St. L. R.R.'s. It is the trade centre of a large and fruitful agricultural region, is an important cotton market, and has manufactures of engines and boilers, cotton goods, lumber, machinery, flour, cottonseed-oil, furniture, trunks, spokes and skewers, plows, carriages, bricks, and other products. Here are located the Southwestern Baptist University, the Memphis Conference Female Institute, and Lane University. Jackson has a fine park, Carnegie Library, and modern municipal improvements, the waterworks and electric-light system being owned by the city. It has five banks with a combined capital of $400,000. The government is by mayor and a council of eight aldermen. Jackson was first settled in 1818. Pop. (1900) 14,511.

During the Civil War Jackson was at times the headquarters of Gen. Grant. It was captured by Union troops 7 June 1862. On 19 Dec. 1862, Gen. Forrest sent detachments of cavalry to destroy the railroad to the north and south, and with 400 men advanced on Jackson and had a running fight with two regiments of Union infantry and detachments of cavalry under Col. Engelmann of the 43d Illinois, who disputed Forrest's advance until the fortifications of the town were reached, when Forrest withdrew and moved on Humboldt and Trenton. On 13 July 1863, a Confederate cavalry force held the town and guarded a large number of conscripts. Col. Edward Hatch with 1,160 men of the 3d Michigan, 2d Iowa, 1st West Tennessee, and 9th Illinois cavalry regiments attacked the Confederates and drove them from the town, releasing about 450 conscripts, and capturing 250 horses and nearly 400 stand of small arms. Hatch's loss was very slight. The Confederates had 38 killed and about 150 wounded. Consult: 'Official Records,' Vol. XXIII.

Jackson (Miss.), Battle of. After the battle of Raymond (q.v.), 12 May 1863, Gen. Grant, having provided for the safety of his rear and left from the direction of Vicksburg, turned McPherson's and Sherman's corps and part of McClernand's on Jackson, 12 miles northeast of Raymond, to capture the place without delay. On the 13th McPherson moved from Raymond to Clinton, and then turned east on Jackson. Sherman moved through Raymond to Mississippi Springs on the 13th, and that night arranged with McPherson that both columns should arrive at Jackson about the same hour next day. McClernand closed up to Raymond and sent one division to Clinton to support McPherson. Gen. J. E. Johnston had arrived at Jackson on the evening of the 13th and, hearing next morning of the Union approach on the Raymond and Clinton roads, ordered Gregg's brigade to take position on the first-named road, and Walker's brigade on the latter, with instructions to each to delay the Union advance as long as possible, to give time for the removal of public property from the city. The combined strength of Gregg and Walker was about 6,000 men. About 9 A.M. of the 14th McPherson's advance on the Clinton road came upon Walker's pickets and drove them back upon the main body, posted in works on the crest of a semicircular ridge 2½ miles west of Jackson, the front covered by a marshy creek lined with dense willows, and artillery commanding the bridge over the creek. At the end of nearly two hours Crocker's division of three brigades was deployed in line, with one brigade of Logan's in reserve. At 11 A.M. the skirmishers advanced to the creek and were checked, upon which the entire division went forward, drove in Walker's skirmishers, and advanced over the open ground beyond the creek, meeting a stout resistance; but Walker's men soon retreated, abandoning seven guns. They were pushed more than a mile by Crocker; but his men fell into some disorder, and were finally brought to a stand by artillery posted in an inner line of works close to the town. While Crocker was reforming, Walker made his escape to the Canton road. Crocker's loss was 265 killed and wounded. On the Raymond road Sherman encountered Gregg and, by a flank movement, compelled him to abandon his entire line and ten guns, with the loss of nearly 200 prisoners and 81 in killed and wounded. Sherman's loss was 32. Johnston retreated northward on the Canton road. McPherson and Sherman entered Jackson between 3 and 4 P.M.; Sherman was left in the city to destroy the railroads, bridges, factories, arsenals, and everything valuable. On the morning of 15th Grant turned the rest of his army west, defeated Pemberton at the battle of Champion's Hill (q.v.) on the 16th, drove him across the Big Black on the 17th, and began the siege of Vicksburg. The Union loss at Jackson was 42 killed, and 251 wounded. The Confederates make their loss less than 400, but Sherman estimated it at 845 killed, wounded and missing. Consult: 'Official Records,' Vol. XXIV.; Johnston, 'Narrative'; Sherman, 'Memoirs, Vol. I.; The Century Company's 'Battles and Leaders of the Civil War,' Vol. III.

E. A. CARMAN.

Jackson, Siege of. The battle of Jackson (q.v.), 14 May, 1863, was followed by the movement of Gen. Johnston northwest, with Gregg's and Walker's brigades, to form a junction with Pemberton, who had been directed to join him; but early on the 19th he received word from Pemberton that he had decided to hold Vicksburg instead, upon which Johnston marched his troops to Canton. He was reinforced, and 29 June he marched west to operate in the rear of Grant, who was besieging Vicksburg. He was about to move on the morning of 5 July to the south of the Vicksburg and Jackson Railroad, when he heard that Vicksburg had fallen, whereupon he fell back to Jackson and occupied a line of works covering the town, with both flanks on Pearl River. Gen. Sherman had been held in readiness to move back and drive the Confederates from the State, and when Vicksburg fell he moved promptly with his own corps and those of Gen. Ord and Parke, crossed the Big Black at three different points, and by 11 July was close up to Johnston's works and shelling the city with nearly 100 guns. Ord's Thirteenth corps was on the right, the Fifteenth corps in the centre, and Parke's Ninth corps on the left. On the 12th the fire of the artillery was increased, reaching every part of the town, and Lauman's division of Ords' corps, moving in dense woods, came too close to the Confederate works, was struck in flank and driven back in disorder, losing over 500 men killed, wounded, and captured, together with the colors of three regiments. The siege was prosecuted night and day, and on the morning of the 17th Jackson was found evacuated, Johnston having retreated on the road to Brandon, and thence to Morton, where he arrived on the 20th. Steele's division pursued Johnston as far as Brandon, 14 miles from Jackson; Sherman remained five days at Jackson, destroying much property of every description, and then returned to Vicksburg. The Union loss at Jackson, 11–16 July, was 129 killed, 762 wounded, and 231 missing or captured. The Confederate loss, 5–25 July, was 71 killed, 504 wounded, and 764 captured or missing. Consult: 'Official Records,' Vol. XXIV.; Johnston, 'Narrative'; Grant, 'Memoirs,' Vol. I.; Sherman, 'Memoirs,' Vol. I.; The Century Company's 'Battles and Leaders of the Civil War,' Vol. III.

E. A. CARMAN.

Jacksonville, Fla., one of the most important and rapidly growing ports of the southeastern United States; chief city of the State, and seat of Duval County in the northeastern corner; on the west bank of the St. John's, 24 miles from the ocean by water, 14 direct. It is one of the chief southern railroad centres, six important lines converging there, three of them great trunk lines: the Southern, Seaboard Air Line, Atlantic Coast Line, Georgia Southern & Florida, Florida East Coast, and Jacksonville & Southwestern. It is 138 miles south of Savannah, 212 north of Tampa, and 165 east of Tallahassee; and about 1,000 from New York, with train service of 25 to 28 hours. It is also connected with all the Atlantic coast cities by the Clyde, Mallory, and Ocean Steamship lines; and with the picturesque St. John's and its tributaries by six daily and tri-weekly lines of steamers. The fascinating rivers, lakes, Everglades, etc., of Florida, the best hunting and fishing grounds east of the Mississippi, with Jacksonville's mild and healing winter and even summer climate, make it one of the leading tourist resorts in the country, some 50,000 to 60,000 stopping annually at its numerous large and well-equipped hotels.

Jacksonville's position makes it the business key and metropolis of the peninsula, the great shipping point for Florida's exports, and the distributing point for its purchases. Of the former, the chief are lumber, shingles, and ties, mainly yellow pine from the great Florida forests, to nearly $2,000,000 a year; next come naval stores — turpentine, rosin, and rosin oil — of over $1,000,000, and rapidly increasing, a company with $3,000,000 capital having been recently organized for it; cotton has also risen to over $600,000 a year; and an extremely heavy element is the shipping of fruit — oranges, pineapples, and a great diversity of tropic fruits, for which see FLORIDA — and garden vegetables to the North. In a suburb of the city is the largest ostrich farm in the United States, and the only one east of California, whose products form part of the shipments; these also include great quantities of phosphates and fertilizers, and kaolin. As a jobbing centre for interior trade, it has the immense advantage of having practically no competitor in the State, and is rapidly becoming one of the foremost in the South; there are 19 large wholesale grocery houses alone, and the freight entries of grain, hay, and milled products amounted in 1900 to over $12,000,000. Its gross annual trade exceeds $75,000,000. This business implies large banking facilities; and there are now two national and three State banks in the city, besides a savings bank, with over $1,100,000 of capital and undivided profits.

In manufacturing, Jacksonville's chief specialty is lumber and timber products, which in 1900 amounted to nearly a third of the entire output of $2,312,309; there are ten large saw and planing mills. Of the other industries, the most considerable was the manufacture of ice, five establishments producing $87,647 worth; a witness to the needs of thronging tourists in a warm climate. But there were also foundry and other iron products, steam engineering works, brick and tile, paving and roofing materials, wooden ship and boat building, carriages, saddlery, mattresses and palmetto fibre products, pulp, patent medicines, confectionery, cigars, and other articles. There are about 200 different establishments in all.

As a port, it has long been hampered by shoals in the river, and the bar outside the St. Johns. The river is a magnificent estuary, a mile wide for many miles up, and with a channel deep enough for the largest ocean vessels; but it was not until 1896, by combined government and local efforts, that a channel 19 feet deep was obtained from Jacksonville to the ocean, admitting vessels of 3,800 tons. The National government, at last, in 1901, appropriated $1,300,000 to deepen it to 24 feet all the way, by a permanent system of jetties and dredging. It has over seven miles of water front. The city, 7.6 square miles in area, is handsomely laid out, and its business section is almost entirely new, having been practically obliterated by a fire on 3 May 1901, which destroyed 148 blocks, covering 455 acres and including 2,361 buildings, a property loss of over $15,000,000. With astonishing energy up to 25 Oct. 1903, 3,361 new buildings had been erected, 1,000 more than were destroyed, and greatly improved ones. Among the finest buildings are the Union station, United States post-office and customhouse, Masonic Temple, St. Luke's hospital, National Bank of Jacksonville (which were spared by the fire). Among the public buildings since erected are the Windsor hotel, Seminole, Elks, Woman's and Wheelmen's clubhouses, Mercantile Exchange Bank, Board of Trade, and Duval High School. A $50,000 Carnegie free library is being erected. The religious denominations have built a number of fine churches, costing from $25,000 to $100,000 each. Notable among them are the Congregational, Baptist, Christian, McTieire Memorial (M. E. South), Snyder Memorial (M. E.), Presbyterian, St. John's Episcopal, Church of Good Shepherd, Episcopal, and three fine colored churches. There are five parks of 57 acres in all, «Hemming» having a Confederate monument; and 14 miles of shell streets and drives, besides a general macadamizing of paving with vitrified brick. The ocean beaches, 18 to 20 miles off, are among the finest on the Atlantic coast. The sanitation of the city is perfect. After the yellow fever epidemic of 1888 it installed a fine thorough system of sewerage, drained and filled in the swampy tracts around, and replaced the water supply with one almost chemically pure, drawn from artesian wells 500 to 1,000 feet deep. Its death rate has sunk to 10 in 1,000, one of the lowest in the country. There are 20 miles of trolley tracks, and the city owns electric-light works and waterworks; both light and water are extremely cheap. The finances of the city are in the best condition. It has never defaulted its bonds, which are for the waterworks and electric plant, and amount to $1,368,000, payable 15 May 1904 at 5 per cent. There is no floating debt. The assessed valuation is $15,000,000; tax 16.02 mills on the dollar, or 11 mills if beyond the hydrants. Jacksonville was settled in 1816 by Lewis Z. Hogans, whence Hogans' Creek, dividing the city, is named. In 1822 it was laid out and named after Andrew Jackson, the first territorial governor of Florida. It was incorporated in 1833. The Seminole War prevented its development, but it revived in 1842 and has grown steadily since. Its population in 1850 was 1,045, in 1860 2,118, in 1870 6,912, the war having been an immense gain instead of loss; 1880 7,650, 1890 17,201, 1900 28,429, of whom 16,271 or 57 per cent were colored. At present (1903) is over 35,000.

CHAS. H. SMITH,
Secretary Jacksonville Board of Trade.

Jacksonville, Ill., city, county-seat of Morgan County; situated on the Mauvaisterre Creek, a branch of the Illinois River, about 34 miles southwest of Springfield and 88 miles north of St. Louis, Mo.; on branches of the Wabash, the Chicago & A., the Burlington, the Chicago, P. & St. L., and the J. & St. L., the last of which is also a part of the Burlington system. Jacksonville was laid out as early as 1825, about seven years after the admission of the State of Illinois into the Union, established as a town in 1840, and incorporated as a city in 1867. It was made the county-seat of Morgan County in 1825. The origin of the name of the city is somewhat uncertain, but the most probable tradition seems to indicate that it was named in honor of Andrew Jackson, who was a prominent Presidential candidate at the time when the town was founded. Jacksonville is noted for its institutions of learning, its wide, prettily shaded streets, and its handsome residences. It is the seat of Illinois College, the oldest college in the State, founded through the efforts of local residents and a band of students from Yale College. Originally non-sectarian, the college has recently become Presbyterian, has absorbed the Jacksonville Female Academy, and become affiliated with the University of Chicago. Among the other institutions are: the Illinois Woman's College, established in 1847 under the auspices of the Methodist Episcopal Church; the State Central Hospital for the Insane; the State School for the Blind; the State School for the Deaf and Dumb; Our Saviour's Hospital, in charge of the Sisters of the Holy Cross; the Passavant Memorial Hospital; a Carnegie Free Public Library; the Conservatory of Music; and Whipple Academy, a preparatory school. The last two are connected with Illinois College. The city-hall, the court-house, and the high school are the most prominent public buildings. Besides these, there are numerous church edifices, the most attractive of which is the Westminster Presbyterian. The most important industrial establishments of the city are the woolen mills, and the car-shops of the Chicago, Peoria & St. Louis Railroad. Other manufactures include machine-shop products, bricks, candy, paper, and flour. The executive head of the city government is a mayor, who holds office for two years, and a city council composed of 12 members elected for two years by the four wards. The mayor appoints the administrative officials, subject to confirmation by the council. The city owns and operates the electric-light plant and the waterworks. Pop. (1890) 12,935; (1900) 15,078.

C. H. RAMMELKAMP,
Head of Department of History and Political Science, Illinois University.

Jacob (Heb. *Yaqōbh,* the supplanter), the son of Isaac, and the grandson of Abraham, the last of the Jewish patriarchs, and the real ancestor of the Jews. He died at the age of 147 years, about 1860 B.C., and was buried in the tomb of Abraham, before Mamre in Canaan.

Jacob Tome Institute, an institution of secondary education located at Port Deposit, Md. It was founded 1894 by Jacob Tome. When Mr. Tome's gift was made, only five other citizens of the United States — Stephen Girard, Anthony J. Drexel, Johns Hopkins, Charles Pratt, and John D. Rockefeller — had made greater gifts to educational institutions. The endowment and other property of the school are estimated at more than $3,000,000. The Jacob Tome Institute was incorporated in 1889. The boarding school for boys, founded in 1900, is located on the hills overlooking the historic Susquehanna River. The grounds of the institute include about 160 acres. The principal buildings are Memorial Hall, erected in memory of the founder, two dormitories, gymnasium, the Inn, power plant, and infirmary. The school consists of six classes, each requiring one year. The studies of the last three years are arranged in five groups which prepare students for college, technical schools, or for active business life. The institute confers no degrees, although a certain amount of collegiate work can be and is done in the regular courses: Students must be not less than 10 years of age in order to gain admission. Special scholarships are offered to boys from Maryland. There is also a kindergarten, Junior School, and Senior School for girls.

Jacobi, ja̤-kō'bĭ, Abraham, American physician: b. Hartum, Westphalia, 6 May 1830. He was educated at the universities of Greifswald, Göttingen, and Bonn, and was graduated as M.D. from the latter in 1851. Those were years of revolutionary ferment in Germany and Jacobi, becoming identified with the movement, was held in detention for «high treason» at Berlin and Cologne (1851–3). In 1853 he settled in practice in New York, where his abilities soon brought him into notice. He was appointed professor of diseases of children at the New York Medical College (1860–5) and held a similar chair in the medical department of the University of the City of New York (1865–70). Some years later he became professor of the diseases of children at the College of Physicians and Surgeons. He has held many important appointments, and was president of the New York State Medical Society (1882) and of the New York Academy of Medicine (1885–9). In 1900 his 70th birthday was made the occasion of a public demonstration in his honor. Author: ‘Dentition and its Derangements’; ‘Infant Hygiene’; ‘Diphtheria’; ‘Therapeutics of Infancy and Childhood’; ‘Infant Diet.’

Jacobi, Friedrich Heinrich, German philosopher: b. Düsseldorf 25 Jan. 1743; d. Munich 10 March 1819. He was educated at the University of Geneva, and in 1764 entered upon a commercial career in his native town; after a few years, he retired from business, and in 1770 became a member of the councils for the duchies of Juliers and Berg. From his university days he was actively interested in literature and philosophy, and with Wieland started a journal in which some of his own writings were first published. In 1779 he went to Munich for a short time; and in 1793 left Düsseldorf and settled in Holstein. In 1804 he was called to Munich as a member of the Academy of Sciences then newly established; from 1807 to 1812, he was president of the academy; and in 1812 retired to prepare a collected edition of his works, which, however, was not finished before his death. His writings include two philosophical romances, ‘Allwills Brief-Sammlung’ (1774), and ‘Woldemar’ (1779); and the more important philosophical treatises ‘Briefe über die Lehre Spinoza's’ (1785); ‘David Hume über den Glauben oder Idealismus and Realismus’ (1785); ‘Von den Göttlichen Dingen’ (1811). In these treatises he defines his theory that man's thought — or reason — is by its nature partial and limited, and can only connect facts, not explain their existence; and that the higher truths must be understood through another different faculty which he calls «faith» or «belief» («Glaube»); he does not, therefore, seek to establish a systematic philosophy. His theories involved him in considerable controversy, especially with the adherents of the critical philosophy.

Jacobi, Herman Georg Jakob, German Sanskrit scholar: b. Cologne 11 Feb. 1850. He was educated at Cologne Gymnasium, and later took up a course of studies in Sanskrit and allied languages at the universities of Bonn and Berlin. After spending a year (1872–3) in the Indian office in London on the old Sanskrit manuscripts, he went to India, making a tour of Rajputana. In 1875 he became a docent in Sanskrit at Bonn; from 1876–85 was professor extraordinarius of Sanskrit and Comparative Philology at Münster, Westphalia; in 1885 was made professor ordinarius of Sanskrit at Kiel, Holsatia; and in 1889 was appointed professor of Sanskrit at Bonn. He made a particular study of Jainism and Prâkrit grammar, writing exhaustively on those subjects as well as on the Sanskrit poetical languages. Among the most important of his works are ‘The Indian Antiquary’ and the ‘Epigraphia Indica’, published in 1892, in which he gives two sets of tables showing the Hindu dates in inscriptions, a work of much value. His other works include: ‘De Astrologiæ Indicæ, Horâ appellatæ originibus’ (1872); ‘The Kalpasûtra of Bhadrabâhu’ (1879); ‘The Âyaramgo Sutta of the Çvetāmbra Jains’ (1882); ‘Gaina Sûtras’ (1884); ‘Ausgewählte Erzählungen in Mâhârâshtrî. Zur Einführung in das Studium des Prâhrit’ (1886); ‘The Porisishtaparvan by Hemachandra’ (1891); ‘Sthavirâvalî Charita’ (1891); ‘Das Râmâyana Geschichte und Inhalt, nebst Concordanz der gedruckten Recensionen’ (1893); ‘Kompositum und Nebensatz, Studien über die indogermanische Sprachentwicklung’ (1897); etc.

Jacobi, Johann Georg, German poet: b. Düsseldorf 1740; d. 1814. He was a brother of the philosopher, Friedrich Heinrich Jacobi (q.v.) He was educated at Göttingen and in 1766 was appointed to the chair of philosophy and oratory at the University at Halle. In 1784 he became professor at Freiburg. He edited ‘Iris’ with Gleim (1774–6); and published in 1786 his correspondence with Gleim. An edition of his collected works was published at Zürich in 1882 and his ‘Ungedruckte Briefe von und an Johann Georg Jacobi’ appeared in 1874 edited by Martin.

Jacobi, Karl Gustav Jakob, German mathematician: b Potsdam 10 Dec. 1804; d. Berlin 18 Feb. 1851. He obtained his education at the University of Berlin, where he studied especially mathematics and philosophy, later in 1824 becoming a privat-docent there. In 1825 he became assistant professor of mathematics at Königsberg and in 1827 was appointed professor. He was appointed a member of the Prussian Academy of Sciences in 1836 and from

1842 till his death in 1851 lectured at the University of Berlin. His most important work was on the theory of elliptic functions but he also made some valuable contributions to the theory of numbers and determinants. Only a small portion of his writings and lectures were published during his lifetime and the greater part of these were published in the *Crelles Journal.* Among these are: 'Fundamenta Nova Theoriæ Functionum Ellipticarum' (1829); 'Canon Arithmeticus' (1839); 'De Formatione et Proprietatibus Determinantium' (1841); 'Mathematische Werke' (1846–71). A complete edition of his works 'Gesammette Werke' was published in seven volumes by the Berlin Academy of Sciences (1881–91). His 'Vorlesungen über Dynamik' did not appear till 1866, long after his death, and later in 1895, his essay 'Uber die vierfach periodischen Functionen Zweier Variabeln' was published in Latin.

Jacobi, Mary Putnam, American physican: b. London, England, 31 Aug. 1842; d. New York City, 10 June 1906. She was graduated from the New York College of Pharmacy in 1862, from the Woman's Medical College of Philadelphia in 1864, and from the Ecole de Médecine of Paris in 1871. She then entered practice in New York, in 1881 was appointed clinical professor of the diseases of children in the New York Post-Graduate Medical School, where she lectured for three years. In 1874 she established an association for the promotion of the medical education of women, and became its president. In 1873 she was married to Abraham Jacobi (q.v.) She became a member of the American Medical Association, and published several works, including: 'The Question of Rest for Women during Menstruation' (1877); 'Acute Fatty Degeneration of New Born' (1878); 'The Value of Life' (1879); 'Cold Pack and Anæmia' (1880); 'The Prophylaxis of Insanity' (1881); 'Common Sense Applied to Woman's Suffrage' (1894).

Jacobi, Moritz Hermann, German physicist: b. Potsdam 1801; d. 1874. He was appointed professor of physics at the University of Dorpat in 1835 and while there did important work in scientific research, especially along the line of physics. He was the inventor of new processes in galvano-plastics and electrotyping, and in 1842 was made a member of the Academy of Sciences at Saint Petersburg. The most remarkable and important of his works was an essay published in 1835, 'Memoire sur l'application de l'électro-magnetisme au mouvement des machines,' which was shortly afterward in 1840 followed by 'Die Galvanoplastik.'

Jacobi, Otto R., Canadian landscape painter: b Königsberg, Prussia, 27 Feb. 1812. After executing several important watercolors for the crowned heads of Europe, he was appointed court painter at Wiesbaden. In 1860 he came to Canada, where his ability won him membership in 1880 to the Royal Canadian Academy of Art, and in 1890 he was elected president.

Jacobins, jăk'ō-bĭnz, the most famous of the clubs of the first French Revolution. When the States-General assembled at Versailles in 1789, it was formed and called the Club Bréton. On the removal of the court and national assembly to Paris it acquired importance and rapidly increased. It adopted the name of Société des Amis de la Constitution, but as it met in a hall of the former Jacobin convent in Paris, it was called the Jacobin Club. It gradually became the controlling power of the Revolution, and spread its influence over France, 1,200 branch societies being established before 1791, and obeying orders from the headquarters in Paris. The Jacobins were foremost in the insurrectionary movements of 20 June and 10 Aug. 1792; they originated the *commune de Paris,* and changed their former name to Les Amis de la Liberté et de l'Egalité. For a while they ruled supreme, and the Convention itself was but their tool. Robespierre was their most influential member; they ruled through him during the Reign of Terror, and were overthrown after his downfall in 1794. In that year the Convention forbade the affiliation of societies; the Jacobin Club was suspended and its hall was closed. The term Jacobin is now often used to designate anyone holding extreme views in politics. Numberless pamphlets were then published in regard to the Jacobins, the most noted being 'La Jacobinade,' 'Le secret des Jacobins,' and 'Les crimes des Jacobins.'

Jac'obite Christians, a subdivision of the sect of the Monophysites (q.v.) comprising those who dwelt in Syria, Mesopotamia, and Babylonia, organized by a certain Jacobus Baradæus, in the reign of Justinian, somewhat later than the middle of the 6th century. Jacobus had been a monk whose poverty-stricken asceticism gained for him the title of Jacobus Baradai (Ragged James). He had been appointed bishop of Edessa in 541, and from that year to 578 he traveled round gathering the members of his heretical sect, until they formed a compactly ordered body which has survived to the present time. They now number about 80,000, and are governed by two so-called Patriarchs, one of Antioch, the other of Jerusalem.

Jac'obites, a party in Great Britain (so styled from Lat. *Jacobus,* James), who after the revolution in 1688 continued to be the adherents of the dethroned King James II. and his posterity. In Ireland they were soon put down by conquest. In England the revolution was accomplished with the apparent consent of all parties; but in a year or two the Jacobite party gained considerable influence, and continued to disturb the government of William throughout his reign. After the accession of Anne and the death of James their efforts slackened for a time; but toward the close of her reign they revived. Bolingbroke and Oxford, with others of the Tory ministers of Anne, were in treaty with the son of James II., and either really or pretendedly negotiated for a restoration. On the arrival of George I. in 1715 a rebellion broke out in Scotland, supported by a more insignificant rising in the north of England. The failure of both these movements damped the enthusiasm of the English Jacobites, but in Scotland the party maintained its influence until the unsuccessful rebellion of 1745 put an end to its political importance, though some ultra-Jacobites did not think themselves justified in transferring their allegiance to the house of Brunswick till the death of Cardinal York in 1807. The hopes and wishes of the

Scottish Jacobites found expression in many beautiful songs, which form an interesting feature of the national literature.

Jacobs, Henry Eyster, American Lutheran clergyman and theologian: b. Gettysburg, Pa., 10 Nov. 1844. He was graduated from Pennsylvania College (Gettysburg) in 1862, from the Lutheran Theological Seminary at Gettysburg in 1865, was professor of Latin and history in Pennsylvania College in 1870–80, of ancient languages in 1880–1, and of Greek in 1881–3. In 1883 he became professor of systematic theology in the Lutheran Theological Seminary, and in 1894 dean of the faculty of that institution. His publications include: 'The Lutheran Movement in England' (1891); a 'History of the Lutheran Church in America' (1893); 'Elements of Religion' (1894); a 'Life of Martin Luther' (1898); and 'The German Emigration to America 1709–40' (1899).

Jacobs, Joseph, Anglo-American author and journalist: b. Sydney, New South Wales, 29 Aug. 1854. He was graduated from St. John's College, Cambridge, was at various times editor of 'Folk Lore,' the 'Literary Year-Book,' and the 'Jewish Year-Book,' was elected president of the Jewish Historical Society, and became literary editor of the 'Jewish Encyclopædia.' In 1896 he lectured in the United States. His publications include, beside translations and editions of English classics: 'Celtic Fairy Tales' (1891); 'Indian Fairy Tales' (1892); 'The Jews of Angevin England' (1893); 'Studies in Biblical Archæology' (1894); 'Literary Studies' (1895); and 'Jewish Ideals' (1896).

Jacobus, Melancthon Williams, American Presbyterian clergyman and educator: b. Allegheny, Pa., 15 Dec. 1855. He was graduated from Princeton in 1877, from the Princeton Theological Seminary in 1881, and after study at Göttingen and Berlin (1881–4), was pastor of the Presbyterian Church at Oxford, Pa., in 1884–91. In 1891 became professor of New Testament exegesis and criticism in the Hartford (Conn.) Theological Seminary. His Stone lectures at the Princeton Theological Seminary (1897–8) appeared as 'A Problem in New Testament Criticism' (1900).

Jaco'by, Harold, American astronomer: b. New York 4 March 1865. On his graduation from Columbia University in 1885, he determined to apply himself to astronomical research, a subject in which he had always evinced interest, and he was appointed assistant astronomer United States eclipse expedition to West Africa (1889–90). He has been professor of astronomy at Columbia since 1894 and is an active member of the leading astronomical and scientific societies at home and abroad. He has written numerous technical monographs in astronomical photography, stellar parallax and star clusters which have been published by French, English and Russian societies. He has also been a frequent contributor to the periodical press on popular astronomy.

Jacotot, Jean Joseph, zhŏṅ zhō-zĕf zhä-kō-tō, French educator: b. Dijon 4 March 1770; d. Paris 30 July 1840. He was successively soldier, secretary to the minister of war, and deputy-director of the Polytechnic School, where he was also professor of mathematics. He went to Brussels in 1815, in 1818 was appointed lecturer on the French language in the University of Louvain, and in 1827 director of the Military Normal School. The fundamental principle upon which his system of education rests is that every person is able to educate himself, provided he is once started in the right way. Knowledge should first be acquired through instinctive experience, or by the memory. For example, in imparting a knowledge of a language, Jacotot began by making the pupil commit to memory a single passage; he then encouraged him to study for himself, first the separate words, then the letters, then the grammar, and lastly the full meaning and import. His steps were learn, repeat, reflect, and verify. He expounded his views in 'Enseignement Universel' (1822). Consult: 'Life,' by A. Guillard (1860); Quick, 'Educational Reformers' (1868); Payne, 'Lectures on Education' (1892).

Jacquard, Joseph Marie, zhō-zĕf mä-rē zhä-kär, French inventor: b. Lyons 7 July 1752: d. Oullins, near Lyons, 7 Aug. 1834. His parents were silk weavers, and he learned the same trade. After a long period of hardship, during which he shared in some of the campaigns of the Revolution, he made his name famous by the invention of his new loom, which was publicly exhibited in 1801. He endeavored to introduce it into general use in Lyons, but was mobbed, and all but lost his life. Ultimately, however, his invention was bought by the French government, and he was able to spend the latter part of his life in comfortable independence. The subsequent prosperity of Lyons is largely attributable to his invention, and a more enlightened generation erected a statue to him in 1840 on the very spot where his loom was publicly destroyed. See LOOM.

Jacquard Machine. See DAMASK MANUFACTURE.

Jacquerie, zhäk-ė-rē, the name given to the rising of the French peasantry in the 14th century after the battle of Poitiers. They committed great devastations and outrages — burning castles, murdering men and violating women — particularly in the northeast of France. They were at length quelled by the Captal de Buch and Gaston Phébus, count of Foix, who slaughtered 7,000 of them near Meaux. The term *Jacquerie* is derived from *Jacques Bonhomme,* a familiar epithet for a peasant.

Jade, a remarkably tough, compact, ornamental stone, of green to white color and vitreous lustre, used by the prehistoric peoples of Switzerland, Mexico, Alaska, and other countries for axes, utensils and carvings. It is still highly prized in the East, especially in China and New Zealand. Jade is a general term including two distinct minerals, jadeite and the more common nephrite. Jadeite belongs to the pyroxene group and chemically is a soda-spodumene, easily fusible (at 2.5) and having a specific gravity of 3.3 to 3.35. Nephrite is a variety of amphibole identical with tremolite when of white color, or with actinolite when green, fusing much less easily (at 4) and with specific gravity of 2.95 to 3.0. Much information as to jade and implements made from it may be found in the publications of the Smithsonian Institution, especially a paper by S. Blondel, ‹A Historical, Archæological and Literary Study of Jade,› in the annual report for 1876.

Jad'win, Edgar, American military engineer: b. Honesdale, Pa., 1865. He studied at Lafayette College, was graduated from West Point in 1890, was an assistant in government engineering in 1890–1 and again from 1893, in the Spanish-American War was successively major and lieutenant-colonel of the 3d United States volunteer engineers, and for a time commanded a battalion of this regiment in the sanitation of Matanzas, Cuba. Promoted captain in the corps of engineers, U. S. A. (1900), he was appointed (1902) to direct all Pacific coast fortification and river and harbor work south of San Francisco.

Jæger, yā'gėr. See GULL; SKUA.

Jaffa, jăf'fạ or yäf'fä (ancient JOPPA; Ar. *Yafa;* Heb. *Yapho,* beauty), Asiatic Turkey, in the western part of Palestine on the Mediterranean Sea; about 35 miles from Jerusalem. Jaffa is an old Phœnician town mentioned in several places in the Bible. It was the port of entry for Jerusalem and for several of the interior cities of Palestine. Here the cedars from Lebanon were landed and then carried overland for the building of the Temple in Jerusalem. The house where Simon the tanner lived, and where Saint Peter lodged, is still pointed out. In 1187 it was taken by Saladin, in 1191 by Richard I. In 1799 it was captured by Napoleon, who here put to death 1,200 Turkish prisoners. The narrow entrance to the harbor is extremely dangerous. The city is built on a high rocky coast, and presents today the same irregular arrangement of streets, and unattractive looking houses that it may have had hundreds of years ago. The remains of Roman fortifications and dwellings are in the vicinity. The old road to Jerusalem is extremely interesting; but a railroad, built in 1892, connects the city with Jerusalem. The chief exports are oranges (said to be the finest in the world), other fruits, soap, sesame, wine, oil, raw silk, and nuts. The chief imports are sugar, rice, lumber, cotton goods, petroleum, tobacco, and silk goods. The city contains several mosques, a Franciscan monastery, and a mission school. Some attempts have been made to establish colonies of Jews on land near Jaffa. Pop. (1903) estimated, 30,000.

Jagannath, or **Juggernaut** (Sanskrit, *Jagannâtha,* lord of the world, one of the names of Vishnu), called by the natives Purí, a town and celebrated temple of Hindustan, in the presidency of Bengal, province of Orissa, on the Bay of Bengal, 48 miles south of Kattack. The town derives all its importance from the temple. This, the most celebrated shrine in Hindustan, was completed in the 12th century, at an enormous expense. The main street, at the extremity of which the temple stands, consists entirely of religious structures built of stone. The gardens here produce the finest fruits in the province. The temple stands near the shore, in a waste, sandy tract, and appears like a shapeless mass of stone. The idol is a carved block of wood, with a hideous face, painted black, and a distended blood-red mouth, and is magnificently dressed. On festival days the throne of the image is placed on a high tower moving on wheels. Long ropes are attached to the tower, by which the people draw it along. The belief that devotees used to cast themselves headlong in front of this car to be crushed to death probably grew out of the accidental fatalities sometimes occurring. Every year pilgrims flock in crowds to the temple.

Jagersfontein (yā'gėrz-fŏn-tīn) **Excelsior, The,** a name given the largest known diamond; found in the mine of the Jagersfontein Company, Orange Free State, South Africa, in 1893; weight, 971 carats; color, blue white.

Jag'ger, Thomas Augustus, American Protestant Episcopal bishop: b. New York 2 June 1839. He was graduated from the General Theological Seminary, New York, and ordained deacon in the Protestant Episcopal Church 1860. While serving as rector of Holy Trinity parish, Philadelphia, Pa., he was elected to the newly formed diocese of Southern Ohio, and consecrated May 1875. He is the author of ‹The Men of the Ages›; ‹The Ministry of Phillips Brooks›; ‹The Personality of Truth,› the Bohlen lectures for 1900.

Jag'gery, a coarse brown sugar made in the East Indies by the evaporation of the juice of several species of palms, chemically the same as cane-sugar. The sap which yields jaggery becomes by fermentation palm-wine, and from it arrack (q.v.) is distilled. See PALM.

Jaguar, jăg'ū-är or jăg'wär, a great American spotted cat (*Felis onca*), once numerous as far north and east as Arkansas, but since the early part of the 19th century rare even in Mexico. It resembles the leopard, but is more robust (exceeding the cougar in weight), has a rounder head, relatively shorter legs and a shorter, thicker tail. The tawny yellow hide is spotted with black, the spots larger than those of the leopard, and inclined to form broken rings with a spot in the centre. Jaguars abound in the tropical forests, especially along the great rivers, where they find most prey. They subsist largely on capybaras, agoutis, etc., but frequently pounce upon deer when they come down to drink. They seem to be more arboreal than most large cats, and a favorite method of obtaining their food is to lie along a tree-limb in some favorable spot and leap down upon the victim. But jaguars also abound in the treeless morasses of the Gran Chaco, and even on the dry uplands of Paraguay and Argentina, where their food and habits are entirely different from those who dwell in the forests. In view of the great extent of country and variety of circumstances in which this animal occurs, formal statements as to its habits are rarely more than locally true; and much error and superstition encumbers popular accounts. In general the jaguar has the manners and disposition of other great cats, changing with environment, season and circumstances. It submits grudgingly to captivity, and gives the same reluctant submission to the training of the circus as is exhibited by other great cats. In some regions it is greatly feared by the people, while in other places it is regarded as little to be feared. Its greatest peculiarity, perhaps, is the tendency to terrific roars and cries, more loud and continuous than those of cougars or leop-

SOUTH AMERICAN JAGUAR AND TAPIR.

ards. Consult the works of South American travelers and naturalists, especially Humboldt, Azara, Walterton, Wallace, Bates, and W. H. Hudson. Their accounts are well summarized by Porter in 'Wild Beasts' (New York 1894).

Jaguarondi, jăg-wa-rŏn′dĭ, or **Yaguarondi,** a slender, long-tailed, unspotted, blackish-gray wildcat (*Felis jaguarondi*) of tropical America. It is not common, and is little known. It measures about 30 inches from snout to tail, and the tail is 25 inches long; and the sides of its nose are curiously pinched in.

Jains, jīnz, or **Jainas,** jī′näz, a Hindu religious sect, which in union with the Buddhists opposed Brahmanism. They are numerous in the great cities of western and northwestern India, as well as in the Dravidic states of the South. The name signifies a follower of Jina («conqueror of the world»), one of the denominations of their apotheosized saints. They have many fine temples built in different parts of the Deccan, as well as elsewhere. The Jains deny the divine origin and infallible authority of the Vedas; they reverence certain holy mortals, now termed Tirthankara or saints, and they manifest extreme and even ludicrous tenderness for animal life. They positively affirm that the world exists from all eternity, not being created by God or any other being, and that it will exist forever. This world is divided into three parts — the upper, the middle, and the lower worlds. The Jains believe that not to kill any sentient being is the highest virtue; and lying, covetousness, theft, are strongly condemned. Not to eat at night, and to drink water strained (for fear of its containing any insect), not to drink arrack, are important injunctions. Various fruits and vegetables they will not eat even under the pressure of starvation, and any kind of flesh meat they will not touch with the hand. They believe in a sort of nirvâna (like the Buddhists). Those who attain to this nirvâna, this extinction of action, this final liberation, do not return to a worldly state, and there is no interruption to their bliss; they have perfect vision and knowledge, and do not depend upon works. The Jains are split up into two principal divisions, Digambaras and Svêtâmbaras; the points of difference between them are said to comprehend a list of 700 topics, 84 of which are considered of paramount importance. The Digambara (sky-clad, naked) now wears colored garments, confining the disuse of clothes to meal hours; the Svêtâmbara wears, as the name signifies, white garments.

Jal′ap (so called from Jalapa, or Xalapa, Mex., whence it is imported), the tuberous roots of several plants of the order *Convolvulaceæ,* that of *Ipomœa purga* being the most important. This is a twining herbaceous plant with cordate leaves and deep pink flowers, growing naturally on the eastern declivities of the Mexican Andes, at from 5,000 to 8,000 feet. The jalap of commerce consists of irregular ovoid dark-brown roots, varying from the size of an egg to that of a hazel-nut.

Jalapa, hä-lä′pä, or **Xalapa,** Mexico, city, capital of the State of Vera Cruz. Spelled Jalapa by the public generally, and most frequently by the Federal Government, but Xalapa always in official documents of the city itself and of the State of Vera Cruz. Elevation 4,689 feet above the sea. One of the oldest and most picturesque cities in the Republic. Distant from the City of Mexico by the Interoceanic railway 350 miles, and from the city of Vera Cruz, 116 miles. Population about 30,000. Was granted the title of «town» or «village» in 1791, by the King of Spain, together with the right to use a coat of arms (five hills with a star above, the whole surrounded by a border of gold alternating with letters composed of roots and flowers forming the name Xalapa,— a helmet and herald staff occupying a conspicuous position in the upper part. On the lower part appears a cornicopia, a laurel and a palm). The name Xalapa signifies five hills. Long before the coming of the Spaniards the town was a place of considerable importance, having been founded by the native Indians. It became a city in 1830, and the seat of the Bishopric of Vera Cruz in 1864. That it possesses very agreeable climatic qualities may be inferred from the fact that its average temperature the year round is 66° in the shade. There are several plazas, cotton mills, cigar manufactories and tanneries, a chocolate factory, a soda water factory and numerous small shops. The educational facilities are most excellent, and include a Normal School, with a valuable chemical laboratory, physical and natural history collection, library, gymnasium and a corps of 20 professors and teachers, a Female College, a School of Fine Arts, a Preparatory College and a most creditable aggregate of well conducted primary schools. Two railways,— the Interoceanic and the Xalapa & Cordova,— provide ample transportation facilties, and the financial needs of the community are looked after by a branch of the Mercantile Bank of Vera Cruz, and agencies of the National Bank and the Bank of London and Mexico. The Palace of the state government, which has recently been materially enlarged, is a spacious and most attractive building. A few miles distant and near the line of the Xalapa & Cordova railway, are the beautiful falls of Xico, which furnish the power for the city's electric lighting. There is the usual complement of churches; but the old convent of San Francisco, which dates back to 1555 and is now the Cathedral is particularly interesting from both a historic and artistic point of view. There are two museums,— those of the Preparatory College and the Primary School. The libraries of the Preparatory College, the Normal College, and of Fernando J. Corona contain altogether 11,000 volumes.

Jalisco, hä-lēs′kō, Mexico, a state bounded on the west by the Pacific Ocean, and on the north, east, and south by the states of Durango, Zacatecas, Aquascalientes, San Luis Potosí, Guanajuato, Quenetaro, Michoacan, Colima, and the territory of Tepic. The Sierra Madre range in the eastern portion of the state includes the active volcano Colima (about 14,238 feet) and other high mountains. The largest river is the Santiago, or Lerma. (See MEXICO — THE STATES OF.)

Jamaica, ja-ma′ka, the largest of the British West India Islands. It occupies the central position in the Antillean region, being nearly equidistant from Florida and the northern point of South America; from the mouths of the Orinoco and Galveston; from the head of the

Gulf of Honduras, on the west, and St. Thomas, on the east. Its greatest length is 144 miles; greatest breadth, 49 miles; area, 4,200 to 4,218 square miles. The eastern part of the island has, as its most commanding feature, the Blue Mountain range (highest peak 7,360 feet). The centre and west, an elevated plateau of later geologic formation, show the characteristic Antillean limestone, and, more perfectly here than elsewhere in the West Indies, the extraordinary results of exposure of that soluble material to the tropical rainfall. This upland plain, by the action of the elements, has been carved into hills, basins, called «cockpits,» 500 feet or more in depth, and much larger and deeper valleys, in which the plantations are situated, and from which the numerous streams often find their way to the sea by underground passages. One of these depressions, the Clarendon Valley (drained through a cañon), is 25 miles wide and 50 miles long; another, St.-Thomas-in-the-Vale, is circular in form, with a diameter of about 10 miles. Throughout the western half of the island such valleys occur, some with, others without, apparent drainage outlets. Coastal plains are most extensive on the south side, where the largest, the plain of Liguanea, has an area of 200 square miles. There are no navigable rivers, but a great number of small streams, pools, and thermal springs. In the limestone region there are many caverns, interesting on account of their size, beauty, or the relics of the old Indian population which they contain. The mean temperature at the coast is very little more than 78° F.; that of the larger part of the habitable regions (1,000 to 3,000 feet above sea-level) is about 73° F.; and at the altitude of 5,500 feet it is 60° F. The maximum for a period of 10 years at Kingston, on the south coast, averaged 87.8° F., and the minimum 70.7° F. On the plateau the annual variation is scarcely 9°; for example, at St. Elizabeth the maximum is 75° F. and the minimum 67° F. As a whole, the island has a pleasant climate. The average rainfall is 66 inches, the extremes being 100 inches on the high mountains and 44 inches at Kingston. The death-rate is 20.9 in 1,000; but this favorable showing, as compared with the other islands of the Antilles, is due much less to natural advantages than to the strict enforcement of local sanitary and quarantine regulations. The total number of inhabitants in 1903 is estimated at about 780,000. The census of 1891 showed 639,491, five sixths of the entire population being blacks or colored people; the whites numbering 14,692, and East Indian coolies 10,116. The birth-rate is little less than twice the death-rate. The Jamaican negroes are fairly good laborers when well fed; the menial work of the island is performed by them, and they are regarded as cheerful, honest, and respectful servants. They have no share whatever in the government.

Fauna, Flora, and Agriculture.— Jamaica has no native mammals. There are many species of lizards, including the large iguana, a few harmless snakes, and the slightly poisonous centipede and scorpion; in the lowlands mosquitoes, ants, and sand-flies are common; butterflies, fireflies, and beetles, parrots, pigeons, water-fowls, and 20 different kinds of song-birds are enumerated. Edible marine fish are seldom caught near the island, but the streams contain a few fresh-water species. The flora is distinguished from that of the other Antillean regions by the total absence of the royal palm, and by the abundance of pimentos, or allspice-trees, which are found nowhere else. Common trees are the ceiba, mango, wild orange, cocoa-palm, plantain, fustic, logwood, and cedar. Begonias, orchids, ferns, and grasses abound, except on the southern coast, which has a flora of the arid type, including the cactus, thorny acacias, etc. There are 739,256 acres under cultivation (tillage 200,168, pasturage 413,152, etc.). Of this total, 83,549 acres are devoted to pimento (allspice), but chiefly as a by-product on lands also used for stock-raising. Since the abolition of slavery the production of sugar has fallen off very greatly. In 1805 Jamaica exported 151,000 hogsheads of sugar, and 5,000,000 gallons of rum; in 1897 the cultivation of sugar-cane constituted only 19 per cent of the whole agricultural industry; in 1902 only 27,342 acres were under this crop. Other products have gradually taken its place, as shown in the following statement of areas devoted to them: Ground provisions, 91,733 acres; coffee, 31,265 acres; bananas, 32,842 acres; cocoanuts, 13,244 acres; etc. Since the great frosts in Florida (1895–6) the exportation of oranges from Jamaica has been carried on profitably; since 1886 tobacco has been grown and cigars for exportation made on a large scale. Coffee from the Blue Mountain estates is of fine quality. The cultivation of cocoa has increased in recent years; ginger grows most readily in the rich soils on the mountains; and among the other exports may be mentioned annatto, lime-juice, tamarinds, nutmegs, a number of dye-woods, cabinet-woods, etc. Special instruction in agriculture is given at the schools, and agricultural and horticultural interests are encouraged by the government and active private associations.

Commerce, Railways, Roads, etc.— The United States has the most important trade relations with Jamaica, furnishing a large part of the staple food supplies, and affording the best market for the island's fruit and sugar. Thus, in 1895–6, the total exports were valued at $8,900,000, the United States taking 57 per cent, and Great Britain 27.6 per cent. Imports in the same year amounted to $13,722,500, Great Britain, Canada, and other British possessions furnishing about 55.6 per cent, and the United States 41.8 per cent. There are about 185 miles of railway, 683 of telegraph, and 154 of telephone. In the year 1901–2 the number of letters and postal-cards transmitted by the post-office was 5,424,814. The system of public highways (3,600 miles), extending into all parts of the island, is admirable: the roads are thoroughly well built and graded, have substantial bridges, and are kept in good repair. The principal line of steamships is the Royal Mail, with fortnightly sailings between England and the Caribbean ports. The Atlas Line and the Boston Fruit Company's steamers maintain communication with New York, Boston, Philadelphia, and Baltimore. A steamer from Kingston circumnavigates the island once a week.

Government, Education, and Religion.— The executive authority is vested in a governor, appointed by the king. He is assisted by a secretary, attorney-general, director of public works, collector-general, and the commanding officer of the military forces. The legislative council consists of 29 members, with the governor as president; of the whole number 14 are elected (term 5 years), 10 nominated, and 5 are the administrative officers mentioned above. Admittance to the lower grades of the civil service is gained through competitive examinations. The government medical service has in charge 18 public hospitals. The police system includes more than 100 stations in different parts of the island; a force of more than 1,500 men (769 district constables); several prisons, reformatories, and industrial schools. In 1902 the strength of the regular forces stationed in Jamaica was 1,866 officers and men; militia, 763. Fortifications and batteries are at Port Royal, Rocky Point, Salt Pond's Hill, Rock Fort, Fort Augusta, Fort Clarence, and Apostles' Battery. Ships of the royal navy on the North American and West India station are 13 in number (see also below in connection with Kingston). The judicial department includes a high court of justice (9 members), circuit courts, and a magistrate in each parish. Public revenue and expenditure in recent years, each about $3,000,000; the public debt in 1897 was given as $7,581,000. Government schools in 1902 numbered 728, with 84,779 pupils. There are four government training colleges for teachers; several endowed secondary, industrial, and high schools; a public lyceum and museum, with a valuable library, etc. Local examinations are held on the island by the University of Cambridge. In 1870 the Church of England was disestablished and disendowed on the island; in 1902 churches and chapels were: Church of England, 219; Baptist, 189; Methodist, 128; Presbyterian, 73; United Methodist Free Church, 43; Roman Catholic, 28; Moravian, 27; Congregational, 26; Christian Church, 20; and Church of Scotland, 10.

Dependencies.— The Cayman Islands, Turks, and Caicos Islands, and the Morant and Pedro Cays are attached to Jamaica for administrative purposes. Of these, the first group lies in the Caribbean Sea, 180 miles northwest of Jamaica, and comprises Grand Cayman, 17 miles long, 4 to 7 broad; Little Cayman, 9 miles long and about 1 mile broad; and Cayman Brae, 10 miles long and 1 mile broad. The government is administered by a commissioner, and magistrates are appointed by the governor of Jamaica. The population of the Cayman Islands is about 4,300. The second group, Turks and Caicos Islands, situated nearly 500 miles northeast of Jamaica, geographically belongs to the Bahamas; but the governor of Jamaica exercises a supervising power over the local authorities (a commissioner and legislative board of 5 members). Area, 165½ square miles; population, 5,350; capital, Grand Turk; products, salt, sponges, pink pearl, etc. The Morant Cays and Pedro Cays are situated, respectively, about 33 miles southeast, and about 45 miles southwest, of Jamaica.

Chief Towns.— Kingston, the capital, has 46,542 inhabitants, a good water-supply and system of sewerage, well-lighted streets, large shops, a street-railway, etc. The town is, however, unattractive; residences of the officials and wealthy merchants are built in the suburbs. Public institutions are the museum, library, colonial offices, schools, churches, almshouse, penitentiary, asylum, and Victoria Market. Four miles away is the important naval station of Port Royal, headquarters for the British West India naval forces, and a strongly fortified place. Spanish Town, population 5,019, at one time the capital, is situated 15 miles west of Kingston. Port Antonio, on the northeast side of the island; Montego Bay, population 4,803; Savanna-la-Mar, Falmouth, Lucea, St. Ann's Bay, Buff Bay, Port Morant, Black River, etc., are distributed among the three counties of Surrey, Middlesex, and Cornwall.

History.— The native word from which we have the name Jamaica signifies "island of fountains." Names recalling the old Spanish occupation of the island are Montego (Spanish Manteca), Bog Walk (Spanish Boca del Agua), Wag Water (Spanish Agua Alta), and others. As a Spanish colony (1509–1665) Jamaica was backward and of little consequence; the total population in the year last mentioned, when an English fleet captured it, was only 3,000. One half of that number took refuge in Cuba. The settlers who arrived subsequently were peasants from Scotland, Ireland, and England, English subjects from the other West Indian islands, and Jewish traders from Minorca. Negroes were brought from Africa in great numbers; the old town of Port Royal being chosen as a convenient point from which to reship slaves to the other islands and the mainland. That town, once a place of great wealth and importance, was ruined by repeated calamities. "On 7 June 1692 happened that earthquake which swallowed up great part of Port Royal," says Edwards, who explains that the town "was chiefly built on a bank of sand, adhering to a rock in the sea, and a very slight concussion, aided by the weight of the buildings, would probably have accomplished its destruction." Hurricanes in 1712 and 1722, and a conflagration 13 July 1815, completed the work of obliteration. Toward the close of the 18th century the island was occupied by large plantations, and was exceedingly productive. Before that time 610,000 slaves had been landed at Port Royal. The freeing of the negroes (see EMANCIPATION) resulted in the abandonment of the island by many landlords. The effort to regain the lost prosperity through diversified agriculture has already been mentioned. In August 1903 a hurricane inflicted great injury at several points in Jamaica, and on the Cayman Islands. In January 1907 Jamaica was visited by a disastrous earthquake which almost entirely destroyed Kingston. Loss about $10,000,000 and 1,000 lives.

Consult: Hill, 'Cuba and Porto Rico, with the other Islands of the West Indies'; and Edwards, 'History of the British West Indies.'

MARRION WILCOX,
Authority on Spanish America.

Jamaica, a part of the borough of Queens in the city of New York. Prior to 1 Jan. 1898 Jamaica was the county-seat of Queens County on Long Island, but that portion of Queens County in which Jamaica is situated has been incorporated in the city of New York (Greater New York). The town was settled as early as 1656. Several houses built before the Revolutionary War are in a good state of preservation. In the vicinity there are a large number of market gardens. One of the New York State normal schools is situated in Jamaica.

Jamaica Bay, an inlet of the Atlantic Ocean which indents the southeast shore of Long Island. It is nearly circular in shape; the Rockaway Beach extends across the side toward the ocean and makes of the bay a land-locked body of water. A number of islands are in the middle and at the entrance. The whole of the bay, except an inlet, Head Bay on the east shore, is within the limits of New York city; Coney Island is near the entrance to the bay.

James, Saint, called the «Greater,» the son of Zebedee. He was called to be an apostle, together with his brother Saint John, as they were mending their nets with their father, who was a fisherman. They then followed Christ, were witnesses with Saint Peter of the transfiguration, and accompanied our Lord in the garden of Gethsemane. In the lists of the apostles given in the synoptic Gospels and in the Acts the names of Peter, Andrew, James, and John stand first; and it is plain that these four were at the head of the 12 throughout. After the ascension Saint James persevered in prayer with the other apostles and the women and the Lord's brethren. Nothing further is certainly known of him till the passover of 44, when, being in Jerusalem, the Jews stirred up Herod Agrippa I. against him, who put him to a cruel death. Thus Saint James was the first of the apostles who suffered martyrdom. There is a legend that he went to Spain, and that his bones lent miraculous aid to the Spaniards against the Saracens.

James, Saint, called the «Less,» an apostle, the brother or cousin of Jesus. He is called in Scripture the «Just,» and is probably the apostle described in Matt. x. 3 and elsewhere as the son of Alpheus. He was the head of the church in Jerusalem when the Scribes and Pharisees threw him down from the gable of the temple, and a fuller dashed out his brains with a club, about the year 62. This is the account of his death given by Hegesippus, a Christian of Jewish origin, who lived in the middle of the 2d century, and it differs somewhat from the narrative of Josephus. Some critics maintain that James, the son of Alpheus, was one person, and James, the brother of Jesus, another. Whether James was the author of the epistle which bears his name is considered doubtful.

James I., king of England, and VI. of Scotland, the only child of Mary, Queen of Scots, by her cousin Henry Stuart, Lord Darnley: b. Edinburgh Castle 19 June 1566; d. palace of Theobalds, Hertfordshire, 27 March 1625. In 1567 he was solemnly crowned at Stirling, and from that time all public acts ran in his name. His childhood was passed in civil wars, under the regencies of Murray, Mar, and Morton, during which time he resided in Stirling Castle, under the tuition of the celebrated Buchanan. From the first he seems to have imbibed those exalted notions of the royal authority and divine right which proved so injurious to his posterity. But James soon found it advisable to ally himself with Queen Elizabeth and accept a pension from her. When, however, it became apparent that the life of his mother was in danger from the sentence of an English judicature, James sent representatives to England to intercede with Elizabeth; but his whole procedure in the matter shows a singular callousness. As a matter of form he ordered the clergy to pray for his mother, but when the news of Mary's execution arrived James was not much moved, though he attempted to make a show of indignation by condemning one of the commissioners to death, a sentence which, however, he commuted to banishment. On 23 Nov. 1589 James married Anne, daughter of Frederick II., king of Denmark. On his return home, after passing the winter in festivities at Copenhagen, he was in some danger from the unruliness of the nobles; and for several succeeding years of his reign the history of Scotland displays much turbulence and party contest. In 1603 James succeeded to the crown of England, on the death of Elizabeth, and proceeded amidst the acclamations of his new subjects to London. One of his first acts was to bestow a profusion of honors and titles on the inhabitants of both countries. At a conference held at Hampton Court between the divines of the Established Church and the Puritans James exhibited the ill-will he bore to popular schemes of church government. The meeting of Parliament also enabled him to assert those principles of absolute power in the crown which he could never practically maintain, but the theoretical claim of which provided the increasing spirit of freedom in the House of Commons with constant matter of alarm and contention. Although James had behaved with great lenity to the Catholics in Scotland, those in England were so disappointed in their expectations of favor, that the famous gunpowder plot was concerted in 1605, the object of which was to blow up the king and Parliament. (See GUNPOWDER PLOT, THE.) In 1612 he lost his eldest son Henry, a prince of great promise, then 19; and in the following year the eventful marriage of his daughter Elizabeth with the elector palatine took place. No circumstance in the reign of James was more unpopular than his treatment of the celebrated Sir Walter Raleigh (q.v.). James had set his heart on marrying his son Charles to a Spanish princess, but the negotiations failed through the overbearing temper of Buckingham, the royal favorite, who quarreled with the grandees of the Spanish court. The close of the life of James was marked by violent contests with his Parliament. He was also much disquieted by the misfortune of his son-in-law, the elector palatine, who, having been induced to accept the crown of Bohemia, and to head the Protestant interest in Germany, was stripped of all his dominions by the emperor. Urged by national feelings for the Protestant cause, he was at length (10 March 1624) induced to declare war against Spain and the emperor; and troops were sent to Holland to act in conjunction with Prince Maurice. James was not destitute of abilities nor of good intentions, but the former were not those of a ruler, and he was neither beloved at home nor esteemed abroad. He received during his lifetime a great deal of adulation on the score of his literary abilities. Consult: Aikin, ‹Memoirs of the Court of King James the First› (1822); Burton, ‹History of Scotland› (1873); Macaulay, ‹History of England› (1858); S. R. Gardner, ‹History of England from the Accession of James I. to the Spanish Marriage› (1863–9); ibid., ‹The First Two Stuarts› (1876).

James II., king of England, second son of Charles I. and of Henrietta of France: b. London 15 Oct. 1633; d. St. Germain, France, 16 Sept. 1701. He was at once declared Duke of York, though only formally raised to that dignity in 1643. At the Restoration in 1660 he took the command of the fleet, as lord high-admiral, and was also made Warden of the Cinque Ports. He had previously married Anne, daughter of Chancellor Hyde, afterward Lord Clarendon (q.v.). In 1671 the Duchess of York died. Before her death she declared herself a convert to the Roman Catholic faith, which had been secretly that of the duke for many years, and was now openly avowed by him. This declaration laid the foundation of the opposition which finally drove him from the throne. A test act being soon after passed, to prevent Roman Catholics from holding public employments, the duke was obliged to resign his command. On 21 Nov. 1671 he married Mary Beatrice of Este, daughter of the Duke of Modena, and in 1677 his eldest daughter, Mary, was united to William, prince of Orange.

On the death of Charles II., 6 Feb. 1685, the duke succeeded, under the title of James II., and from the time of his ascending the throne seems to have acted with a steady determination to render himself absolute, and to restore the Roman Catholic religion. At variance with his Parliament he was under the necessity of accepting a pension from Louis XIV. He sent an agent to Rome to pave the way for a solemn re-admission of England into the bosom of that Church, conduct which encouraged the rebellion of the Duke of Monmouth. The unrelenting temper of James was again exhibited in the executions on this account. The legal proceedings under Jeffreys were brutal in the extreme; and no fewer than 320 persons were hanged on the western circuit alone, which attained an unenviable notoriety as the Bloody Assize. He gradually proceeded to a direct attack on the Established Church, by the formation of an ecclesiastical commission, which cited before it all clergymen who had done anything to displease the court. Apparently to conciliate the Puritans a declaration of indulgence in matters of religion was ordered to be read by the clergy in all the churches of the kingdom, but its real object, however, was to favor the Roman Catholic element. Seven bishops met and drew up a loyal and humble petition against this ordinance, and for this act they were sent to the Tower, on a charge of seditious libel. On 29 June 1688 they were acquitted amid the most enthusiastic rejoicings of the populace. The innovations, in regard both to the religion and government, gradually united opposing interests, and a large body of nobility and gentry concurred in an application to the Prince of Orange, signed by seven of the most prominent and influential political leaders, to occupy the throne. James, who was long kept in ignorance of these transactions, when informed of them by his minister at the Hague, was struck with terror equal to his former infatuation; and, immediately repealing all his obnoxious acts, practised every method to gain popularity. All confidence was, however, destroyed between the king and the people. William arrived with his fleet in Torbay 5 Nov. 1688, and landed his forces, amounting to 14,000 men. Several men of rank went over to William, and the royal army began to desert by entire regiments. Incapable of any vigorous resolution, and finding his overtures of accommodation disregarded, James resolved to quit the country. He repaired to St. Germain, where he was received with great kindness and hospitality by Louis XIV. In the meantime the throne of Great Britain was declared abdicated, and was occupied, with the national and parliamentary consent, by his eldest daughter, Mary, and her husband, William, conjointly; Anne, who had equally with her sister been educated a strict Protestant, being declared next in succession, to the exclusion of her infant brother, known in history as the Pretender, who had been born on 10 June of that year. Assisted by Louis XIV., James was enabled, in March 1689, to make an attempt for the recovery of Ireland. The battle of the Boyne, fought 1 July 1690, compelled him to return to France. All succeeding projects for his restoration proved equally abortive. Consult: Burnet, 'History of the Reign of King James the Second'; Cavelli, 'Les derniers Stuarts à Saint Germain-en-Laye' (1871); Klopp, 'Der Fall des Hauses Stuart' (1875–88).

James I., king of Scotland, of the house of Stuart: b. Dunfermline 1394; d. Perth 21 Feb. 1437. He was the son of Robert III. In 1406, while on his way to France, he was taken by the English and carried to the Tower of London. For the next 18 years he remained a prisoner in England, being confined during part of his captivity in Nottingham Castle, Evesham, and Windsor Castle, where he wrote the 'King's Quhair' and other poems. Robert III. died very shortly after learning of his son's captivity, and James was proclaimed king; but during the remainder of the reign of Henry IV., and the whole of that of Henry V., he was detained in England, with a view to prevent the alliance of Scotland with France. In 1424, under the regency of the Duke of Bedford, he was restored to his kingdom, at which time he was in his 30th year. Previous to his departure he married Jane or Joanna Beaufort, daughter of the Earl of Somerset, a lady of the blood royal of England, who is the fair dame alluded to in his poem 'The King's Quhair.' On his return to Scotland he restored Scotland to some degree of order, but so severe was his treatment of his turbulent nobles that he was at last murdered by their emissaries at Perth in the 13th year of his reign.

James II., king of Scotland, son of James I.: b. 16 Oct. 1430; d. Roxburgh, Scotland, 3 Aug. 1460. During the minority his kingdom was distracted by struggles for power between his tutors Livingston and Crichton and the great house of Douglas. In 1449 he assumed the government and married Mary of Guelderland. He had latterly allied himself with the Douglases, but being deprived of all real power, he resolved to free himself from their yoke. This he did in 1452 by inducing the Earl of Douglas to come to Stirling Castle, where he stabbed him with his own hand. He then quelled a powerful insurrection headed by the next earl, whose lands were confiscated. In 1460 he infringed a truce with Henry VI. of England by besieging the castle of Roxburgh, and was killed by the bursting of a cannon in the 29th year of his age.

James, III., king of Scotland, son of James II.: b. 10 July 1451; d. 11 June 1488. He was crowned at Kelso on his father's death, but in 1465 came under the influence of Bishop Kennedy and the Boyd family, one of the latter espousing the king's sister in 1467. James married Margaret of Denmark in 1469 and dismissed the Boyds from favor only to advance other favorites. Prominent among these was Cochrane, through whom one brother of James was obliged to flee the kingdom, and another was put to death. The nobles seized Cochrane and five others and hanged them. Subsequently a plot was formed to dethrone the king, and though many peers remained loyal to him the royal army was defeated at Sauchie, near Stirling. James escaped from the field, but was murdered during his flight.

James IV., king of Scotland: b. 17 March 1473; d. Flodden 9 Sept. 1513. He was the son of James III. He commanded the nobles who vanquished and killed his father at Sauchieburn, and was crowned at Scone in June 1488. He married Margaret, the daughter of Henry VII. of England, but taking umbrage at the hostile attitude of his brother-in-law, Henry VIII., allied himself with France. He was defeated and slain at the battle of Flodden (q.v.) during an invasion of England.

James V., king of Scotland, son of James IV.: b. Linlithgow, Scotland, 10 April 1512; d. Falkland Palace 14 Dec. 1542. He came to the throne under the regency of his mother in 1513 and assumed the reins of government in 1528. He married Madeleine of France in 1537, and on her death married the daughter of the Duke of Guise, Mary of Lorraine, in 1538. He ruled with much vigor and decision, and on account of his mingling freely with his people was called «the king of the commons.» Becoming entangled in war with England in 1542 he was defeated at the battle of Solway Moss and died a month later. He was succeeded by his daughter, Mary, Queen of Scots, who was but seven days old at his death.

James, Bushrod Washington, American oculist: b. Philadelphia 25 Aug. 1836. He was graduated from the Homœopathic Medical College of Pennsylvania in 1857, became well known as a practitioner, was elected president of the Pennsylvania Homœopathic Medical Society in 1873, of the American Institute of Homœopathy in 1883, and in 1896 was vice-president of the Homœopathic Medical Congress held at London, England. His publications include: ‹American Climates and Resorts› (1889), a manual of climatology (1889); ‹Alaskana› (1892); ‹Echoes of Battle› (1895); and ‹Alaska: Its Neglected Past and its Brilliant Future› (1897; rev. ed. 1901).

James, Charles, English novelist and playwright: b. London 26 Dec. 1858. He received a private education, became lieutenant-colonel of the Royal West Kent regiment, and published: ‹A Bird of Paradise› (1889); ‹The New Faith› (1890); ‹Honors Easy› (1892); ‹A Worker in Iron› (1894); ‹At the Sign of the Ostrich› (1895); and ‹Where Thames is Wide› (1896); etc.

James, Edmund Janes, American college president: b. Jacksonville, Ill., 21 May 1855. He was educated at Northwestern University and at Harvard, was principal of the high schools at Evanston and Normal, Ill. (1878–82), professor of public finance and administration in the Wharton School of Finance and Economy of the University of Pennsylvania (1883–95), and professor of political and social science in the university (1884–95). In 1896 he became professor of public administration in the University of Chicago and director of the extension division; in 1902 president of the Northwestern University; and in 1905 president of the University of Illinois. He became president of the American Academy of Political and Social Science in 1889, and in 1891–5 was president of the American Society for the Extension of University Teaching. His writings include: ‹The Legal Tender Decisions› (1887); ‹The Canal and the Railway› (1890); ‹The Federal Constitution of Germany› (1890); and ‹The Growth of Great Cities in Area and Population› (1900).

James, Florence, «FLORENCE WARDEN,» English novelist: b. Hanworth, Middlesex, 16 May 1857. She taught as a governess, 1875–80, and was on the stage, 1880–5. Her novels, many of which are strongly sensational in tone, have been very popular in this country as well as in England. They are published under the pseudonym «Florence Warden,» and among them are: ‹At the World's Mercy›; ‹The House on the Marsh,› which established her reputation; ‹A Prince of Darkness›; ‹Scheherezade›; ‹A Perfect Fool›; ‹Pretty Miss Smith›; ‹A Lady in Black› (1897); ‹A Very Rough Diamond›; ‹Morals and Millions›; ‹One too Often› (1901); ‹A House with a History.›

James, George Payne Rainsford, English novelist and historian: b. London 9 Aug. 1801; d. Venice 9 May 1860. As a young man he traveled widely on the Continent. He began his writing under the influence of Scott's novels, and wrote in all over 100 novels; he was also known as the author of popular historical books, and in 1839 was appointed historiographer royal, in this capacity writing ‹History of the United States Boundary Question› and ‹The Corn Laws.› In 1850 he was British consul in Massachusetts, two years later was transferred to Norfolk, Va., and in 1856 became consul general at Venice. His novels include: ‹Richelieu› (written 1825, published 1829); ‹Darnley› (1829); ‹DeLorme› (1830); ‹Philip Augustus› (1831); ‹Henry Masterton› (1832); ‹The Gypsy› (1835); ‹Attila› (1837); ‹Man at Arms› (1848); ‹King's Highway› (1848); ‹Agincourt› (1844); ‹The Smuggler› (1845); ‹Ticonderoga› (1854). His historical works include: ‹Memoirs of Great Commanders› (1832); ‹Life of the Black Prince› (1836); ‹Life of Richard I.› (1842–9). James' novels were very popular when first written, and a new edition appeared in 1903.

James, George Wharton, American explorer, lecturer and ethnologist: b. Gainsborough, Lincolnshire, England, 27 Sept. 1858. He has spent many years in making geological and other researches in California, and elsewhere in the southwestern United States, and is a member of various learned societies in this country and England. He has published: ‹The Lick Observatory› (1888); ‹Nature Sermons›; ‹Picturesque Southern California›; ‹Missions and Mission Indians of California›; ‹From Alpine Snow to Semi-Tropical Sea›; ‹In and Around the Grand Canyon› (1900); ‹Indian Basketry›

(1900); ‘The Indians of the Painted Desert Region’ (1903).

James, Henry, American Swedenborgian theologian: b. Albany, N. Y., 3 June 1811; d. Cambridge, Mass., 18 Dec. 1882. He was educated at Union College and Princeton Theological Seminary, traveled abroad and became a Sandemanian and later a Swedenborgian. He subsequently lived in New York, Newport, R. I., and lastly at Cambridge. Among the most noted of his works on morals and religion are: ‘What is the State?’ (1845); ‘Moralism and Christianity’ (1852); ‘Lectures and Miscellanies’ (1852); ‘The Nature of Evil’ (1855); ‘Christianity the Logic of Creation’ (1857); ‘Substance and Shadow’ (1863); ‘The Secret of Swedenborg’ (1869). His ‘Literary Remains,’ edited by William James, appeared in 1885.

James, Henry, American novelist and essayist: b. New York 15 April 1843. He was the son of a clergyman, Henry James (q.v.), who gained fame as a writer on philosophico-theological subjects, first from the Sandemanian, and afterward from the Swedenborgian standpoint. The novelist, known until his father's death as Henry James, Junior, was educated under his father's guidance in New York, Geneva, Paris, and Boulogne. He lived in Europe with his parents during the years 1855–9, and after his return to the United States studied in the Harvard Law School in 1862. He began his literary career about 1865 as a contributor to American magazines, and soon afterward published ‘The Story of a Year, a tale of the American Civil War.’ In 1869 he took up his residence in Europe, and since then he has resided chiefly in England and Italy. ‘Roderick Hudson’ (1875) was his first long novel. His subsequent novels include: ‘Watch and Ward’ (1878), originally published in 1871 in the ‘Atlantic Monthly’; ‘The American’ (1877), by some regarded as his best; ‘Daisy Miller’ (1878); ‘The Europeans: a Sketch’ (1878); ‘Confidence’ (1880); ‘Washington Square’ (1880); ‘A Bundle of Letters’ (1880); ‘Diary of a Man of Fifty’ (1880); ‘The Portrait of a Lady’ (1881); ‘The Bostonians’ (1886); ‘Princess Casamassima’ (1886); ‘The Tragic Muse’ (1892); ‘The Other House’ (1896); ‘The Spoils of Poynton’ (1897); ‘What Maisie Knew’ (1897); ‘The Awkward Age’ (1899); ‘The Sacred Fount’ (1901); ‘The Wings of a Dove’ (1902); ‘The Better Sort’ (1903). He has also written a great many short stories, among which are: ‘A Passionate Pilgrim, and other Tales’ (1875); ‘Pension Beaurepas’ (1878); ‘An International Episode’ (1879); ‘The Madonna of the Future, and Other Tales’ (1879); ‘The Siege of London’ (1883); ‘The Point of View’ (1883); ‘Tales of Three Cities’ (1884); ‘The Author of Beltraffio, and other Stories’ (1885); ‘Stories Revived’ (1885); ‘The Aspern Papers, and other Stories’ (1888); ‘The Reverberator’ (1888); ‘A London Life, and other Stories’ (1889); ‘The Lesson of the Master, and other Stories’ (1892); ‘The Real Thing, and other Tales’ (1893); ‘Picture and Text’ (1893); ‘The Private Life’ (1893), a collection of stories; ‘The Album’ (1894); ‘The Reprobate’ (1894); ‘Tenants’ (1894); ‘Disengaged’ (1894): ‘Terminations, and other Stories’ (1896); ‘In a Cage’ (1898); ‘The Two Magics’ (1898), consisting of two stories; and ‘The Soft Side’ (1900), a series of stories. In very many of his stories he describes the life of Americans in Europe, and they depend for much of their interest upon the contrasts between American and European character and institutions. Though a very prolific writer, he is never careless, his style being always felicitous, while in respect to the substance of his work he ranks as the subtlest of American novelists. A dramatic version of ‘The American’ was produced in London in 1891, but neither it nor his subsequent play ‘Guy Domville’ (1895) was successful. He has turned his intimate knowledge of modern French literature to good account in his volume of essays entitled ‘French Poets and Novelists’ (1878). Other works of a similar kind are ‘Transatlantic Sketches’ (1875); ‘Portraits of Places’ (1884); ‘A Little Tour in France’ (1884; new ed. 1900); ‘Partial Portraits’ (1888); ‘Essays in London and Elsewhere’ (1893). He also contributed the volume on ‘Hawthorne’ (1879) in the ‘English Men of Letters’ series, and in 1903 published ‘William Wetmore Story and his Friends,’ a notable biography.

James, Thomas Lemuel, American banker: b. Utica, N. Y., 29 March 1831. He early learned the printer's business and bought out a weekly Whig paper, the ‘Madison County Journal,’ at Hamilton; and in 1856 changed its name to the ‘Democrat-Republican,’ which was for 10 years the most powerful Republican organ in Madison County. He was collector of canal tolls at Hamilton 1854–85; was appointed inspector of customs in New York 1861; weigher in 1864; and in 1870 was promoted to be deputy collector in charge of the bonded warehouse, which department he immediately proceeded to arrange according to a new system. In 1873 President Grant appointed him postmaster of New York, and he was reappointed by President Hayes in 1877. He filled this office with signal success and originated improvements in the delivery system involving the whole postal methods of the United States. President Garfield in 1881 gave him the portfolio of postmaster-general, and his chief important service during his 10 months' incumbency was his initiation of inquiries which led to the investigation of the Star Route frauds. In 1882 he became president of the Lincoln National Bank of New York.

James, William, American psychologist and philosopher: b. New York 11 Jan. 1842. He is the son of Henry James, theologian (q.v.), and brother of Henry James, novelist (q.v.). He was educated in private schools and by tutors in New York and abroad, studied in 1861–3 at the Lawrence Scientific School of Harvard University, accompanied the Thayer expedition to Brazil in 1864–5, was graduated from the Harvard Medical School in 1870, in 1872 was appointed instructor in anatomy and physiology at the school, and in 1876 assistant professor of physiology. In 1885 he was appointed assistant professor of philosophy in the university, in 1889 professor of psychology, and subsequently professor of philosophy. He was Gifford lecturer on natural religion in the University of Edinburgh in 1899–1901. His best known work has been done in the domain of analytical psychology, in which he won European recognition. His works are marked by a most readable style and skilful exposition of different topics. He was a founder of the American Society for Psychological Research in 1884, and published: ‘Principles of Psychology’ (1890); and ‘Psychology, Briefer Course’ (1892), both popular text-books; ‘The Will to Believe’ (1897); ‘Human Immortality’ (1898); ‘Talks to Teachers on Psychology’ (1899); and ‘The Varieties of Religious Experience’ (1902).

James Bay, an inlet of Hudson Bay, in the southern part. The bay was named in honor of Captain Thomas James, an English navigator, who explored this body of water in 1631–3. The bay is about 320 miles long and from 140 to 160 miles wide. It contains a number of islands, the largest, Agomska, being about 70 miles in length. Several large rivers flow into James Bay; the Albany, Moose, Noddawai, and East Main are the largest. Moose Factory, at the mouth of Moose River, on the southern shore, is the most important Canadian trading station, next to York Factory, of the Hudson's Bay Company.

James, Epistle of, an encyclical letter addressed to the Jews of the Dispersion. It was written by a Jew for Jewish readers, all of whom are supposed to be subject to the Jewish law. Its date is about 50 A.D., at latest, certainly before the fall of Jerusalem. The epistle was not at first admitted into the canon, and it is not much quoted by the earlier writers, Origen indeed being the earliest we find quoting it by name. Eusebius places it in his list of books controverted but recognized by most (*Antilegomena*), and Jerome expresses the doubt more strongly still. It was finally declared canonical by the third Council of Carthage (397), and already we find it acknowledged by Cyril of Jerusalem, Epiphanius of Cyprus, Athanasius, Gregory of Nazianzus, and all later theologians, down to the time of the Reformation, when it was rejected by Erasmus and Cardinal Cajetan, and stigmatized by Luther as «a downright epistle of straw . . . with nothing evangelical about it,» although Calvin thought that it was worthy of an apostle.

The aim of the epistle is throughout ethical rather than doctrinal, Christianity being prominently put forward as the ethical fulfilment of the law, the perfect man being he whose faith has constantly proved itself in practice, and who is patient under all tribulation. It echoes closely the language and method of Christ himself; as Beyschlag says, «essentially it is the teaching of Christ, and thus there is little teaching about Christ.» Besides the discourses of the Master, especially his Sermon on the Mount, we find distinct traces of familiarity with the Wisdom of Solomon, and the Ecclesiasticus of the son of Sirach. Formalism, greed of gain, respect of persons, falsehood, evil-speaking, boasting, wrangling and bitterness in debate, attention to dogmatic definitions instead of holiness of life—such are the sins against which the author inveighs with vivid and abrupt invective. His Greek is unusually pure, and some scholars, as Schmidt, Bertholdt, and Bishop Wordsworth, have supposed that the epistle was first written in Aramaic and afterward translated.

The passage in the second chapter (14–26) has been interpreted by many theologians as a direct attack on the Pauline view of faith and justification, that Christ by his death had accomplished a new order of salvation, in which the law, which was merely temporary, was now abrogated, and that thus Christianity had fitted itself to become a universal religion; but Paul's conception is more philosophical and comprehensive, although it by no means excludes the conception of James, whose faith without works is not Paul's justifying faith at all, but the profitless faith without love condemned in 1 Cor. xiii.

The Tübingen school, as might have been expected, claimed the Epistle of James as a polemic against Paul, and made its author a pseudonymous writer of later time, who employed the name of James as an accepted type of spiritualized Jewish Christianity.

Bibliography.— Besides the general introductions of Bleek, De Wette, S. Davidson, Hilgenfeld, Holtzmann, Salmon, Dods, and Weiss, and the works on the New Testament canon by Kirchofer, Overbeck, Westcott, and Zahn, may be consulted the special commentaries by Bassett (1876), Reuss (1878), Erdmann (1881), Schegg (1883), E. H. Plumptre (1884), Beyschlag (1888; the 5th ed. of the commentary in the ‘Exegetisches Handbuch’), and R. Johnstone (2d ed. 1888).

James Island, an island in Charleston harbor, in South Carolina. It is separated from the city of Charleston by the Ashley River and the South Channel of the harbor, here a little over a mile wide. On the northeast coast of the island is Fort Johnson and nearby a quarantine station. Just northeast of the island is Fort Sumter (q.v.). The battle of Secessionville, fought on 16 June 1862, and several other engagements of the Civil War, took place on this island.

James Milliken University, an organization which includes three institutions of learning: the Lincoln College, located at Lincoln, Ill.; the Industrial School and the Decatur College, at Decatur, Ill. The synods of the Cumberland Presbyterian Church of Iowa, Indiana, and Illinois, founded, in 1865, the Lincoln College. Schools of art, music and elocution, a classic college, and a preparatory department, at times a commercial school, all made up Lincoln College. The Decatur College and Industrial School are endowed institutions opened in 1903. In 1900–01 a fund for a university was provided by gifts from James Milliken, an appropriation from the Cumberland Presbyterian synods of Iowa, Illinois, and Indiana, and donations from the citizens of Decatur. The three schools mentioned were united in the James Milliken University, but each one retains to a certain degree its own independence.

James River, a stream which has its rise in Wells County, in North Dakota, and flows south into South Dakota, and in a southerly direction across the State into the Missouri River. Some of the largest cities and towns of the interior of both North and South Dakota are on or near the James River; Aberdeen, Huron, Mitchell, and Yankton near the mouth, in South Dakota; and Jamestown in North Dakota. It is about 450 miles long.

James River, the largest river in Virginia, has its rise in the western part of the State, in the Alleghany Mountains; the head-waters are the Jackson and Cowpasture rivers which unite at Covington, in Virginia. The James flows southeast to Buchanan, in Botetourt County, then northeast to Balcony Falls, where it breaks through the Blue Ridge Mountains, again southeast to Lynchburg, then northeast to Scottsville, from which point the general course is southeast to the Chesapeake Bay. Its length is about 450 miles. At the Rocketts, just below Richmond, where the river becomes a tidal stream, is the head of navigation for steamboats of 130 tons, about 150 miles from the mouth. Ocean steamers come up the river as far as City Point, at the mouth of the Appomattox River. From City Point to the mouth, 66 miles, the stream is really a broad, deep estuary with Hampton Roads (q.v.) at its entrance to the Chesapeake. The falls in the river at Richmond, about 100 feet in six miles, furnish a large amount of water power. From Richmond to Buchanan, a distance of nearly 200 miles, the Kanawha Canal follows the course of the river and utilizes extensive reaches of slack water navigation. The chief tributaries of the James are the Chickahominy (q.v.) from the north, and the Appomattox from the south. The broad body of water at the entrance into Chesapeake was early explored by European navigators, and Jamestown (q.v.), the first permanent English settlement, was located on this river.

Jameson, jā'mē-sŏn, **Anna Brownell Murphy,** English author and art critic: b. Dublin 17 May 1794; d. Ealing, Middlesex, England, 19 March 1860. In 1827 she was married to Robert Jameson, afterward speaker of the House of Assembly of Upper Canada, and attorney-general, but the union proved unhappy. She made her first appearance as an authoress by the publication of the ‹Diary of an Ennuyée› (1826), which was very favorably received. Her ‹Loves of the Poets› appeared (1829), and was succeeded by ‹Memoirs of Female Sovereigns› and ‹Characteristics of Shakespeare's Women.› In 1836 Mrs. Jameson visited her husband in Canada, and published ‹Winter Studies and Summer Rambles in Canada› (1838). Later works of hers include: ‹Handbook to the Public Picture-galleries of Art› (1842); ‹Companion to the Private Galleries of Art in London› (1844); ‹Memoirs of the Early Italian Painters› (1845); ‹Memoirs and Essays on Art, Literature, and Social Morals› (1846); ‹Sacred and Legendary Art› (1848); ‹Legends of the Monastic Orders› (1850); ‹Legends of the Madonna› (1852). In these the author has given admirable expositions of the works of the old masters and the religious bearings of mediæval art. Few writers have done so much to refine the public taste, and diffuse sound canons of art criticism. Consult: Macpherson, ‹Memoirs of the Life of Anna Jameson› (1878).

Jameson, John Franklin, American historical writer: b. Boston 1 April 1859. He was graduated from Amherst College in 1879 and was professor of history at Brown University 1888–1901. He has been managing editor of the ‹American Historical Review› from 1895 and the head of the department of history at the University of Chicago from 1901. He has published ‹History of Historical Writing in America› (1891); ‹Dictionary of United States History› (1894); etc.

Jameson, Leander Starr, Scottish physician, administrator, and freebooter: b. Edinburgh 8 Feb. 1853. He studied medicine in Edinburgh and London, began professional practice at Kimberley, Cape Colony, in 1878, in 1891 became administrator of Rhodesia for the British South Africa Company, and in 1895 led the now well known raid into the Transvaal. During disturbances between the Boers and the Uitlanders, or foreigners, in the South African Republic, Jameson had, by order of Cecil Rhodes (q.v.), then premier at the Cape, assembled a Rhodesian military force on the Transvaal border, to act in case of emergency. On 29 December, with 600 troopers, Jameson, proceeding on his own judgment, entered the South African Republic for the support of the Uitlander party. His force was compelled to surrender to the Boers at Doornkoop on 2 Jan. 1896. Jameson, with his officers, was handed over by President Kruger to the British government for trial. He was sentenced, May 1896, to ten months' imprisonment, but in December was released because of illness. In 1897 he returned to Rhodesia, and in the second Boer war served in the English army. Jameson's surrender was followed by a congratulatory message to Kruger from the German emperor which for a time threatened serious consequences.

Jameson, Patrick Henry, American physician: b. Monroe Township, Jefferson County, Ind., 8 April 1824. At 19 he went to Indianapolis, taught school there four years, studying medicine meanwhile, and was graduated from Jefferson Medical College, Philadelphia, in 1849. He then returned to Indianapolis, where he became very prominent as a physician. During the Civil War he served as military surgeon and was commissioner of the Indiana hospital for the insane, 1861–80. He was likewise active in the establishment of the Indianapolis city hospital and in the organization of the University of Indianapolis, and was for 30 years a director of Butler College, at Indianapolis. From 1863 to 1869 he was a member of the Indianapolis common council and compiled the city ordinances in 1865. He has published ‹Memoirs of Prominent Physicians of Indianapolis.›

Jameson Raid, The. See JAMESON, LEANDER STARR.

Jamestown, jāmz'town, **N. Y., city** in Chautauqua County, on the Conewango Creek, which is the outlet of Chautauqua Lake; and on the Erie and the Jamestown & C. L. R.R.'s; about three miles from Chautauqua Lake, 25 miles from Lake Erie, and 70 miles, by rail, southwest of Buffalo. Lake steamers and trolley cars connect it with a number of the nearby towns. The first permanent settlement was made in 1810, by settlers in search of agricultural lands. The location, so near the outlet of the lake and in the midst of a fertile agricultural region, attracted settlers, and in 1815 the town was planned; and was incorporated as a village in 1827. The country around developed rapidly, but Jamestown was not chartered as a city until 1886. The chief manufactures are furniture, woolen goods, photographic paper, metallic goods, boots and shoes, agricultural implements, and brooms. It has saw-mills, canning factories, lumber and brick yards. The city has the James Prendergast Free Library, containing about 17,000 volumes, and an excellent high school.

The municipal officers are a mayor, who holds office two years, a city council, a clerk, overseer of the poor, sealer of weights and measures, constables, assessors, justices of the peace, and police justices, all of whom are elected by the people. Other subordinate officials are appointed by the mayor subject to the approval of the council. Jamestown was the home of Reuben E. Fenton (q.v.). There are about 8,000 Swedes now living in Jamestown. Although they are adopted citizens, those born in Sweden still use their native language in the homes; and they have their own Swedish papers and literature. Pop. (1890) 16,038; (1900) 22,892.

Jamestown, N. D., city, county-seat of Stutsman County; on the James River, and on the main line and a branch of the Northern Pacific railroad; about 80 miles west of Fargo, on the Red River of the North, and 100 miles east of Bismark on the Missouri River. It is situated in an agricultural region, noted for its extensive wheat fields and large stock farms. Some of the industrial establishments are flour-mills, grain elevators, stock-yards, wholesale groceries, lumber and brick yards. It is the trade centre for a large extent of country, and the small towns off the railroad procure their local supplies of manufactures and groceries from Jamestown. Pop. (1900) 2,853.

Jamestown, Va., in James City County, the first permanent English settlement in the New World, and capital of Virginia 1607–98; on what was a peninsula of the James River some 32 miles from its mouth, nearly opposite the present Williamsburg, with a neck overflowed at high tide, and since then washed away, leaving the place an island; the front also has been eaten away by the river, so that the site of the original huts is submerged. It was ill chosen and malarious, and the place never prospered; but no towns did in early Virginia. It was founded 13 May 1607 by the company of Gosnold, Wingfield, John Smith, etc., with Capt. Newport; and was first a triangular wooden blockhouse called Fort James, after the king, around which some huts sprang up. These were entirely destroyed by fire in 1608, but soon rebuilt. In 1609 there were 50 or 60 wooden houses of one and two stories, with a chapel and a storehouse, surrounded by a log palisade 15 feet high, and with a fort at the neck. During the Starving Time of 1609–10 it was nearly depopulated, and on 7 June 1610 the remnant deserted it and started for England; but meeting Lord Delaware with provision ships at the mouth of the river, all turned back and reoccupied it. Delaware found the chapel «ruined and unfrequented.» In 1616 John Rolfe says there were 50 inhabitants. By 1619 a church of hewn timber 50 x 20 had been built; in July 1619 the first legislative assembly in America was held there. A timely warning enabled its inhabitants to escape the great Indian massacre of 1622, and it was a place of refuge for those outside it. The first brick edifice in Jamestown was erected in 1640; a brick church some time after; between 1676 and 1684 was built the brick church whose ivy-mantled tower still stands, and which is incorrectly supposed by many tourists to be the one in which Rolfe married Pocahontas. About the same time a more ambitious fort was begun, with a magazine still traceable; but so injudiciously located for guarding the river-channel that it was above instead of below the place to be defended. Jamestown has little history separate from the colony thence till Bacon's Rebellion (q.v.); as Berkeley's capital, it was burnt to the ground by Bacon, that it might no longer «harbor the rogues.» Again rebuilt, in the last decade of the century it was once more destroyed by fire, and never rose from its ashes. It had long been dwindling, and removal of the capital had been mooted, and in 1698 Williamsburg was made the capital. Till very recent years the ruins of Jamestown were left to sink gradually into the encroaching river; but some years ago the Association for the Preservation of Virginia Antiquities bought it, and with the help of the national government have built a sea-wall and saved the relics from further destruction. Besides the church tower, a few tombstones and remains of two or three houses still exist. Consult Tyler, ‘Cradle of the Republic’ (1900).

Jamestown Weed. See DATURA.

Jamieson, jā′mĭ-sȯn, **Cecila Viets Dakin,** American novelist: b. Yarmouth, N. S., 1848. She was married in 1878 to Samuel Jamieson of New Orleans. She has published ‘The Story of an Enthusiast’: a novel (1887); ‘Lady Jane’; ‘Toinette's Philip’; ‘Seraph’; ‘The Little Violinist’; ‘Woven of Many Threads’; ‘The Lily of San Miniato’; etc.

Jan Mayen, yän mī′ĕn, an island in the Arctic Ocean, about 250 miles northeast of Iceland; area, about 160 square miles. It is volcanic, with an irregular surface, mountainous near the extinct volcano, Beerenburg, about 6,500 feet in height. One of the active volcanoes is about 1,500 feet high. There are some large glaciers on the island, one near Beerenburg. Vessels from Norway and Scotland occasionally visit the island. In 1882–3 scientists from Austria lived on the island for some months, engaged chiefly in making meteorological observations. The island was named after Jan Mayen, a Dutch navigator, who discovered the land in 1611. Later it was ascertained that Henry Hudson visited the island in 1607.

Janauschek, yä′now-shĕk, **Fanny** (FRANZISKA MAGDALENA ROMANCE), American actress: b. Prague, Bohemia, 20 July 1830; d. Amityville, L. I., 28 Nov. 1904. She first went upon the stage in Cologne, playing in that city and also in Frankfort, 1848–60, and subsequently played in Dresden and the principal cities of Germany. In 1852 she was married to Captain Frederick Pillot, of the Germany navy. She made her first tour in America, 1867–9, playing in the German language and securing most favorable notice. Returning to Germany she studied English, and in 1873 made her second visit to the United States, when she played in English the most exacting Shakespearian roles. She was also very successful in such roles as Meg Merrilies, Mary, Queen of Scots, and in double roles, as in ‘Bleak House’ and other plays. She retired from the stage in 1898.

Jane Eyre, ãr, a famous novel by Charlotte Brontë, published in 1847. In the character of Jane Eyre, the young authoress first found an outlet for the storm and stress of her own nature. The book is therefore autobiographical in the truest sense.

Jane, Fred. T., English naval author: b. 6 Aug. 1865. He was educated at Exeter School, invented the naval war game, was naval correspondent of the *Engineer,* the *Scientific American,* and the *Daily Chronicle,* and has written: ‹Blake of the “Rattlesnake”› (1895); ‹The Incubated Girl› (1896); ‹To Venus in Five Seconds› (1897); ‹The Lordship, the Passen, and We› (1897); ‹The Violet Flame› (1897); ‹The Port Guard Ship› (1897); ‹All the World's Fighting Ships› (naval annual); ‹The Torpedo in Peace and War› (1898); ‹The Jane Naval War Game› (1898); ‹The Imperial Russian Navy› (1900); ‹Ever Mohun› (1901); ‹Hints on Playing the Jane Naval War Game› (1902); ‹The Jane Coast Operations War Game for the Instruction of Garrison Artillery in Coast Defense› (1903); ‹The Imperial Japanese Navy› (1904); etc.

Janes, Edmund Storer, American Methodist Episcopal bishop: b. Sheffield, Berkshire County, Mass., 27 April 1807; d. New York 18 Sept. 1876. In 1830 he entered the Methodist ministry in the Philadelphia conference, in 1835 became financial agent for Dickinson College, in 1840–4 was financial secretary of the American Bible Society, and in 1844 was elected bishop. In connection with his episcopal duties he traveled widely in the United States and abroad, and subsequent to the Civil War aided in the reorganization of his Church. He had some reputation as a preacher.

Janes, Lewis George, American scholar and author: b. Providence, R. I., 19 Feb. 1844; d. Greenacre, Maine, 5 Sept. 1901. He was president of the Brooklyn (N. Y.) Ethical Association in 1885–96, lecturer on sociology and civics in the School of Political Science there in 1893–6, and in 1896 became director of the Cambridge (Mass.) conferences and the Monsalvat school of comparative religion. In 1899 he was elected president of the Free Religious Association of America. Among his works are: ‹A Study of Primitive Christianity› (1887); ‹The Evolution of Morals› (1889); ‹Life as a Fine Art› (1891); ‹War and Progress› (1893); ‹Cosmic Evolution as Related to Ethics› (1895); ‹Social Ideas and Social Progress› (1899); and ‹Health and a Day› (1901).

Janesville, jānz'vĭl, Wis., city, county-seat of Rock County; on the Rock River and on the Chicago, M. & St. P. and the Chicago, N. W. R.R.'s; about 85 miles northwest of Chicago and 60 miles southwest of Milwaukee. The first permanent settlement as a village was in 1837, and it was chartered in 1853. Janesville is located in an agricultural region, noted for the amount and quantity of tobacco raised. The chief manufactures are agricultural implements, foundry products, wagons and carriages, furniture, cotton and woolen goods, boots and shoes, flour, fountain pens, and school supplies. It has large lumber and brick yards, storage houses, and stock yards. Its principal trade is in its own manufactured goods, farm and dairy products. Some of its principal buildings are the State School for the Blind, the Saint Joseph's Convent, the Y. M. C. A. buildings, two hospitals, the churches, high school, public library, court house, and city hall. The mayor holds office for two years. The mayor, council, board of education, attorney, city clerk, treasurer, sealer of weights and measures, and justices of the peace are chosen by popular election. The mayor appoints, subject to confirmation by the council, the directors of the public library; the council elects the city engineer, the assessors, and the street commissioners. The members of the fire and the police departments are selected from the eligible civil service lists. From 1885 to 1903 there has been a constant and healthy expansion in industrial and commercial lines. Pop. (1890) 10,836; (1900) 13,185.

Janet, zhä-nā', **Paul,** French philosopher: b. Paris 30 April 1823; d. 4 Oct. 1899. He was educated at the Lycée Louis-le-Grand and the École Normale. He was professor of moral philosophy in the college at Bourges 1845–48, and in the University of Strassburg 1848–57; was professor of logic in the Lycée Louis-le-Grand at Paris 1857–64; and from 1867–97 was professor of the history of philosophy at the Sorbonne. In 1864 he was elected a member of the Academy of Moral Sciences; in 1860 was decorated with the cross of the Legion of Honor; and in 1877 was promoted officer. His chief works are: ‹La Famille: Leçons de philosophie morale› (1855), awarded a Sorbonne prize; ‹Histoire de la Philosophie morale et politiques dans l'Antiquité et dans le Temps modernes› (2 vols. 1858), also crowned by the Academy; ‹Le Philosophie du bonheur› (1862, 1873); ‹Etudes sur la dialectique dans Platon et Hegel› (1860); ‹Le materialisme contemporain en Alemagne› (1864); ‹Histoire de la Science politique› (1871); ‹Problèmes du XIXe Siècle› (1872); ‹Philosophie de la Révolution française› (1875); ‹Les Causes finales› (1877); ‹Saint-Simon et le Saint-Simonisme› (1878); ‹Les Philosophie française contemporaine› (1879); ‹Les Maîtres de la pensée moderne› (1883); ‹Les origines du socialisme contemporain› (1883); ‹Victor Cousin et son œuvre› (1885); ‹La philosophie de Lamenais› (1890); ‹Fénelon› (1892); ‹Principes de métaphysique et de psychologie› (1896); etc. He also published several text-books, contributed numerous articles on the liberty of thought to many of the leading periodicals and translated Spinoza's ‹God, Man, and Happiness,› and Leibnitz's ‹New Esays on Human Understanding.›

Janin, Jules Gabriel, French critic: b. Saint Étiene, department of the Loire, 24 Dec. 1804; d. Paris 20 June 1874. He was educated at Saint Étienne and at the Collége Louis-le-Grand; studied law and became a private tutor in the Latin quarter of Paris; and then turned to literature, becoming editor, novelist, journalist, and critic. He soon became a contributor to several papers, notably the liberal opposition paper *Le Figaro,* and the government paper *Quotidienne,* and in 1836 became connected as dramatic critic with the *Journal des Débats,* in the columns of which he wrote for nearly 40 years. He possessed a wonderful piquancy of style and an airy grace of sentiment and wit, but as a critic, however, he was utterly inconsistent through lack of any general principles of judgment, and said the first thing that entered his mind, though fortunately his lack of judgment was linked with amiability. He was an indefatigable worker and was in constant demand by the publishers of Paris to review books, write prefaces and do other literary work. Of his published works, one or two of which are remarkable both in substance and style, the following are noteworthy: ‹L'âne Mort et la Femme Guillotinée› (1829), which went through several editions; ‹La Confession› (1830); ‹Barnave› (1831); ‹Contes fantastiques et contes littéraires› (1832; new ed. 4 vols. 1863); ‹Contes nouveaux› (1833); ‹Le chemin de traverse› (1836); ‹Un cœur pour deux Amours› (1837); ‹Histoire de France› for the plates of ‹La galerie historique de Versailles› (1837–43); ‹Voyage en Italie› (1839); ‹Les Catacombes› (1839); ‹Le voyage d'un homme heureux› (1840); ‹La Normandie Historique› (1843); ‹La Bretagne historique› (1844); ‹La Religieuse de Toulouse› (1850); ‹Les Gaietés champêtres› (1851); ‹Les petits bonheurs› (1856); ‹Les symphonies de l'hiver› (1857), with drawings by Gavarni; ‹Historie de la littérature dramatique en France› (6 vols. 1858), a selection of his weekly *feuilletons,* altered and remodelled so as to present a sketch of the history of the French stage and dramatic artists during nearly a quarter of a century; ‹Rachel et la tragédie,› a biographical and critical work upon that great tragic artist, with photographic illustrations (1859); ‹La poésie et l'éloquence au temps des Césars› (2d ed. 1864); ‹Beranger et son temps› (1865); ‹Les oiseaux bleus› (1864); ‹Circe› (1867); ‹L'Interne› (1869); ‹Lamartine› (1869); ‹Fin d'un Monde et du Neveu de Rameux›; and a translation of ‹Horace› into French (6th ed. 1885). His ‹Œuvres de Jules Janin› (12 vols. 1875–78), and ‹Correspondence› (1877) appeared after his death. He became a member of the French Academy in 1870.

Janitschek, Hubert, Austrian historical art writer: b. Troppau, Silesia, 30 Oct. 1846; d. Leipzig 21 June 1893. He was educated at the university at Gratz 1868–73, from the latter year until 1877 pursued the study of art history in Italy, from 1877–79 was custodian of the Austrian Museum of Art and Industry in Vienna, and was subsequently professor in the universities of Prague (1879), Strassburg (1881), and Leipzig (1891). He was the author of the following biographies in Dohme's ‹Kunst und Kunstler›; Andrea del Sarto, Bellini, Paolo Veronese, Tintoretto, etc.; and also wrote ‹Die Gesellschaft der Renaissance in Italien und die Kunst› (Stuttgart 1879); ‹Zwei Studien zur Geschichte der karolingischen Malerei› (1885); ‹Geschichte der deutschen Malerei› in Grote's ‹Geschichte der deutschen Kunst› (Berlin 1890); ‹Dante's Kunstlehre und Giottos Kunst› (Leipzig 1892); etc. His wife, MARIE (b. Vienna 23 July 1859) became known as a poet and novelist, her principal works being ‹Legenden und Geschichten› (Stuttgart 1885); ‹Im Kampf um die Zukunft,› an epic poem (1887); ‹Gesammelte Gedichte› (2 vols. 1892); ‹Aus Alten Zeiten› (1900): the novels ‹Aus der Schmeide des Lebens› (1890); ‹Lichthungrige Leute› (1891); ‹Atlas› (Berlin 1893); ‹Gott hat es gewollt› (1895); ‹Frauenkraft› (1900); ‹Harter Sieg› (1901); etc.

Janiuay, hä-ne-wī, Philippines, a pueblo of the province of Iloílo, Panay, situated 18 miles northwest of the town of Iloílo, near the Jalaur River. It lies in a hilly country and petroleum has been reported in the vicinity. Pop. 28,700.

Janizaries, jăn'ĭ-zā-rĭz (Turkish, *jeni-tcheri,* new soldiers), an infantry force of Turkey, first organized by the Sultan Orkhan about 1330, and in 1362 increased to about 10,000 by Amurath I., who gave them considerable importance by bestowing on them special privileges. The janizaries thus became a class of warriors so deeply imbued with the military spirit that they proved in many instances a means of salvation to the empire. It was their boast that they had never fled in battle, and they were the nerve and sinew of the Ottoman army. The regular troops of janizaries at one time amounted to 60,000 or more, but they were afterward reduced to 25,000. They were kept in barracks in Constantinople and a few other cities. The irregular troops amounted to 300,000 or 400,000, and were scattered among all the cities of the empire, in time of peace performing police duties. The janizaries who constituted the sultan's bodyguard became in time so dangerous and their insurrections so frequent that several unsuccessful attempts were made to reform or disband them. In 1826 they rebelled on account of a proposal to form a new militia, when the sultan, Mahmoud II., having displayed the flag of the Prophet, and being supported by their commander-in-chief, defeated the rebels and burned their barracks, when many of them perished in the flames. A royal proclamation abolished the corps. As many as 15,000 were executed, and fully 20,000 were banished.

Janko (yŏn'kō) **Keyboard,** a keyboard for the pianoforte, invented 1882 by Paul von Janko; introduced in London 1888, in New York in 1890. It consists of six rows or banks of keys arranged like a fan, placed in a semi-circle. Each note has three different keys. The keyboard can be attached to any pianoforte, grand, upright or square.

Jannaris, Anthony, Greek educator: b. Lakkoi, a mountainous village in Kydonia, southwest of Canea, of the island of Crete, 25 Aug. 1852. He was educated at Canea, Athens, and Marburg; was foreign secretary to the Cretan government 1882–84; headmaster of the public gymnasium there 1883–85; head clerk to the British Consulate in Crete 1884–88; and lecturer on Greek literature at Athens University in 1889. He took a prominent part in the Cretan insurrection of 1889–90, and was proscribed by the Sultan; and subsequently went to England, where for six years he studied in the British Museum investigating the history of the Greek language. Upon his return to Crete he was elected a member of the assembly, and during the troubles of 1897 acted as correspondent for the *Times.* From 1896 to 1904 he was lecturer on post-classical and modern Greek at Saint Andrews University. His publications include: ‹Kreta's Volkslieder› (1876); ‹Neugriechische Grammatik› (1878); ‹Adnotationes Criticæ in Longini Peri Hypsous libellum› (1880); ‹Deutsch-Neugriechisches Handwörterbuch› (1884); ‹Methodos tês Germanikês Glosses› (1887); ‹Methodes tês Gallikês Glosses› (1888); ‹Germano-Hellenikòn Lexikón› (1888); ‹Hellenikòn Lexikón› (1890–92); ‹Peri Erotokritou› (1889); ‹Echo der Neugriechischen Sprache› (1890); ‹Modern Greek Dictionary› (1895); ‹Historical Greek Grammar› (1897); ‹Saint John's Gospel, as read by the early Christians›; etc.

Janney, Samuel MacPherson, American biographer and historian: b. in Loudoun County, Va., 11 Jan. 1801; d. there 30 April 1880. He was a preacher in the Hicksite branch of the Society of Friends, traveled extensively, and in 1869 was appointed a superintendent of Indian affairs by President Grant. Among his works are: ‹The County Schoolhouse,› a poem (1825); ‹Conversations on Religious Subjects› (1835–43); ‹The Last of the Lenape, and Other Poems› (1839); ‹The Teacher's Gift,› essays (1840); ‹An Historical Sketch of the Christian Church during the Middle Ages› (1847); ‹Life of William Penn› (1852–56); ‹Life of George Fox› (1853); ‹History of the Religious Society of Friends, from its Rise to the Year 1828› (4 vols. 1860–67); etc.

Janow, Matthias von, theologian and reformer, considered the Wiclif of the Bohemian Church: date of birth unknown, though he was probably born in Prague; d. there 30 Nov. 1394. Very little concerning his early life is known, except that he was descended from a noble Bohemian family, studied theology at the University of Prague, and later spent about six years at the University of Paris. He then went to Rome, in 1381 was appointed canon of the Cathedral of Saint Vitus in Prague, and confessor to Charles II., and continued in that office until his death. He had no oratorical ability, but through his writings exercised a remarkable influence on the religious thought of his time. His writings were collected in a work entitled ‹De Regulæ Veteris et Novi Testamenti› (1392). In this book he denounced the corruption and evil that existed in the church, alleged gross misconduct of bishops and priests, and urged that all human additions to Christianity, both doctrinal and ceremonial, be eliminated, and that the Church return to its original beliefs and doctrines. The pope declared these writings heretical, and 16 years after his death they were publicly burned with those of Wiclif.

Jans, Anneke, än'nā-kė yāns (or ANNETJE), Dutch colonist in America: d. Albany, N. Y., 1663. She came from Holland to New Netherland in 1630 with Roeloff Jansen, her husband, who secured in 1636 a grant of a tract of land containing 62 acres and reaching from the Hudson to the present Broadway and from a point near Desbrosses Street to Warren Street. In 1654, Anneke, upon the death of her second husband, Everardus Bogardus (q.v.), obtained in her name a patent-right to the tract. In 1671 the land was sold by the heirs to the English Governor Lovelace. Three of the heirs, however, did not sign the document. Subsequently the property was confiscated by the English government and deeded to Trinity Church corporation (1705). From 1749 the possession of the property has been the subject of numerous suits by the heirs, based chiefly on the omitted signatures, and all decided for the defendants.

Jansen, yän'sĕn, or jăn'sĕn, **Cornelius,** Dutch theologian: b. near Leerdam, Holland, 28 Oct. 1585; d. Ypres, Belgium, 6 May 1638. From his 17th year he applied himself to the study of theology and first came into notice while professor of theology at Louvain (1630), as a teacher of the most rigid Augustinianism, especially in connection with the doctrine of free will and divine mercy. This brought him into conflict with the Jesuits. He was appointed (1636) bishop of Ypres, where he completed his famous work, on which he had labored for 22 years, under the title ‹Augustinus, sive Doctrina Sti. Augustini de Humanæ Naturæ Sanitate, Ægritudine, Medicina.› In this he declared philosophy, especially that of the Aristotelians, to be the source of Pelagian error, and in accordance with rigid Augustinianism, maintained the utter corruption of human nature and the extinction of free will, together with predestination. The school of thought he thus founded is now known as Jansenism (q.v.).

Jansen, Olaus, Swedish naturalist: b. Christianstadt 1714; d. Copenhagen, Denmark, 1778. He was educated in Germany; was a professor in the University of Tübingen for several years; was then appointed to a professorship in the University of Copenhagen, of which he was rector in 1761; and was elected a member of the Academy of Sciences in 1762. In 1764 he was sent by the Danish government to study the natural resources of the South American countries, but during his travels he reached as far north as Central America, Louisiana, and Florida. In 1772 he visited Boston. His chief publications are: ‹Den Geist in den Naturvidenskaben og naturens almindelige laere› (Copenhagen 1773); ‹Neue Reisen durch Brazil und Peru› (1775); Neue Reisen durch Louisiana und Neuva España› (1776); ‹Anmarkningar ons Historia Naturalis och climated af Nye England og Nye Spanien› (2 vols. Copenhagen and Stockholm 1778); etc.

Jansenism, jăn'sen-ĭsm, the teaching of the Jansenists, a sect of Christians still existing in the Netherlands and named after Cornelius Jansen, bishop of Ypres. They profess to hold the truth as it was taught by Augustine, bishop of Hippo, and prefer to be called ‹Disciples of St. Augustine.› The free grace of God, the free will of man, and predestination, in the Augustinian sense, formed the main articles of their belief. The Jansenists were, however, accused of reviving the teaching of Michael Baius (1513–89) which had been pronounced heretical by Popes Pius V. and Gregory VIII. Baius taught that original justice is an integral part of human nature, and not a free gift of God; that fallen man, being utterly depraved in his nature, is incapable of doing good; that all actions of man in the natural order are sinful, and that divine grace compels men to be and do good, without the concurrence of their will. The book of Jansen was condemned by Urban VIII. in his ‹In Eminenti› (1642), but the pope's decree was not generally accepted in Flanders. The Jesuit Molina and the Molinists, his followers, supported views opposed to those of Jansen. Alexander VII. declared that the errors attributed by the Molinists to Jansen, and which the Jansenists said could not be found in ‹Augustinus› were held and enunciated by Jansen. The Port Royalists, Arnauld, Nicole and Pascal, wrote famous books defending Jansen against the Jesuits.

In 1679 Arnauld and his followers were constrained to take refuge in the Netherlands. In 1702 the Sorbonne decided that a priest accused of Jansenism could grant absolution. In 1694 Quesnel's ‹Moral Reflections› were published and the controversy had been revived. In his bull ‹Unigenitus,› Clement XI. condemned the Jansenist passages in Quesnel's work and the author fled to Brussels, and died in Holland 1719. The Jansenists of Utrecht number about

8,000; they profess to be Roman Catholics, are governed by an archbishop, to whom, however, the pope always refuses confirmation and the gift of the palla. They reject the bull ‘Unigenitus’ and published a protest against the dogmas of the Immaculate Conception, and Papal Infallibility. Consult: Reuchlin, ‘History of Port Royal’ (1844); Fuzet, ‘Les Jansenistes du 17me Siècle’ (1877); Jervis, ‘History of the Church of France’ (1872). See PASCAL, BLAISE; ARNAULD.

Janson, Kristofer Nagel, Norwegian novelist and educator: b. Bergen 5 May 1841. He was educated for the ministry at the University of Christiana, later interested himself in the movement for popular education and established a «Popular High School,» first in Sel, a district of Gudbrandsdalen, Norway, and afterward in Gausdal. Subsequently he traveled in Italy, in 1879 lectured in the United States, and from 1882 until 1892 was pastor of a Unitarian church in Minneapolis, where he had settled. He also became editor of a Unitarian paper, *Saamanden* («The Sower»), published in the Norwegian language at Minneapolis. He returned to Norway in 1893. For several years the Norwegian Storthing granted him a poet's pension. Among his published works, of which his earlier novels are written in the so-called *Landsmaal,* are: ‘Fra Bygdom’ (‘From the Up-Country Districts’ 1866); ‘Norske Dikt,’ poetry (1867); ‘Jon Arason’ (1867), a drama portraying the fate of the last Roman Catholic bishop of Iceland; ‘Marit Skjölte’ (1868); ‘Han og ho’ (‘He and She’ 1872); ‘Torgrim’ (1872); ‘Sigmund Bresteson’ (1872); ‘Fraa Dansketidi’ (‘From the Times of Danish Rule’ 1875); ‘Den Bergtekne’ (The Spell-Bound Fiddler’ 1876); ‘Vore Bedsteforældre’ (‘Our Grandparents’); ‘Paa begge Sider Havet’ (‘On Both Sides of the Ocean’); ‘Præriens Saga’ (‘The Tale of the Prairie’ (1885); ‘Sara’ (1891); ‘Jesus Sangene,’ a collection of religious songs (1893); etc.

Janssen, Johannes, German Roman Catholic historian: b. Xanten, Rhenish Prussia, 10 April 1829; d. Frankfort-on-the-Main 24 Dec. 1891. He was educated at the universities of Louvain, Bonn (1851–53) and Berlin, was professor of history in the Gymnasium at Frankfort-on-the-Main in 1854, became a priest in 1860, and domestic prelate to the Pope in 1880. He is chiefly known by a work in six volumes, published in 1876 and which subsequently went through 14 editions, entitled ‘Geschichte des deutschen volkes seit dem Ausgang des Mittelalters’ (‘History of the German People from the Close of the Middle Ages to the Beginning of the Thirty Years' War 1618’). This work attained instant and great popularity among the German people, yet though its learning and thoroughness were not questioned, it was severely attacked by Baumgarten, Ebrard, Schweizer, and others as being partial and unfair. A French translation of the first two volumes was published in Paris in 1887–88. Janssen's other works include: ‘Wibald von Stahlo und Corven’ (1854); ‘Frankreichs Rheingelüste und deutschfeindliche Politik in frühern Jahrhunderten’ (Frankfort 1861; 2d ed. 1883); ‘Schiller als Historiker’ (Freiburg 1863; 2d ed. 1879); ‘Zur Genesis der ersten Teilung Polens’ (1865); ‘Gustav Adolph in Deutschland’ (1865); ‘Frankfurts Reichskorrespondenz von 1376–1519’ (1875; 4th ed. 1889); ‘Friedrich Leopold, Graf zu Stolberg (1876–77; 2d ed. 1882); ‘An meine Kritiker’ (1882); ‘Ein zweites Wort an meine Kritiker’ (1883); etc.

Jans'sen, John, American Roman Catholic bishop: b. Keppeln, Rhine Province, 3 March 1835. He pursued theological courses in the seminary of Münster, and in 1858 in the United States, was ordained priest in 1858, was in missionary work at Springfield and Alton, Ill., was vicar-general of Alton diocese in 1870–7 and 1879–86, and in 1888 was consecrated bishop of Belleville, Ill.

Janssen, Peter, German historical painter: b. Düsseldorf, 12 Dec. 1844. His father was J. Theodor J. Janssen (1817–94), a noted engraver, and from him he obtained his early education; in his 16th year he entered the Academy at Düsseldorf and became a pupil of Bendemanns and Sohn. In 1877 he was appointed a professor in the Düsseldorf Academy, in 1895 its director, and in 1885 was elected a member of the Berlin Academy. In 1868 he painted his first great work ‘The Denial of Peter,’ in the Academy at Philadelphia. In the same year he obtained first prize in a contest for decorating the walls of the Rathaussaal in Krefeld and completed this work in 1873. In the summer of 1872 he completed the colossal wall painting in the Bremen Exchange, ‘The Colonization of the Baltic Coast.’ In 1874 he decorated the walls of one of the rooms of the National Gallery in Berlin in wax colors, the painting taken from 12 subjects being entitled ‘The Myth of Prometheus. During 1880–82 he decorated the walls of the town hall at Erfurt with six large and three small paintings in wax colors entitled ‘Momentous Episodes in the History of Erfurt.’ These are noted for their brilliant color scheme and dramatic development. Other paintings by him are: ‘The Infancy of Bacchus’ (1883), exhibited at the International Exhibition in Munich; ‘Walther Dodde and the Peasants of Berg before the Battle of Worringen, 1288,’ in the Düsseldorf Gallery, a picture that was awarded a gold medal at Berlin in 1893; ‘The Battle at Fehrbellin’ (1884); ‘Nature,’ ‘Beauty,’ ‘Human Life,’ and ‘Imagination’ in the Aula of the Academy at Düsseldorf.

Janssen, Pierre Jules Cesar, French astronomer: b. Paris 22 Feb. 1824. He was graduated in 1852 as licentiate in the mathematical sciences, and in 1860 as doctor of physical sciences, the thesis that he wrote upon the latter occasion, ‘L'absorption de la chaleur rayonnante obscure dans les milieux de l'œil,’ creating widespread discussion. In 1853 he became temporary professor in the Lycée Charlemagne, and from 1865 to 1871 was professor of general physics in the Special School of Architecture. In 1857 he went to Peru to fix the location of the magnetic equator; from 1861 to 1864 was in Italy observing the solar spectrum; and from the latter year until 1867 was in the Azores with Saint Claire Deville. In 1867 he went to Trani and in 1868 to Guntoor, India, to observe the total eclipse of the sun, making special spectroscopic observations on the protuberances. In 1870 he escaped in a balloon from Paris, then in a state of siege, in order that he might witness the Algerian obscuration; in 1874 watched the transit of Venus in Japan; in 1875 went as astronomer with the English expedition to Siam; and in the latter year was appointed director of the astrophysical observatory at Meudon, near Paris. In 1883 he was in the Caroline Islands. In 1891 be began his ascensions of Mont Blanc, and in 1892–3 founded an observatory there.

Janssens Van Nuyssen, Abraham, Flemish painter: b. Antwerp 1575; d. there 1632. In early youth he showed remarkable aptitude for painting and when 18 years of age became the pupil of Jan Snellinck. In 1601 he was admitted as a master into the guild of Saint Luke of which he was dean 1606–7; he then visited Italy. As a colorist he ranks next to Rubens among the Flemish painters of the 17th century; in correctness of drawing he excelled him, in treatment of the nude and in bold composition he equalled him, but in general freedom of disposition and touch and in faculty of color he fell far short. The most important of his paintings, which include biblical, allegorical, and mythological subjects are ‘Madonna with Saints’ and ‘Entombment’ in the Carmelite church at Antwerp; ‘Ecce Homo’ and ‘Descent from the Cross’ in the Cathedral of Saint Bavon at Ghent; ‘The Resurrection of Lazarus’ in the elector palatine's gallery; ‘Madonna,’ ‘Adoration of the Magi,’ and ‘Scaldis’ in the Antwerp Museum; ‘Venus and Adonis’ and ‘Day and Night’ in the Vienna Museum; ‘Old Age Resting on Faith and Hope’ in the Brussels Museum; ‘Meleager and Atalanta’ and ‘Vertumnus and Pomona’ in the Berlin Museum; ‘Diana and Nymphs Watched by Satyrs’ in the Cassel Gallery; etc.

Januarius, jăn-ū-ā'rĭ-ŭs, **Saint:** b. Naples or Benevento, Italy, 21 April 272; d. Pozzuoli, Italy, 19 Sept. 305. He became bishop of Benevento in 303 and at the time of the persecution of the Christians by Diocletian was beheaded. He is the patron saint of Naples. His body lies in the crypt of the cathedral at Naples; and two phials of his blood which a pious matron caught, according to tradition, at his execution, are preserved in a chapel in the south aisle. It is asserted that the blood liquefies on being brought near the head of the saint. A trial is made on three festivals of each year, the chief of which is the anniversary of the martyrdom, and also when public danger and calamity exists or is impending. It is believed that the patron saint is particularly propitious if the blood moves briskly in the phials and appears of a clear red, while the opposite is regarded as presaging some ill to the country.

Jan'uary, the first month of the year, was by the Romans held sacred to Janus, from whom the name was derived. The Roman year originally began with March, and consisted of only ten months. Numa is said to have added January and February to the calendar; but although the Romans as early as 251 B.C. accepted January as the first month of the year, the nations of Europe did not universally adopt it as such till the 18th century. The 25th of March was the beginning of the ancient Jewish year, and that day, instead of 1 January, long held a legal position in Christian countries as the opening of the new year.

Janus, jā'nŭs, an ancient Latin divinity, after whom the first month of the year was named. He was sometimes represented as a porter or keeper with a sceptre in the right hand and a key in the left, seated on a glittering throne; but was most commonly represented on the Roman *as* of the early coinage as having one head with two bearded faces, one looking forward and the other backward, and this latter image was set up under the arch in the Forum. Janus was called "father," his name was first invoked at the beginning of all solemn sacrifices, and he was worshipped as the god of gods, the ruler of the day and year, the sovereign disposer of war and peace and the dispenser of the fortunes of mankind. By some he was regarded as the god of light and heaven — the sun-god, the supreme janitor in heaven and on earth — who opened the gates of heaven to let out the day and closed them again upon the return of evening. Others held that all doors (*jauna*) and all passages (*janus*) were under his care. The temple of Janus, standing on the north side of the Forum near the curia, was in reality only two parallel arches facing east and west, connected by side walls and furnished with gates. According to an ordinance of Numa Pompilius these gates were to be opened at the beginning of every war and remain open until peace was established in every country subject to Rome, but during the long space of 700 years the gates were closed only three times.

Janvier, jăn'vĭ-ā, **Catharine Ann,** American painter and author: b. Philadelphia, Pa. She is the wife of T. A. Janvier (q.v.). Her paintings include ‘Geoffrey Rudel and the Countess of Tripoli’; ‘The Princess Badroulbadour’; ‘The Guitar Player’; ‘Daniel at Prayer’; ‘The Violinist’; etc. She has written ‘Keramics for Students’ (1880); ‘London News’ (1904); and has translated (from the Provençal of Félix Gras) ‘The Reds of the Midi’ (1896); ‘The Terror’ (1898); and ‘The White Terror’ (1900).

Janvier, Margaret Thomson, American author, sister of T. A. Janvier: b. New Orleans 1844. Under the pen-name "MARGARET VANDEGRIFT" she has written many juvenile stories and verses, including ‘Under the Dog-Star’ (1881); ‘Clover Beach’; ‘Little Helpers’; ‘The Absent-Minded Fairy, and Other Verses’ (1883); ‘The Dead Doll, and other Verses’ (1888); ‘The Queen's Body-Guard’; ‘Doris and Theodora’; ‘Rose Raymond's Wards’; ‘Ways and Means’; ‘Holidays at Home’; ‘Little Bell, and Other Stories’; etc.

Janvier, Thomas Allibone, American author: b. Philadelphia, Pa., 16 July 1849. He received a common school education; was an editorial writer for the Philadelphia *Press, Bulletin,* and *Times* in 1870–81; lived in New York during most of the period 1884–94, and then made his residence in France and England. Among his works are ‘Color Studies’ (1885); ‘The Mexican Guide’ (1887), ‘The Aztec Treasure House’ (1890), and ‘Stories of Old New Spain’ (1891), material for which was largely derived through visits to Mexico and New Mexico; ‘The Uncle of An Angel and Other Stories’ (1891); ‘An Embassy to Provençe’ (1893), the chronicle of a European journey; ‘In Old New York’ (1894), popular historical sketches; ‘In the Sargasso Sea’ (1898); ‘The Passing of Thomas, and Other Stories’ (1900); ‘In Great Waters’ (1901); ‘The Christmas Kalends of Provçe’ (1902); ‘The Dutch Founding of New York’ (1903).

CONTENTS

DEPARTMENT OF

JAPANESE HISTORY AND DEVELOPMENT

1. Topography.......Naomasa Yamasaki
Professor of Geography in the Higher Normal School, Tokyo

2. Physical and Racial Characteristics. See Mental Characteristics; The Development and Constitution of Society.

3. The Development and Constitution of Society.......Kazutami Ukita
Professor of History and Sociology Waseda University, Tokyo

4. Mental Characteristics.......George Trumbull Ladd
Emeritus Professor of Philosophy, Yale University: Lecturer on Education in the Universities of Japan

5. History of the Empire.......Sanji Mikami
Professor of History, Imperial University, Tokyo

6. The Constitutional Government.......Baron Kentaro Kaneko
Privy Councillor, Tokyo

7. Foreign Relations.......Naojiro Murakami
Commissioner of Historical Compilation, Imperial University, Tokyo

8. The Samurai.......Inazo Nitobe
Director of the First Higher School, Tokyo

9. Education.......His Excellency, Nobuaki Makino.
Minister of Education, Tokyo

10. Religions.......Masahar Anesaki
Professor of the Science of Religion, Imperial University, Tokyo

11. Japanese Literature.......Baron Kancho Suyematsu
Privy Councillor, Tokyo

12. History of Japanese Art.......Baron Ryuichi Kuki
Custodian of the Imperial Art Treasures, Privy Councillor, Tokyo

13. Finance and Coinage System.......His Excellency, Count Masayoshi Matsukata
Tokyo

14. Agriculture.......Tokiyoshi Yokoi
Professor of Agriculture, Imperial University, Tokyo

15. Internal Improvements; Communications and Transportations. His Excellency, Isaburo Yamakata
Minister of Communications, Tokyo

16. The Banking System.......Yoshiro Sakatani
Minister of Finance, Tokyo

17. Army.......His Excellency, General Terauchi
Minister of War, Tokyo

18. Navy.......His Excellency, Vice-Admiral Saito
Minister of Marine, Tokyo

19. Russo-Japanese War.......Tokiwo Yokoi
Member of the Imperial Diet, Tokyo

21. Retrospect and Prospect.......His Excellency, Marquis Ito
Tokyo

JAPAN:

HISTORY AND MODERN DEVELOPMENT.

In introducing this series of articles on Japanese topics to the readers of THE AMERICANA, two or three matters would seem to need a few words, each, of explanation. Several of the topics treated will undoubtedly appear at first somewhat foreign to the legitimate scope of such a form of publication. The main purpose to be served by the entire series, however, is to make this particular nation understood by other nations, in a confidential and intimate, as well as trustworthy manner. Such a purpose cannot be attained merely by representing the national life in an external way; and this is especially true of a nation whose racial characteristics are so complicated and subtly mixed, whose historical development has been, until recently, so hidden and exclusive, and whose recent changes have been so apparently sudden and so startling. It seemed, then, indispensable to have an article that should reveal that spirit of the Bushido to which Japan owes so much, and to which treatment is given under the title, "The Samurai." Similar considerations are emphatic in their application to that "Retrospect and Prospect" which summarizes the views of one, than whom no other man living can better be qualified to speak in a truthful and enlightening way. The same reason led me also to attempt the difficult and delicate task of writing upon the "Mental Characteristics of the Japanese." It can scarcely be expected, however, that the results of this attempt will commend themselves to all who know, or think they know, the people of Japan. But any failures or defects in this article must not be ascribed to the Japanese; for they have afforded its author every possible means of getting familiar with what they are, when intimately and truthfully known.

Attention need scarcely be called to the large proportion of these articles which have been prepared under the highest official supervision and authority. This fact is at once a guaranty of their accuracy and a proof of the patriotism of the authors. These men not only share the wish that Japan should be judged according to truth and reality; they wish, besides, that the real spirit of her past history and present condition, as well as intentions and hopes for the future, should be understood by other nations. For there is no more frequent and sad source of trouble among nations than an accumulation of misunderstandings.

One word more. The editor of this series of articles has no desire to conceal the fact that his work in connection with it has been done *con amore*. If the fact seems to have colored too deeply the one article which he, as the only foreign contributor to the series, has been permitted to prepare, the conclusion is reasonable that the comparatively cool and critical attitude of all the native contributors must, under the circumstances, be considered as enhancing the trustworthiness of their work. "Let another man praise thee," is a maxim not inapplicable to nations as well as to individuals.

GEORGE TRUMBULL LADD.

1. **Japan—Topography.** Along the Pacific coast of the Asiatic continent lies the archipelago of Japan, stretching from the southwest to the northeast. It consists of three large arcs, with their convex side turned towards the ocean. The principal arc, which is situated in the middle, consists of four large islands, namely, the main island of Hokkaido (called Yezo by Europeans), Honshu (often erroneously called Nippon), Shikoku and Kyushu. At both ends of the principal arc begin the other two arcs, Chishima (Kurile) and Ryukyu (Luchu), which are long series of small islands. Besides all these, two large islands have been recently added to this country, Taiwan (Formosa) in 1895, and the southern half of Karafuto (Sakhalin), in 1905. On the whole, the archipelago of Japan consists of six larger islands with the addition of many hundreds of smaller islands. The whole chain meridionally measures 29 degrees of latitude, extending between Vele Rete Rocks (21° 45′ N.) and Alaid Island in the Kurile Group (50° 58′ N.), while it longitudinally covers a comparatively narrow zone between Kwasho in the Hoko Group (119° 20′ E.) and Shimushu Island in the Chishima Group (156° 32′ E.). The area of the principal islands forming these arcs are as follows:

	Area (with annexed small isles), sq. m.
Honshu	86,524
Shikoku	7,011
Kyushu	15,543
Sado	334
Oki	130
Awaji	218
Iki	51
Tsushima	266
Ogasawara-jima	27
Ryukyu	932
Taiwan Group	
Taiwan (Formosa)	13,419
Hoko-to (Pescadores)	49
Hokkaido	
Main island or Hokushu (Yezo)	30,058
Chishima (Kurile)	6,137
Karafuto (Sakhalin) (estimated)	12,634
Total (without Karafuto)	160,699
Total (with Karafuto)	173,333

Partially enclosed by the principal central arc lies the Sea of Japan. This mediterranean sea is a deep depression, whose maximum depth is near the northeast coast of the Korean Peninsula. The northern end of this sea is connected by the narrow passage of Mamiya Strait or the Gulf of Tartary, with the Sea of Okhotsk, a fairly deep depression partially enclosed by the Chishima arc. Passing through Tsushima Strait, another outlet of the Sea of Japan, we come to the China Sea, which is merely shallow water on a great continental shelf, along the edge of which runs the Ryukyu arc. The warm Japan Current or Kuroshiwo washes the southwestern coast of the archipelago, while the cold Chishima Current flows along the northeastern coast. Tsushima Current, a branch of the former, enters the Sea of Japan and affords moisture and warmth to the northwestern coast of Honshu. Liman Current, one of two smaller cold currents along Karafuto, flows southwest near the coast of the Asiatic continent.

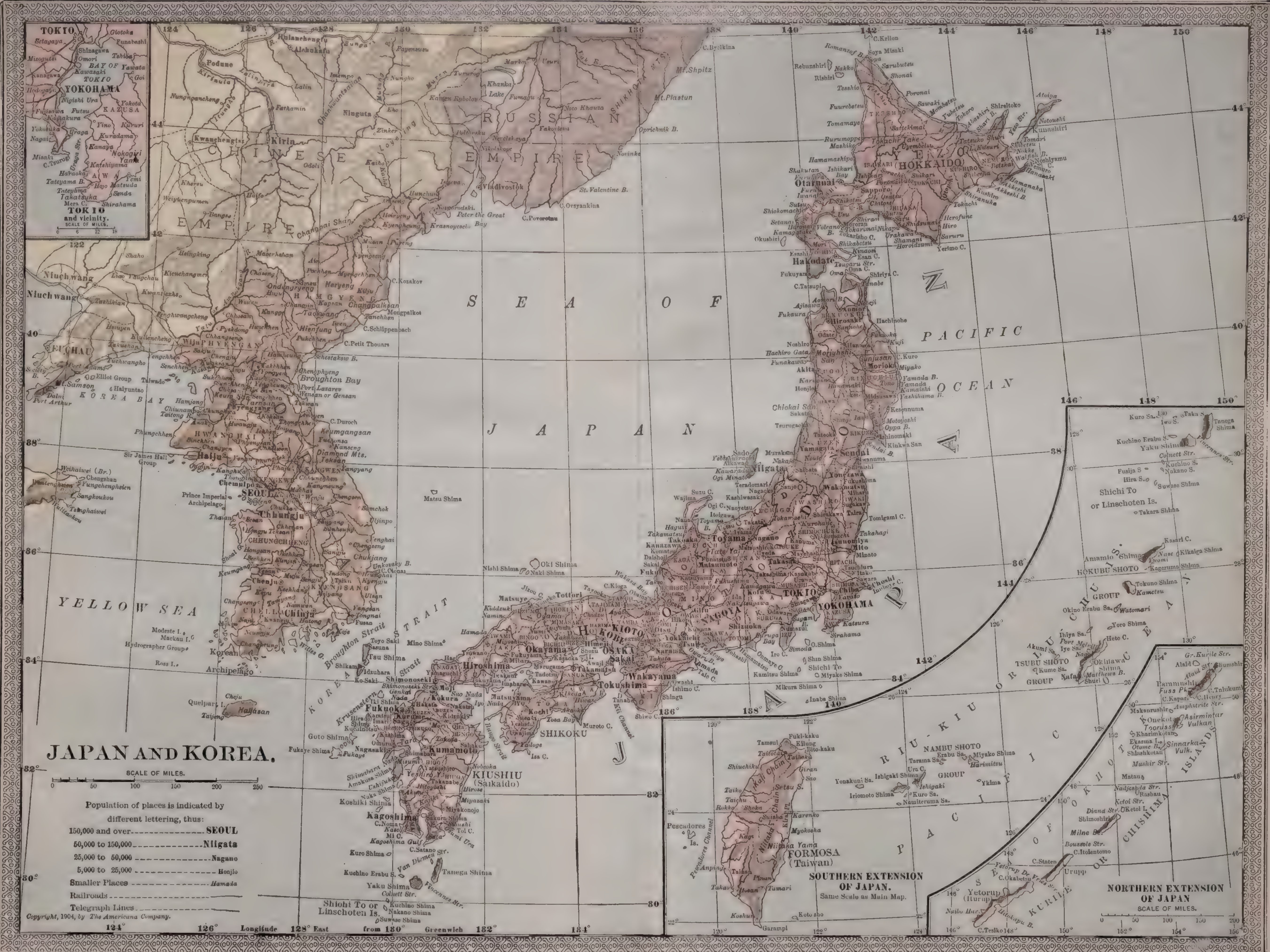
Generally speaking, the archipelago is very mountainous and its topographic features are highly complicated. The crustal movements of the earth have generated large mountain systems, which are again separated into several ranges. Some of these ranges are nearly 10,000 feet in height and exhibit landscapes of Alpine character. Moreover, owing to these terrestrial disturbances, we find many volcanic chains, which are arranged mostly along but sometimes across the principal trend of the archipelago. Many of the lofty peaks in this country are the magnificent cones of volcanic origin. Plains could not develop to any great extent in such a land. They are found occasionally along sea-coasts as well as along the banks of large rivers. Comparatively well developed plains are found in delta districts, which are generally fertile and densely populated. Also in mountain districts we meet some basins, sometimes with lakes nestling in their centres. Rivers in Japan are naturally short and are mostly torrents, thus giving everywhere scenic beauty, as well as water-power for industrial purposes. The stony deltas of these torrents are frequently formed at the base of mountains on the coast. The coastal line is generally well developed, more so along the Pacific coast than along the coast of the Sea of Japan. Every island is indented with innumerable bays and inlets, surrounded by rocky bluffs and sandy beaches. Thousands of isles and rocks are scattered near the coast, especially in the famous Seto-uchi or Inland Sea, which stretches between the three large islands, Honshu, Shikoku, and Kyushu, and is connected by very narrow straits with the Pacific Ocean and the Sea of Japan. The highest development of a coastal line may be seen along the shore of Kyushu, which measures 5.0, while Honshu measures 4.6, Shikoku 3.8, Hokushu 2.3, and the lowest, Taiwan 1.8.

Now let us treat the topography of each principal island in detail.

Honshu. The fundamental form of Honshu the main island, is outlined by two great mountain systems, which are called the northern and the southern arc. The two systems meet in the central part of the island forming a syntaxis or «Schaarung» where lies the great volcanic chain of Fuji. The northern arc, which is often called the Sakhalin system, is quite a large system, and consists of several parallel ranges, whose northern extension passes through Hokushu, the main island of Hokkaido, to Karafuto (Sakhalin). These ranges run nearly north and south but their southern portion gradually tends to the southwest. In the northern half of Honshu or Northern Japan, there are three ranges, separated from each other very distinctly by depressions of low plains. The central range begins on the shore of the Gulf of Mutsu. It runs south, forming the backbone of Northern Japan as well as the watershed between the Pacific Ocean and the Sea of Japan. Geologically the range shows the later formations of the Tertiary Period, accompanying a few exposures of Archæan and Palæozoic formation. Moreover, this range is a series of volcanic cones, forming the Nasu volcanic chain. Some of the cones exceed 7,000 feet in altitude. At the northern extremity of the Nasu volcanic chain stands Osore-yama (2,572 feet) on the north coast of the Gulf of Mutsu. The chain runs south through such volcanoes as Yatsukoda-san (5,153 feet), Ganju-san (6,790 feet), a gigantic volcanic cone of North Japan, Koma-ga-take (3,834 feet), Sukawa-dake (5,435 feet), Zao-san (6,442 feet), Adataro-san (4,658 feet), Adzuma-yama (6,294 feet), Bandai-san (6,442 feet), Nasu-san (6,271 feet), and turns to the southwest and then west through Takahara-yama (5,881 feet), Nantai-zan (8,144 feet), the principal peak of the Nikko Group, Hiuchi-dake (7,813 feet), Akanagi-yama (7,511 feet), Nikko Shirané (7,504 feet), Akagi-san (6,209 feet), Haruna-san (4,779 feet), and Asama-yama (8,134 feet). Some of these are still active. The great eruption of Asama-yama in 1783 and the explosion of Bandai-san in 1888 were most remarkable.

The second range, which runs parallel to the central range and along the coast of the Sea of Japan, is of similar geological formation to the first. These ranges are separated from each other by a series of low lands such as the valleys of the sister rivers Omono and Mogami, the basins of Yonezawa, Aidzu and Inawashiro, etc. The range is divided into two parts by the gorge of Mogami. The northern half, which is composed mostly of hills or low tablelands, is generally comprised under the name of Dewa-hill. The southern half is very mountainous and is called the Echigo Mountain Range. Asahi-dake (7,032 feet), and Iidé-san (6,232 feet) are the prominent peaks of the granite mass in this range. The southern prolongation of the range stretches between the Aidzu-basin and Echigo-plain and terminates in Mikuni Range.

A volcanic chain runs parallel to this western range. Commencing at Iwaki-san (5,209 feet), it passes through Moriyoshi-yama (4,769 feet), Chokai-zan (6,964 feet), and Gassan (5,944 feet). Chokai is well known because of its gigantic proportions and therefore this chain takes the name of this volcano. The coastal line of the Sea of Japan is mostly flat and unbroken. Its monotony is disturbed only by the volcanic peninsula of Oga, which encloses the shallow waters of the lagoon Hachiro-gata. The plain of Echigo on the same



JAPAN AND KOREA.

SCALE OF MILES.

Population of places is indicated by different lettering, thus:

150,000 and over ---------- **SEOUL**

50,000 to 150,000 ---------- **Niigata**

25,000 to 50,000 ---------- Nagano

5,000 to 25,000 ---------- Honjio

Smaller Places ---------- *Hamada*

Railroads

Telegraph Lines

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coast is one of the largest plains in the country.

The third range running along the Pacific coast east of the central range differs from the other two in several respects. It consists of such older geologic formations as Archæan, Palæozoic and Mesozoic, associated with various kinds of old eruptive rocks. Topographically it forms no continuous chain as does the central range, and it is divided into the two spindle-shaped mountain groups, Kitakami and Abukuma. The Kitakami group on the north is sharply separated from the central range by the tectonic valleys of Mabechi and Kitakami. Its external features show no regularity as a mountain system, which can be observed merely in its inner stratified structure. The network of numerous valleys extending in various directions, which have resulted from erosion, divide the district into an irregular group of mountains and hills. Hayachiné, the highest peak, measures about 6,560 feet. The coast of this region is not so smooth and flat as the coast of the Sea of Japan, but it is in many places very deeply indented with numerous small inlets of the «Rias» type, such as Miyako, Kamaishi, Onagawa, etc., affording vessels protected anchorages. Near Oshika-peninsula on the south, separated from the mainland by a narrow passage of water, is the granitic island of Kinkazan, whose lofty peak is the sailor's landmark. Waveworn Matsushima, a group of a hundred small islands in the Bay of Sendai to the west of Oshika-peninsula, is noted for its beautiful scenery.

Another mountainous region, lying between the Pacific Ocean and the tectonic valley of Abukuma, is commonly called the Abukuma Plateau. This is a broad mountain mass, and consists of an extensive area of gneiss and crystalline schists with a narrow zone of coal bearing strata of Tertiary formation along the coast. The abrasion was much greater here than in the Kitakami Mountainland. The Ancient mountain system with its complex strata is now reduced to an undulating plateau, whose greatest elevation scarcely exceeds 3,300 feet. The southern extension of this plateau forms the small ranges of Yamizo and Naka, which gradually sink into the plain of Kwanto. At the extremity of the latter stands an isolated mountain called Tsukuba-san (2,850 feet); on one of its summits the well known meteorological observatory was established some years ago by H. I. H. Prince Yamashina. Another extension of the northern arc toward the southwest forms the mountain blocks or «Scholle» of Ashio and Kwanto or Chichibu, which form the north and northwest boundaries of Kwanto-plain. The Kwanto group is a square mass of the older geological formations. On the west it terminates abruptly in the tectonic valley of Chikuma-gawa and in the basin of Kofu, and on the east in the plain of Kwanto. Some celebrated mountains of this group are Buko-zan (4,297 feet), Kobushi-daké (8,062 feet), and Kimpu-zan (8,367 feet). The great volcanic district of Kenashi and Iwasuge with the extinct volcanoes of the same names lies between the Kwanto group on the south and the Mikuni group on the east. The volcanic chain also stretches to the south until it joins the Nasu volcanic chain at Asama-yama. Kusatsu-Shirané (7,498 feet) and Adzumaya-san (7,731 feet) are well known in this chain.

The plain of Kwanto, the largest in the country, stretches between the Kwanto group and the Pacific Ocean. On the south it extends as far as the two hilly peninsulas, Boso (Awa-Kadzusa) and Miura, which enclose the bay of Tokyo, an outshoot of the Pacific. The plain is gently undulating, partly of Tertiary formation, but mostly covered by later deposits. It is drained by many streams, of which Toné is most noted. Lakes and lagoons are numerous, and Kasumi-ga-ura near the mouth of the Toné is the second greatest lake of Japan. The plain is well cultivated and thickly populated. There are 30 cities and towns with populations of over 10,000. Tokyo, the capital of Japan, is situated on the mouth of the Sumida River, which flows into the Bay of Tokyo. At a distance of only 19 miles from the capital is Yokohama, the greatest seaport in the country, and a little south is Yokosuka, one of Japan's naval ports. Many towns in the northern part of the plain are noted for their flourishing silk industry.

In the central part of Honshu, where the two great mountain systems meet, lies a zone of great tectonic depression, which is represented by the valley of Chikuma-gawa on the east, and those of Fuji-kawa and Kamanashi-gawa and the lowlands of Matsumoto-daira on the west. Along this zone runs the volcanic chain of Fuji and many cones stand as the boundary posts separating the two topographical districts, Northern and Southern Japan. The chain originates in the far south in the Marianna Group in the Pacific Ocean; and running north through the Volcano Group (Iwo-jima) and Shichito Group, it reaches the peninsula of Idzu on the south coast of Honshu. Several eruptions on these volcanic islands and of the submarine volcanoes have been recorded in recent years. Noteworthy among these is Oshima or Vries Island, which is now active. The Idzu Peninsula with Amagi-san (4,546 feet) is linked with Honshu by the Hakoné, which is well known for its large and beautiful atrio-lake, Ashi-no-ko, as well as many hot springs. Next to Hakoné and over Ashitaka stands the prominent cone of Mt. Fuji, whose snowclad peak reaches the height of 12,392 feet. The chain tends towards northwest and north and passing through Kaya-ga-take (4,067 feet), Yatsu-ga-take (9,637 feet), Tateshina-yama (8,298 feet), it terminates at the Myoko Group (Myoko-zan, 8,049 feet) on the coast of the Sea of Japan.

The southern arc of Honshu was first described as a part of the Sinian System by Pampelly and then as a part of the Kuenlun System by Loczy, both considering it as a single system and an extension of Nan-ling or of Peling (Tsin-ling) on the Asiatic continent respectively. But Baron von Richthofen in a recent opinion says that it consists of two different mountain systems, which unite in southern Japan; one chain on the coast of the Sea of Japan, which he names Chugoku Mountain, being probably an extension of the Kuenlun System or Tsin-ling, while the other, which runs along the Pacific coast and is called the

Kuma-kii Range, belongs to the mountain system of Southern China or Nanling. Without going into further discussions of these tectonic problems, we will turn our attention to the general topography of Southern Japan.

Between the tectonic valleys of Fuji-kawa and Tenryu-gawa lies the Akaishi mountain, which from its outline is often called Akaishi Sphenoid. It is composed of several ranges of various geological formations. The highest peak of the Akaishi proper reaches the altitude of 10,145 feet, while the culminating peak of the whole group with a height of 10,332 feet is in the Shiramine Range, which runs parallel to the Akaishi proper on the eastern side of the Oigawa valley. The northern extension of the Shiramine joins a granitic mass with the precipitous peaks of Koma-ga-take (9,843 feet) and Ho-o-zan (9,551 feet). The southern extension of the Akaishi Range forms the mountain districts of Totomi and Mikawa, and disappears in the Akumi Peninsula.

Nearly parallel to the Akaishi mountain, and between the two great valleys of Tenryu and Kiso, extends the Kiso Range with another Koma-ga-take (9,446 feet). This range joins the mountainlands of Mikawa in the south. The spurs of these mountains form a terraced coastal plain which is mostly grass-plain or «Hara,» such as Takashi-ga-hara, Mikata-ga-hara, etc. The lowlands at their base are well cultivated and contain many towns and villages, through which runs the trunk line of the Tokyo-Kobé railway. Many large rivers such as the Fuji, the Abé, the Oi and the Tenryu flow towards the south, cutting deep valleys in the Akaishi mountain and its spurs, and forming stony deltas on this coastal plain. On the plain is Lake Hamana, which is now connected with the sea by a narrow outlet.

Coming back to the great tectonic valley of Fuji-Kamanashi, we find the small basin of Suwa with the lake of the same name. It lies 2,600 feet above sea level and is the source of the Tenryu. Further to the north, separated from this basin by the small ridge of Shiojiri-togé, stretches the valley of Matsumoto-daira with an average height of 1,500 feet. Rising precipitously from this level the lofty Hida Range forms the western boundary of the valley. This range extends south to the right side of the great Kiso valley, and the north end of it terminates abruptly in the precipitous cliff of Oyashirazu on the Sea of Japan. This is the highest mountain range in the Empire with many peaks of 10,000 feet in altitude, and hence it is often called the «Japanese Alps.» There is no glacier in this range at present, but the striated surface of the rocks of Shirouma-ga-take, one of the prominent peaks, indicates the former existence of one. Like the Akaishi Range, it consists of older geological formations and various eruptive rocks. Among several peaks Yari-ga-také (10,142 feet) or the «Matterhorn of Japan», Hodaka-yama (10,168 feet), Jonenbo-daké (10,168 feet), Otenjo-daké (10,447 feet), Shirouma-ga-také (9,624 feet) are the most celebrated. The size and importance of this range is still further increased by its junction with the Norikura Volcanic Chain. The two largest volcanoes of this chain, Ontake (10,447 feet), and Norikura-ga-daké (10,385 feet), are next in height to Mount Fuji. Tateyama is a lofty group including Tateyama proper (9,630 feet) and Ken-ga-mine (about 9,840 feet) closely parallel to the western side of the northern Hida Range and separated from it by the great gorge of Kurobe-kawa.

The western flank of the whole Hida Range is not so steep as the eastern, but slopes to the mountainland of Hida, sometimes called the Hida Plateau. This comprises a wide tract of the most mountainous district in Japan, which spreads over the province of Hida and a part of Mino and Etchu. In its centre there is the small basin or «Becken» of Takayama. To the north of this mountainland lies the fertile plain of Toyama, along the coast of the deep Toyama Bay, an arm of the Sea of Japan. Jindzu-gawa and Imidzu-gawa drain this mountainland and then flow through the plain. The western border is a high ridge, upon which stands the volcano Haku-san (8,659 feet). The range slopes gradually through a hilly region to a narrow belt of the coastal plain along the Sea of Japan. The province of Noto is a large peninsula on this coast, with Nanao, an excellent harbor. The coastal plain is thickly populated and there are such towns as Kanazawa, the seat of an old «Daimyo,» and as Fukui, famous for its silk manufacture.

On the south of the Hida Mountainland stretches the low lands of Mino and Owari. It is a part of the great depression, whose southern half is now occupied by the Isé-no-umi, an arm of the Pacific. The Mino-Owari plain is drained by the three rivers, Kiso-gawa, Nagara-kawa, and Ibi-kawa. It is extremely fertile and produces rice of an excellent quality. Nagoya is a flourishing commercial and industrial city and also an important railway junction in this plain. This plain is bounded on the west by the range of Ibuki, Yoro, and Suzuka. On the further west, there is a series of such depressions separated from each other by north and south «Horst» ranges, which finally come to the great depression of the Inland Sea or Setouchi.

Next to the Mino-Owari plain and between the «Horst» Yoro and Hiei-Kasagi, there lies the depression of the Province of Omi, the greatest part of which is occupied by Lake Biwa, the most picturesque and largest fresh-water lake in Japan. The waters of the Sea of Japan cut deep into the land, forming Tsuruga Bay, and there is only a narrow tract of land between this bay and Lake Biwa. Iga is a small basin to the south of the former. On the southwest of Omi Basin there are the basins of Yamashiro and Yamato. There was, however, originally a single depression between Hiei-Kasagi (Hira-san 4,044 feet, Hiei-zan, 2,700 feet), and Kongo (4,057 feet) mountains, which was afterwards divided into the two basins by the undulating hills of insignificant height between them. These basins have played an important rôle in the history of Japan. The basin of Yamato was the seat of the capital of the Nara dynasty, 1,000 years ago, and there still remain many buildings, especially ancient Buddhist temples. In the centre of the basin of Yamashiro is situated the city of Kyoto, which was the capital of

Japan for a thousand years until Tokyo was made the new metropolis in 1868. The city, which is often called the «Paris of Japan,» is well known for its scenic beauties and its many old magnificent palaces and temples, and it is also noted for its artistic and industrial wares, especially various kinds of silk, embroideries, porcelains and cloisonné ware.

On the other side of Kongo-horst lies the plain of Settsu, which sinks into Osaka Bay on the west. The Yodo River drains Lake Biwa, and passing through both the plains of Yamashiro and Settsu, it discharges into Osaka Bay. Lying at its mouth, Osaka was for centuries a commercial centre of Japan and at present it is a flourishing industrial city. It is the second largest city of Japan with its population of over 1,000,000. Kobé has an excellent harbor on the shore of the bay and is the largest tea exporting port in the Empire.

On the south of this framework of «Horsts» and depressions lies the large peninsula of Kii. It is bounded by the Idzumi Range, whose highest point is Katsuragi-san (2,814 feet). Ki-no-kawa flows in the valley at the southern foot of this range. The peninsula is very mountainous. Especially on the eastern side of Kumano-gawa, a deep transversal valley, the range attains a considerable height in many peaks of the Omine Group (culminating point is 6,153 feet) and Odaiga-hara-san (5,527 feet). These mountains are nothing but an extension of the noted Akaishi Range. The range dips down into the Sea of Ise at the peninsula of Akumi; but, reappearing in Shima Peninsula on the opposite coast of the sea, it extends westward with an increasing magnitude and height. Several geological formations from an old crystalline schist to the Tertiary, are exposed in the successive zones from north to south. The continuity of this system may be well traced in the Island of Shikoku through Kii strait.

On the other hand, the palæozoic mountainlands of Tamba lie north of the Yamashiro and Settsu basins. They occupy an extensive area of older formation, like the Hida Plateau, but not so high and inaccessible. On the north of these mountainlands is the wide bay of Wakasa, its coast indented with many small inlets. On this bay are Maidzura, a naval port and also Amano-hashidaté, noted for its beautiful scenery.

The western part of Honshu forms the large peninsula of Chugoku. It is almost entirely mountainous with a few plains along the coast and rivers. The mountains, however, scarcely exceed 4,000 feet in height, with the few exceptions of some volcanoes, which form a volcanic chain through the northern half of this district. Dai-sen (6,157 feet), Sambe-yama (4,025 feet) and Aono-yama are the most celebrated volcanoes. The earlier geological formation of Chugoku is greatly disturbed by the eruption of granite and other igneous rocks, which are now widely exposed throughout this district. Rivers are generally short, and there are only a few noteworthy ones such as Gono-kawa running into the Sea of Japan, Higashi-no-Okawa, Nishi-no-Okawa, Kawabe-Kawa, and Ota-gawa flowing into the Inland Sea or Setouchi. The coastal lines on both sides of this district show great contrasts. Along the Sea of Japan the coast is very poor with bays and islands. There is one independent range, the Shinji, forming a peninsula of Shimane, which is separated from the main land by the Lagoon Naka-no-umi. Lake Shinji and the low plain of Kidzuki. The south coast of Chugoku is quite different. It faces Setouchi on the Inland Sea. This peculiar sea is a zone of depression having Chugoku on one side and Shikoku and Kyushu on the other. It is divided into several «Nada» or seas by groups of thousands of islands which now remain as detached elevations in this depressed zone. On the east, Awaji, the «Horst»-island separates the Osaka Bay from Harima-nada. Midzuchima-nada, Bingo-nada, Aki-nada and Suonada lie to the west. They are generally very shallow and in most parts do not exceed twenty fathoms in depth. The only portions where great depths are found are the narrow passages at the outlets of the sea, where the bottom is acted upon most effectively by the erosion of tidal currents.

The coastal line of Chugoku is highly developed on the shore of Setouchi. Numerous inlets cut into the land, and there are many good harbors and anchorages. Among them the Bay of Hiroshima is one of the best, with the city of the same name on its shore, and Ujina, its roadstead, which was the headquarters of transport ships in the recent wars. Not far from Ujina, and on the coast of an arm of Aki-nada, is the naval port of Kuré with its large docks and arsenal. Itsuku-shima, situated in Hiroshima Bay, is noted for its beautiful scenery.

Shikoku.—As a whole this great island is a single mountain group of Southern Japan. It is separated from Chugoku by the Inland Sea, while a great depression forms the large bay of Tosa on the south, bounded by the two promontories, Muroto and Sada (Ashizuri), projecting southwards into the Pacific. Kii Strait on the east and Bungo channel on the west, cut off Shikoku from Kii Peninsula and Kyushu Island. There is a great similarity between the mountain formations of Shikoku and the others. Shikoku Range, which extends east and west through the island, is a continuation of the mountains in Kii Peninsula and Kyushu Islands. The greater part of the island is very mountainous, and there are several lofty peaks, such as Tsurugi-san (7,354 feet) and Ishidzuchi-san (6,878 feet). The northern part of Shikoku, from which the two great peninsulas of Takanawa and Sanuki project into the Inland Sea, is very similar in its geological and topographical features to the Chugoku and Setouchi Islands. The peninsula of Sanuki is nothing but a recently elevated tract of the same sea. Many isolated granite mountains and hills, like islands, stand on the low plain. Among many rivers, Yoshino-gawa is most noted. In its upper course it flows eastward, forming a valley in the Shikoku Range, then cutting through the range it forms the famous gorge of Oboké and Koboké and turns again eastwards parallel to the range, flowing through a wide plain until it empties into Kii Channel. Other noted mountain rivers are Shimanto-gawa, Niyodo-gawa and Monobe-kawa, which flow into the

Bay of Tosa. A peculiar development of the coastal line on the western side of the island shows many elongated peninsulas and promontories, such as Sada-no-misaki. Awa-no-naruto, situated in the narrow strait between Shikoku and Awaji is very remarkable on account of its terrible whirlpools, which are caused by tidal currents.

Kyushu.—This is the third largest island in Japan with its topographical and geological features very complicated in many respects. The coastal line, especially in its northern part, is more highly developed than any in the country. The Kyushu Range, which is a continuation of the Shikoku Range, passes obliquely through the southern half of the island. It culminates on the boundary between the two provinces of Higo and Hiuga with several high peaks, such as Ichibusa-yama (5,970 feet), Ishido-yama (5,724 feet) and Mikuni-yama (5,396 feet). Hitoyoshi-Basin is an enclosed basin in this range. The well known river of Kuma-gawa flows from Ichibusa-yama, and passing through that basin cuts this range again forming a picturesque gorge through which it flows into the Sea of Yatsushiro. Further south, there stretch the two great peninsulas of Satsuma and Osumi, forming the shores of the beautiful Bay of Kagoshima. The geological formation of these peninsulas is mostly mesozoic combined with the other deposits by Kyushu Range; but its surface is covered to a great extent by ejecta of volcanoes, there having been several violent eruptions in recent ages. Kirishima-yama is situated between Satsuma and Osumi, and is one of the most celebrated active volcanoes in Japan. Karakuni-daké (5,661 feet) and Takachiho-no-miné (5,064 feet) are magnificent cones in the Kirishima Group. The volcanic chain of Kirishima commences in this group, and runs south through Sakura-jima, the volcanic island (3,749 feet) in the Bay of Kagoshima, and Kaimon-daké (3,041 feet), a perfect cone at the extremity of Satsuma Peninsula. The further extension of this chain passes through the volcanic islands of Kawabé Shichito (Seven Islands of Kawabé), some of which are active at present.

In the northern part of Kyushu, on the other hand, there lies the so-called Tsukushi Mountain, which is a mountain group of various geologic formations, ancient and recent, as well as of plutonic and volcanic rocks. There is no regularity in the mountain formation and the whole region is divided into many mountains and hilly tracts, the heights rarely exceeding 3,300 feet, except in the case of some volcanic cones. An extreme development of the coastal line forms the peninsulas of Sonoki and Shimabara, which are connected with the main body by the narrow isthmus of Isahaya. Omura Bay and Ariaké Bay are separated by these peninsulas from the sea. There are many excellent harbors on this coast. Nagasaki, a beautiful inlet of «Rias» type, was first opened for Dutch merchants, and centuries ago it was known as the only port for foreign trade. Now it has a large dockyard and is a commercial centre of Southern Japan. Sasebo is a good naval port. Many good anchorages are also found on the northern coast. Fukuoka, with Hakata harbor in its neighborhood, is one of the largest towns of Kyushu, situated on the beautiful bay of Hakata. Moji, situated in the extreme north of Kyushu and along the Strait of Shimonoseki, has had a rapid development during the past few years, as an export harbor for coal, which is abundantly produced in the Tertiary hills of the Tsukushi Range in the provinces of Chikuzen and Buzen. Wakamatsu, southwest of Moji, is also a coal harbor, and near this town are the Imperial Iron Works of Yawata.

Between Tsukushi Range and Kyushu Range there lies a great volcanic mass, whose ejecta cover an extensive area in the central part of Kyushu. Aso-san in this group is a remarkable active volcano. The diameter of its outermost craterwall is 17.5 miles by 12.5 miles; perhaps it is one of the greatest in the world. Surrounded by this wall is a large crater plain and in its centre stand five volcanic cones, among which Taka-daké is the highest (5,543 feet). To the northeast of the Aso proper stretches the Aso Volcanic Chain. In this chain there are the volcanic groups of Kuju-san (6,100 feet) next to that of Aso, Yubu-daké (5,517 feet), and Tsurumi-daké (4,890 feet) near the shore of Beppu Bay, and the circular peninsula of Kunisaki with the volcano Futago (2,430 feet). The further extension of this chain may be traced to some small islands in the Inland Sea. Another continuation of this chain in the opposite direction is indicated by Kibo-zan (2,326 feet) in Kumamoto Plain and Unzen-ga-také (4,871 feet), on Shimabara Peninsula. To the north of the latter there is another volcano Tara-daké (1,226 m).

A comparatively wide plain extends along the shore of Ariaké Bay. It is divided into two parts by the hilly region of Miiké. The northern plain is drained by Chikugo-gawa, the largest river of Kyushu, and is thickly populated. Higo Plain on the south has in its centre the city of Kumamoto. This plain is extremely fertile and produces rice of the best quality. There are many islands near Kyushu. On the west there are the twin islands of Amakusa, Koshiki and Goto Group, while on the north Iki and Tsushima form the stepping stones between Japan and Korea.

Ryukyu.—All the islands stretching between Kyushu and Taiwan (Formosa) are comprised under the name of Ryukyu Group. But politically the northern group of these islands belongs to Kyushu. These islands are nothing but the peaks of a submerged mountain ridge along the edge of the continental shelf. Geologically the arc of Ryukyu is divided into three zones. The islands in the central zone are mostly of older geologic formations, while those in the outer zone are of the later Tertiary period. The inner zone is of the volcanic origin, and is the continuation of the Kirishima volcanic chain of Kyushu. Okinawa-jima, the largest island, is situated in the centre of this group. Most of the islands are hilly, with the exception of Yaku-shima with a granite mountain Yaku-daké (6,183 feet).

Taiwan (Formosa).—This spindle-shaped island is at the southern extremity of the Empire and lies next to the Province of Fokien of Southern China from which it is separated by the Taiwan Channel. The slight development of the coastal line characterizes this island, there being no large indentations. Kelung, the gate to this island on its northern end is but a small «Rias» harbor. The backbone of Taiwan begins with a precipitous cliff on the northern coast, and stretches W. S. W. for some distance, then turns to S. S. W. at Setsusan (Mount Sylvia, 12,641 feet). From this lofty peak the range runs along the length of the island, until it terminates at Garampi or the South Cape. It culminates at Niitakayama or Mount Morrison (14,268 feet), the highest mountain of Japan. This range consists of Palæozoic and Archæan formations and slopes abruptly on its eastern side. Sharply separated from this range by a tectonic valley, another small range (the Taito), stretches north and south along the eastern coast. Parallel to the west side of the central range lie spurs of a later geological formation with a lower altitude. Along its foot extends a strip of the coastal plain, where the soil is remarkably fertile, and sugarcane and rice are cultivated. A characteristic feature of this plain is the excellent development of the deltas of many rivers, which, leaving the mountain region, suddenly discharge their water and silts into the plain. Taihoku, the metropolis of the island, is situated in a small basin at the northern end, through which the Tamsui River flows, having Tamsui harbor at its mouth. The hilly tract around this basin is well known for its tea plantations. On the north of the same basin stands the volcanic group of Taitonzan (2,145 feet).

Hoko-to, or Pascadore Islands, are a group of small islands in Taiwan Channel. They are of basalt, with an insignificant altitude above the sea. The main island of Hoko-to has Mako, an excellent shelter harbor.

Hokkaido.—Hokushu, the main island of Hokkaido, or Yezo, as it is called by Europeans, is the second great island of Japan. It is rhombic in its general outline with the coast mostly level and low, and with a peninsula of fish-tail shape on the southwest. The continuation of the volcanic chains in Northern Honshu extends into this peninsular part. The large bay of Uchiura, or the Volcano Bay, commands an excellent view of various volcanoes on its coast. On the south of the bay is Koma-ga-také, to the southeast of which stands the active volcano of Esan. There are many volcanoes, especially in the region to the north of the bay. Makkari-nupuri or Shiribeshi-yama (6,873 feet), which is situated at the centre of that volcanic region, is noted for its perfect cone. Other volcanoes are Usu, Tarumaye, etc.

The backbone of the main part of Hokushu consists of older rocks and passes through the island in a S. S. E.—N. N. W. direction from Cape Erimo to Cape Soya. The southern half of this range is called Hidaka Mountain, the Yubari Range running parallel to it along its western side. At the centre of this backbone stand many peaks, most of which are of volcanic origin. Among these prominent peaks, Nutapkaushibé (7,691 feet), Oputateshiké (6,494 feet), and Tokachi-daké (5,943 feet) are well known volcanoes, and Ishikari-daké (6,675 feet) consisting of older eruptive rocks, is also noted for its high altitude. The Chishima volcanic chain runs east, from Nutapkaushibé, including several volcanic cones, such as Meakan (5,304 feet), Oakan (4,950 feet), Atosa-nupuri, and Raushi-yama (5,160 feet).

Seaward from these elevations stretches a gently undulating hilly region through which many large rivers flow, such as Ishikari-gawa, Teshio-gawa, Tokachi-gawa, etc. Fertile plains are found along these rivers. The largest plain in the island is that of Ishikari, which separates the main body of the island from its peninsular part and penetrates further northward into the mountain district along the river Ishikari. Kamikawa is a basin at the upper course of that river. Sapporo, the political centre of this island, is situated in the plain of Ishikari, and Otaru, its flourishing harbor, lies at a short distance from it.

Chishima or Kuriles.—This group of islands stretches from the Bay of Nemuro to the southern extremity of Kamchatska Peninsula, describing a large arc forming the eastern boundary of the Sea of Okhotsk. These islands are entirely of volcanic origin, accompanying Tertiary strata in some islands. The three great islands, Kunashiri, Etorofu, and Uruppu, lie to the northeast of the main island of Hokkaido in the order named. These islands have been explored but little and are very sparsely populated.

Karafuto (Sakhalin).—The island of Karafuto stretches from east to west with the meridian of 142° 30′ E. as its axis. This island is now politically divided into two parts by the parallel of 50° N., Japan possessing its southern half. There are two peninsulas at the southern end of Japanese Karafuto which form the coast of Aniwa Bay. Kushunkotan (Korsakof), the political centre of the island, is a harbor situated at the northern end of this bay. Another large bay, which is called Terpenia Bay, lies on the eastern coast. The principal mountain chain, the Sakhalin Range, commences at Cape Notoro at the southern extremity of the island, forming a continuation of the backbone of Hokkaido, from which Karafuto is separated by the narrow channel of Soya. This range is of the later geological periods, like to the northern Hokkaido, and generally it consists of gently undulating hills. There are neither precipitous mountains nor abruptly elevated lofty peaks. The highest mountain, Spamberg, does not exceed 3,300 feet in height. Susuya and Tako Rivers flow in opposite directions along the eastern foot of the range, forming a valley which extends north and south. On the other side of this valley the Susuya Range stretches along the eastern peninsula. There older geological formations are exposed, which may be the continuation of the same strata in Hidaka Range of Hokkaido. Along Susuya River there is an alluvial plain where Vladimirovka, the principal town, is situated. In the middle part of the Island, a similar topography is found. A large river valley formed by the Poronai and the Tym, separates the Tiora Mountain Range on the east from the Sakhalin Range. Poronai River rises in the Russian territory and flows across the boundary line. There is a plain along the most of its course until it flows into Terpenia Bay. Some tundra or barren lands are found on its upper course.

Climate.—As the archipelago of Japan extends over 29 degrees of latitude, different parts of the country have different climates, though there prevails an oceanic climate in general. In Taiwan and Ryukyu tropical and subtropical vegetations flourish, while in Karafuto and Chishima severe arctic cold is experienced. The mean annual temperature is 75° F. (24° C.) in Koshun, a town in the southern extremity of Taiwan, and is over 68° F. (20° C.) in all islands of Ryukyu Group. In the greater part of Kyushu and Shikoku the mean temperature is 59° F. (15°C.). The Setouchi coast of Chugoku is warmer than the coast of the Sea of Japan in the same peninsula. In the mountainlands of central Honshu, as well as in the provinces of Northern Honshu, the temperature becomes gradually lower and averages 50° F. (10° C.), while a milder climate is always experienced on the Pacific coast. In Tokyo, it is 56.8° F. (13.8° C.) and in Yokohama 57.9° F. (14.4° C.). In Hokkaido the climate is generally cold. In most towns, except those in the southern peninsula, the annual temperature ranges between 39° F. (4° C.) and 44° F. (7° C.). Karafuto and Chishima are of course still colder,though there are no systematic records. August is the hottest month in most of the country, with the exception of Taiwan and southern Ryukyu, where the temperature in the month of July reaches 80° F. (27° C.). February is the coldest month in Taiwan, Ryukyu and some parts of Southern Japan, as well as on the coast of the Sea of Japan, while in other parts January is generally colder. The mean maximum temperature exceeds 86° F. (30° C.) in most of Japan, and the minimum reaches 22° below zero F. (—30° C.) in Kamikawa and Tokachi in Hokkaido.

Having the Asiatic continent on one side and the Pacific Ocean on the other, the most of the archipelago is included in the monsoon region. In winter, when the continent is extremely cold and the highest atmospheric pressure is attained, severe northwest and north winds prevail throughout the country. In summer, however, when the continent is heated and there is a low atmospheric pressure, warm and wet winds blow from the S. and S. W., that is, from the Pacific Ocean. Naturally there are several kinds of local winds, due to the complicated configuration of the land. Violent hurricanes or so-called typhoons (Taifoons), which occur mostly during the last of the summer and in the first of the autumn, cause terrible damage, especially to rice crops. They arise generally in the neighboring sea of Taiwan, and passing over Ryukyu and Kyushu, strike the Sea of Japan. Sometimes they pass further to the east through central Honshu. Typhoons from another source are said to come from the southern sea and suddenly strike the Pacific coast of central Japan.

The rainfall is of course abundant in the islands of Japan. The southern islands experience an extraordinarily great amount of rain. At Kelung in Taiwan, the annual precipitation is 139.2 in., and in Oshima of Ryukyu Group 128.9 in. As a high mountain range runs along the axis of the main islands, a greater rainfall is caused on the coast of the Pacific Ocean during the summer than in the winter, while in the regions along the Sea of Japan the reverse is true. In these regions, except Hokkaido and Northern Honshu, the rainfall exceeds 78 in. annually. In Tokyo it it 58.4 in. The least rainfall occurs in Hokkaido, though there it is not less than 27 in., and in most of the island it amounts to 40 in. or over. In the beginning of the summer, when the summer monsoon commences, the southern and central regions of Japan are generally cloudy and have many rainy days, though the whole amount of the precipitation is not exceedingly great. Heavy rains fall, oftener in storms, at the end of the summer in the same districts, and they cause inundations of many rivers, inflicting great damage on ricefields and hindering communication in several directions.

It is an astonishing fact that an enormous amount of snow falls on the northern coast of Central Japan. Prevailing cold winds from the northwest bring the moisture of the Sea of Japan, especially that of the Tsushima current, a branch of the warm Kuroshiwo or Japan current, and deposit it in the form of snow on the barrier of the high mountain range. It is difficult to believe that the depth of snow on the plains is at least three feet and in the mountain districts is sometimes more than 10 feet during the winter season. This is a real fact, however; whole towns and villages are often nearly buried under the snow, which is cleared away only with great difficulty.

Mineral Wealth.—The chief mineral products of Japan are coal, copper, gold, silver, iron, antimony, petroleum and sulphur. Among these minerals, coal stands as the most valuaable product. 10,000,000 tons of coal are annually produced, one-quarter of which is exported. The richest coal-fields are located in the northern mountains of Kyushu and in the Yubari Range of Hokkaido. Coal occurs also on the Pacific coast of Abukuma Plateau of Honshu. Most of the Japanese coalmeasures belong to the Tertiary formation. Copper plays the most important rôle among metal productions, and Japan ranks as one of the chief sources of copper in the world. The annual average of its export is estimated to be nearly 46,000,000 pounds, or two-thirds of the total production. The celebrated copper mines are Kosake and Ashio in the Northern Honshu and Besshi in the island of Shikoku. Precious metals, however, are not quite so abundant. Gold occurs both in veins and in alluvial deposits. It is produced mostly in the Province of Satsuma in Kyushu and in Northern Taiwan. The gold mines of the island of Sado in the Sea of Japan have been known for centuries. Silver is obtained in several localities, but the principal mines are Kosaka and Innai in Northern Honshu. A mine of antimony at Ichinokawa on the northern coast of Shikoku is well known, not only on account of its rich production, but also for its mineralogical importance on account of its magnificent crystals of antimony glance. The celebrated iron mine of Kamaishi is on the Pacific coast of Kitakami mountainland in Northern Honshu.

Iron is not produced in sufficient quantities to supply domestic demand. Much ironware is imported from Europe, as well as iron ore from China. The production of petroleum is annually increasing. In 1905 about 52,250,000 gallons of crude oil were obtained. Oil fields stretch along the coast of the Sea of Japan mostly in the Tertiary hills. The most productive wells are found in the province of Echigo. Sulphur is produced in several volcanoes. The quantity of precious stones found in Japan is insignificant. The only ornamental stones are quartz and agate. Topaz occurs in some places. Among building stones granite is most popular. It is quarried abundantly in Southern Honshu. Its Japanese name «Mikagé-ishi» was derived from the name of a quarry near Kobé on the coast of Osaka Bay. Andesite and tuff are other important building materials. Good porcelain-clay is obtained in several places throughout the country.

Flora and Fauna.—It is true, to a certain extent, that Japan is poor in land flora and fauna, as it consists of groups of islands separated from the continent. The empire, however, extends from the tropical nearly to the frigid zone, and approaches the continent so closely at several points, that the species of the Asiatic continent are apt to be introduced very easily into the nearest islands. Consequently, the islands are comparatively rich in number of species, which closely resemble those of the continent.

Flora.—The whole island of Taiwan is practically tropical in nature, with luxuriant vegetation, as the name «Formosa» implies. Of the plants growing on the plains, the betel-nut palm (Areca catechu), the banyans (Ficus retusa and F. wightiana), the Pandanus (P. odoratissima), the bamboo, and the tree-fern (Cyathea spinulosa) are the principal ones. The most important of the cultivated plants are rice, sugar-cane, the tea plant, the sweet potato and the ananus. The camphor tree (Cinnamomum camphora), the king of the Formosan forest, grows in woods on somewhat elevated ground, attaining 10 feet in diameter and 130-160 feet in height.

Kyushu, Shikoku, and a quarter of Honshu, south of the parallel 35° N., present some semitropical features, with several species of the oaks (Quercus glauca, Q. myrsinæfolia, etc.) and the pines (Pinus Thunbergii and P. densiflora). The stately growth of the woods of P. Thunbergii on the sand dunes gives magnicent scenery everywhere along the shores of this region. The tea plant and the wax tree (Rhus saccedanea) are extensively cultivated.

In that part of Honshu which is north of the parallel 35° N., there are found the forest trees of the temperate zones. The beech (Fagus sylvatica), «Onara» (Quercus grosseserrata), and the horse-chestnut (Aesculus turbinata) abound, often found with such species of conifers, as «hinoki» (Chamæcyparis obutosa) «sawara» (Ch. pisifera), the arbor vitæ (Thujopsis dolabrata), «sugi» (Cryptomeria japonica), and the fir-tree. (Abies firma). The mulberry tree and the lacquer tree (Rhus vernicifera) are planted abundantly. Here is found also the Ginkgo tree, a primitive conifer, indigenous to Japan, Korea and China.

These three central islands with their semitropical and temperate characteristics are the most thickly populated and most thoroughly cultivated of the whole country; so the plains and valleys are mostly covered with fields of rice and barley.

Hokkaido and Karafuto may be grouped together as belonging to the subarctic zone. In this zone, the air (Abies sachalinensis), the spruce (Picea ajanensis), and the larch (Larix leptolepis), are the chief trees in the forests. The birches (Betula), the alders (Alnus), and the poplars (Poplus) are found with these in some places. Thus, the general features are very much like those of Siberia or the northern part of North America.

In Taiwan and the central Honshu, where great elevations occur, vertical zones of flora may be traced, which very nearly coincide with the horizontal zones just mentioned, although the same species are not always represented in the proper zones.

It may be assumed that the coasts of the Sea of Japan are generally poor in the marine flora, while the coasts of the Pacific are rich in the number of species as well as of individuals. On the southern Pacific side, where Kuroshiwo or the Japanese current passes close to the shore, many species of the red algæ, Sargassum, and Ecklonia adorn the submarine rocks and cliffs; while on the northern Pacific coast, which the cold currents wash, Laminaria and Alaria grow abundantly. Alaria fistulosa nearly 300 feet in length is not rare.

Fauna.—The land animals of Taiwan are also semitropical. Among the mammals, the pangolin (Manis dalmani), with its relatives in India and Africa, is well known; the black bear (Ursus formosanus), the wild boar (Sus taivanis), and the deer (Cervus Swinhonii) belong to species different from those of the central Japan. Out of about 200 species of birds known in this island, four-fifths are similar to those of India and China, while one-half are similar to those of Japan proper. The most useful domestic animal is the bison (Bos chinensis), which is used for plowing and also supplies meat, hides and horns to the natives. Swine are bred everywhere in the islands as also in China.

Kyushu, Shikoku, and Honshu may be grouped in one faunal zone; for there is scarcely any marked line to divide them into two zones. as in the case of plants. Most of the important groups or families of animals of the temperate continent are likely to be found in this region. Among the mammals, the hares (Lepus brachyurus and L. variabilis), the wild boar (Sus leucomystax), the deer (Cervus sika), the fox (Canis japonica), «tanuki» (C. procyonoides), the otter (Lutra vulgaris), «itachi» (Putorius itatsi), and the bear (Ursus japonicus) are the principal ones. Of the birds, wild ducks (Anas), the pheasant (Phasianus versicolor), and the snipes (Scolopax) attract sportsmen. The bush warbler (Cettia cantans), and the white eye (Zosterops japonica) are common caged birds. The long tailed fowl of the province of Tosa in Shikoku deserves notice. The most remarkable facts concerning the fauna of Japan are that the monkey (Inuus speciosus) lives far north at Aomori (41° N.), and the giant salamander (Megalobatrachus maximus) survives in the mountain streams of the western Honshu. It is also an interesting fact that the wild cat and the Chinese ring-necked pheasant (Phasianus torquatus) are found in the island of Tsushima, which is considered to be a stepping stone between the continent and central Japan in the migration of animals. Of domestic animals, horses and cattle are most common. The small silkworm (Bombyx mori) is most important economically.

The fauna of the islands north of the Tsugaru Strait is of a different character, as is also the flora. The black fox (Canis alpinus), the sea otter (Enhydra lutris), the marten (Mustela brachyura), the brown bear (Ursus arctos), and the leopard seal (Phoca fœtida) are common in this zone. The fur seal (Callorhinus ursinus), which migrates in winter to the sea off Choshi or the Tsushima Strait, breeds in summer on the rocky shores of the Chishima (Kuriles) and the Robben Island off Cape Patience in Karafuto. The gray-headed green woodpecker (Gecinus canus), the great black woodpecker (Picus martius), Blackiston's eagle owl (Bubo blackistonii), and the hazel grouse (Tetrao bonasia) are also peculiar species.

In high mountains such as are found in Taiwan and central Honshu, alpine species are often observed. The most remarkable of these are the common ptarmigan (Tetrao mutus), and Japanese alpine accentor (Accentor alpinus, erythropygius).

The fishes in the seas of Taiwan are very similar to those in the seas of the Malay Archipelago, India, and eastern Africa. «Sabahi» (Chanos chanos) are bred in large numbers in ponds on the west coast of the island. In the seas around the three central islands, there are many peculiar species, although some resemble those of the Chinese and Indian seas. Bonito (Thynnus pelamys), Tunny (Thynnus thynnus), the Spanish mackerel (Scomber colias), the snapper (Pagrus major), the sardine (Clupea melanostica), and the anchovy (Engraulis japonicus) are economically most important. The seas of Hokkaido and Karafuto, and a greater part of the Sea of Japan contain fishes of a subarctic nature; and the species found there are often similar to those of North America and occasionally to those of northern Europe. The herring (Clupea pallasii), the cod (Gadus brandtii), and the dog salmon (Onchorhychus keta) are economically most important. «Ayu» (Plecoglossus altivelis) and «Shirauwo» (Salanx) are fishes characteristic of Japan and Korea. The viviparous surf-fishes (Ditrema) and «Chika» (Hypomesus) are confined to Japan and North America. «Rabuka» (Chlamydoselachus anguineus) often caught off the Tokyo Bay, being a primitive shark, is famous throughout the whole world. The culture of the pearl oyster (Avicula martensii), and the artificial method of depositing pearls in the shells which is practiced at Shima on the coast of the Sea of Ise, are worthy of notice.

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2. Japan—Physical and Racial Characteristics. See MENTAL CHARACTERISTICS: also THE DEVELOPMENT AND CONSTITUTION OF SOCIETY.

3. Japan—The Development and Constitution of Society. Except England, there is perhaps no other country so aristocratic as Japan. From the beginning of its history, there have always been some aristocrats in the land. In the first period after the era of Jimmu Tennō, we find distinction of noble and ignoble classes among the people. Those who had clan names and belonged to some clan were noble, and those who had no clan name and belonged to no clan were ignoble. Before the Reform of Taikwa period A. D. 645-6, society was entirely consituated on clanship and family associations.

Among the nobles, two clans, respectively called Omi and Muraji, stood in the highest rank. Omi was a clan name, mostly conferred on the branches of the Imperial line since Jimmu, and Muraji on the clans descended from the branches of the ancestors of Jimmu. Oomi and Omuraji were the names given to the respective chiefs of these noble clans, who were the prime ministers of the Emperor, or Mikado (Tenno in Japanized Chinese language). Below these clans, there were others which performed certain hereditary functions for the Emperor. They were called collectively Tomono-Miyatsuko. Some performed religious function, some military, some judiciary, and

HIS IMPERIAL MAJESTY MUTSUHITO,
The Emperor of Japan.

others, weaving, sewing, cooking, forestry, fishery, etc. In fact for every social function, a clanship was constituted. They all had their own chiefs. Besides these there were also hereditary clans who had the power of the local administration in the country. They were called Kuni-no-Miyatsuko and Agatanushi. At first the local tribal chiefs, who were subjugated by Jimmu and became loyal to him, were appointed to these local functions, and later, the sons of the Emperors were also appointed.

The foreign immigrants who were naturalized and distinguished in learning and art were also given a clan name, and left some hereditary function to their descendants.

The smaller family associations were also to be distinguished within these clanships. They had their particular names and organizations, and headships. The family names were derived sometimes from their occupation, sometimes from the name of the localities where they dwelt, and sometimes from the name of their ancestors. Besides the members proper, there were clients or servants who had no clan name and so were servile to the noble class. They were perhaps the aboriginal tribes who inhabited the country before the coming of the superior race, to whom they became serfs and domestic servants.

The early society in Japan was constituted in this way, and it may be called clannish feudalism. For the clan and family chiefs owned the land and governed the people directly. The Mikado had complete power only in his private domains and in those belonging to his family. He had his jurisdiction only in those cases relating to sacrilege, treason, and the controversies between several clans and families. In such cases, the ordeal of hot water was administered as in mediæval Europe. Otherwise the clan and family chiefs had complete power of life and death over the members belonging to their clans and associations. Hence the clans and families appropriated the land and the people, and had monopoly of offices and hereditary occupations in their respective groups. And by their aggrandisements and encroachments, the feuds among them became in time interminable. So came the Reform of Taikwa era, A.D. 645-6.

This Reform was the first attempt to put an end to clannish feudalism and to introduce the form of centralized government. In many respects, it resembled the Restoration of 1868, only it was based on the ideas and institutions introduced from China. By this Reform, the land and the people were made immediate subjects of the Emperor and the State. Before this time, they were subject in the first place to their clan and family chiefs, without whose mediation the Emperor and the State could do nothing. The Reform put an end to the heredity of public functions in certain clans and families. The clan and family organizations were left as before, but the political offices were opened to all without reference to clan or family. The private ownership of land was abolished. To indemnify the owners, the whole or a part of the taxes paid by a certain number of households was given them. Every male and female above six years old was to be provided with a certain proportion of land. A boy was to receive two tan (4.90 acres) and a girl two-thirds of what a boy received. Not even the servile class was excluded. Those who belonged to the government and were public servants received the same proportion of land as the noble class. But those who were private servants received a third. For this purpose a census was to be taken every sixth year. Moreover, the association of five households living in a neighborhood was organized and put under a headman. A household in those days consisted of several families and several generations, as brothers, uncles and their children lived together with their clients and servants. A household in some cases consisted of more than 100 persons. Women were allowed to become the head of a household. But the distinction between the noble and servile classes was left untouched, although the social intermingling of the two classes was unavoidable. Some poor noblemen sold their clan names, and became servile, while natural children were constantly born to the two classes. So it was ordered by the Reform Act, that among the noble class the children should belong to the father, and among the servile class they should belong to the mother, while natural children of the two should belong to the servile class.

Thus the land and the people were nationalized. The Reform, however, was not complete until the laws of the Emperor Mommu were promulgated, A.D. 702. These laws were called Taiho-ryo. By the Reform of Taikwa, all people, except military functionaries, were prohibited from bearing swords. Even the royal members and State ministers were not exempted from this rule. By Taiho-ryo, the principle of universal military service was introduced, by which every third male was to serve as a soldier. The term of the soldiers in the capital was one year, and that of those in the sea borders three years.

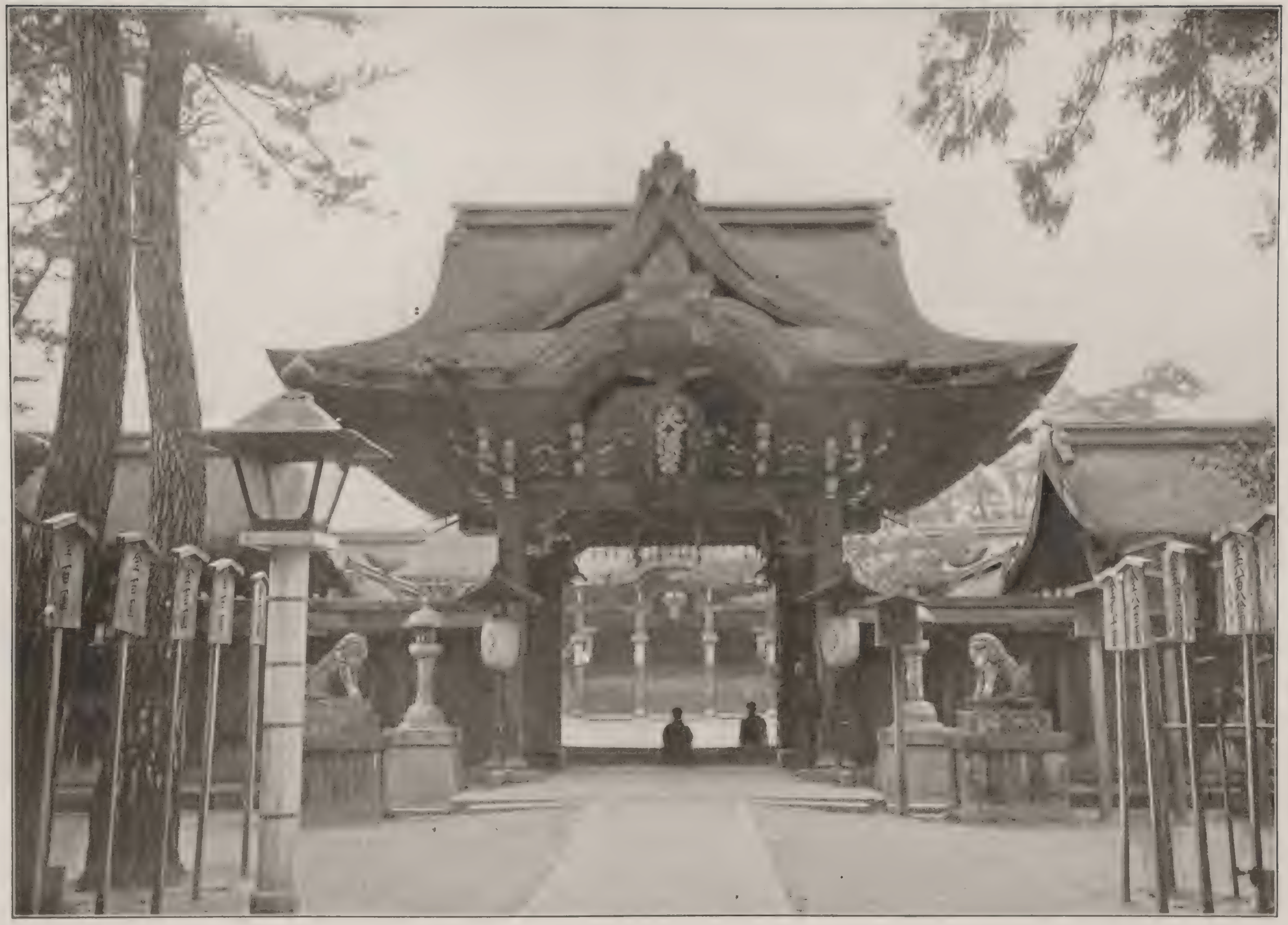
But the above Reform, and regulations based on it, came at a time to be impracticable. For it was the entire reorganization of the central and local administration, as well as of the mode of land-ownership, which the State tried to introduce, while it left the clan and family associations in society as heretofore. The heredity of public functions in certain clans and families was abolished, but the same persons were employed as before in the central and local administration under different names and qualifications. The State was too weak to enforce the intended reforms, while the clanship and family associations were too deeply rooted to be overcome. In time, the Fujiwara family or clan descended from Kamatari, who with the crown prince Naka-no-oye (afterward the Emperor Tenchi) carried through the Reform of Taikwa, got the complete power of government and official functions into their hands. As the salaries of officials in those days, paid by the gifts of cloth and certain amounts of taxes from the land and the people, were not sufficient for ambitious and avaricious men, they appropriated the waste lands, and by cultivation turned them into fertile fields. Thus the private ownership of land and private jurisdiction was soon revived, and increased more and more. Within these private lands called Sho-yen, the central and local governments had no power of administration and the personal and household taxes were free, while the taxes on land were very light. So the increase of these lands subtracted in fact so much from the power of the Emperor and the State, that the Court tried to put an end to this private system of ownership and jurisdiction. But being unable to prohibit it, the Court finally succumbed to it; that is, the Court sanctioned it, and had its own private domain and jurisdiction.

As the central government was too feeble, and the system of universal military service and drill was not carried out, there arose men who made fighting their special occupation. They were afterward called Bushi or Samurai. (See Japan—the Samurai.) In the meantime, the old clanship and family associations were entirely confused, but the new clanship and associations arose in their place. Such was the Fujiwara Clan, and after it came Tachibana, Taira, and Minamoto clans in succession. They were the nobles of the capital, branched out from the Imperial Family, whose descendants and relations were ramified throughout the country. As the government was too weak to protect the life and property of the people, the noble clans attached to themselves the people, and especially the fighting men became their retainers. In the capital (Kyoto) the Fujiwara Clan held the perfect control of government for several centuries. But they were mostly civilians and had need of generals who could fight. Now the two clans of Taira and Minamoto, which title was bestowed by the Emperor, respectively descended from the younger sons of the Emperors Kwammu (A.D. 782-806), and Seiwa (A.D. 859-877), became very powerful as military leaders. They were not able to compete with the Fujiwara Clan in civil administration and at the Court, and so they served as generals and as local governors, where there was much disturbance. They grew up to be two great rival clans in the capital and throughout the country. The fighting men, and in fact, most people who had landed property, became their retainers. Thus the new feudalism, based on land and local associations and attached to the military clans of Taira or Minamoto, was gradually formed in spite of the prohibitions and remonstrances from the central government. Finally, the Emperor, the Fujiwara Clan and their several families were powerless against the two military clans, who had successively fought with each other for the supremacy in the capital and in the country. The Minamoto Clan vanquished the Taira Clan under the leadership of the two brothers, Yoritomo and Yoshitsune. Yoritomo (A.D. 1186-1200) was the founder of military government and organizer of territorial feudalism, which continued down to the Restoration of 1868. Yoritomo was the first Shogun (general in chief) in the special sense of that term. He established military court called Bakufu at Kamakura, which was the second capital and the centre of military government for 146 years (A.D. 1186-1332). Yoritomo, by the sanction of the Emperor, established the military chiefs in every province side by side with the civil governors appointed by the Court. Thus peace and order were preserved, after civil wars had distracted the whole country. The code of honor and allegiance to some military chiefs besides the Emperor, now called Bushido, arose in this period. The virtues of courage, loyalty, magnanimity, simplicity and frugality were inculcated by Yoritomo and his contemporaries. From this period also those who had large private estates and many retainers were called Daimyo (greater barons), and those who had smaller estates, Shomyo (lesser barons).

After the Ashikaga family, a scion of the Minamoto Clan, succeeded in the military government of the country, A.D. 1336, and established Bakufu at Kyoto, the dual system of local administration was done away, and only the military governors appointed by the Shoguns were left in the provinces. The office of these local governors became hereditary functions, the ownership of land and political jurisdiction were now identified, and thus the feudal system was made complete. At first the retainers of military chiefs tilled the soil in the time of peace, and were soldiers only in the time of war. But during the Ashikaga period (A. D. 1338-1573), wars were so constant and general that fighting was the only occupation of the retainers. Thus the military class and the industrial class became entirely distinct, although there was of course constant recruiting from, and mixing with, each other.

Under Tokugawa Iyeyasu, also a scion of the Minamoto Clan and the victor of the famous battle of Sekigahara (A.D. 1600), the most perfect form of feudalism was established and continued down to the present era. Bakufu was established at Yedo, now Tokyo, which very soon became the largest city in Japan. During this Tokugawa period, the Emperor was powerless, more so than during the Kamakura and Ashikaga periods, but was none the less held divine as before. Iyeyasu and his descendants were able to hold the whole country in peace, almost without intermission during the two centuries and a half. The function of the Shogun was hereditary, but it needed the Imperial investiture every time. The whole country was distributed to the military chiefs or nobles, most of whom arose during the civil wars at the end of the Ashikaga dynasty. These territorial nobles had complete power of government within their provinces, and no appeal to the central government was allowed against their decisions in civil and criminal cases. But they were responsible to Bakufu for misgovernment. Their succession and marriage required the sanction of Yedo government. So long as they governed their provinces well, they were allowed to hold their fiefs and to transmit them to their descendants. Bakufu only regulated the military, monetary and postal and foreign affairs.

During the Kamakura and Ashikaga periods one knight and several foot soldiers were perhaps furnished from every unit of feudal tenure. In the latter period the land tax was paid in money in some localities, but Hideyoshi enforced the ancient custom of payment in rice, which was followed by Iyeyasu and continued till 1873. According to the regulation of the Kwanyei period (1624-43), the Tokugawa government demanded from all land producing 1,000 koku of rice (a koku is equal



GATE OF THE GOLDEN TEMPLE, TOKIO.

to 4.9629 bushels) 23 soldiers, 2 spears, 1 bow, 1 musket; from all land producing 10,000 koku of rice, 235 foot soldiers, 10 knights, 10 bows, 20 muskets, 30 spears; from all land producing 100,000 koku of rice, 2,055 foot soldiers, 170 knights, 60 bows, 350 muskets, 150 spears, and so on in the same proportion. During the Genroku period (1688-1703), it is said that the whole country, with the exception of the island Tsushima, produced 25,786,895 koku of rice. Now the Tokugawa government owned, as its immediate feudal tenure, the land which produced 8,000,000 koku of rice. It was more than one-third of the produce of the whole country. The greatest territorial noble had only 1,000,000 koku of rice for his income. So the Yedo government, under the Shoguns and their immediate soldiers, was the most powerful feudatory in the country, and by the aid of the other branches of the Tokugawa family and former retainers now settled as territorial nobles in various provinces, was able to keep the most insubordinate feudal nobles in peace. The territorial nobles who had the income of 10,000 koku of rice and upward were entitled to be called Daimyo. These Diamyo or territorial nobles were obliged to leave as hostages their wives and children at Yedo. They had to attend the Court at Yedo every year at first and later every other year. They had to aid Bakufu in cases of great occasions and expensive public works and had of course to furnish contingents when the general or special levy was ordered. Military levy was also made on the military class who had the income of less than 10,000 koku of rice.

The land of Daimyos who had no sons to succeed them was escheated at first, but later the Daimyos were allowed to name their successors. The military class, including the Daimyos and their retainers, all came under the jurisdiction of Bakufu. Bushi or Samurai were nearly all of them retainers of some Daimyos. They were obliged to bear two swords, one long and one short. They all had family names besides their personal names. They were carefully educated in the art of fighting, and also in the Chinese classics. They were thus taught Bushido, and Confucian ethics. They were the fighting class, but from them all the civil officers were supplied. They were free from taxation, and were exempted from criminal law. The code of honor was their supreme law. In case they committed great wrong, they were permitted to punish themselves by means of Harakiri, or honorable suicide. But if they committed heinous crimes unworthy of Samurai, they were first deprived of their Samurai rank or gentility, and then they were punished as any other criminal belonging to Heimin class (common people).

Besides these retainers, there were free Samurai who had no lord to serve. They were called Ronin (floating men). They were originally retainers of some Daimyos, but they lost or for some reason left their lord, and so became lordless Samurai. They were permitted to have family names, and bear two swords like all the rest of the military class. They were very independent and a source of great trouble to the government. But the principle of Bushido was sometimes best exemplified by these men, as is well known by the story of the forty-seven Ronins.

The physicians, priests and scholars did not belong to any feudal classification. They did not belong to Samurai. So they were legally Heimin (common people), but they were not so treated. They were honored and respected. The physicians and scholars were entitled to have family names and bear swords (physicians only one). They at first shaved their heads just as the Buddhist priests do even now. This was for the reason that during the Ashikaga period the civil wars were so general and learning declined so much that the priests alone were the learned class as in the dark ages of mediæval Europe. During the regency of Shogun Tsunayoshi, A.D. 1681-1709, scholars ceased to shave their heads, but the physicians commonly did shave their heads till the present era.

The Buddhist priests were the great instrument in the spiritual and material civilization of Japan. As militarism prevailed in the country, they alone had the key of knowledge and education. Some of them were teachers and counselors to the Emperors, Shoguns, and local magnates. They were universally recognized as such by the common people. During the Tokugawa period, the special class of scholars arose, and the government undertook the education of the military class. But the education of the common people was left still to priests and private persons. Hence all private schools devoted to the education of the common people were called Terakoya or church-schools. To send children to the church meant to send them to school. As scholars arose the privilege of educating the children was not monopolized by the priests as in the previous periods, but their influence was enhanced in another direction. Since Christianity, that is (Roman Catholicism), was entirely prohibited (A.D. 1636), every Japanese was obliged to belong to some Buddhistic church. Thus the priests had the power of census in their hands. All births, deaths and marriages were registered by the priests, and their certificates were necessary. Every Buddhist church had its constituents among the people, who supported the priests and the temples belonging to them. The priestly functions were open to all classes, if they wished to enter them. In the age of militarism and hereditary nobility, priesthoods alone were free to all. Those, therefore, who were tired of worldly ambition, fond of learning, and were offended at the feudal caste-system, entered the priesthood.

The art of healing was highly respected in Japan and physicians were employed as court doctors both in the central and local governments. In fact it was the art of healing which saved Japan from oriental stagnation and decay. It was in the year 1771 A.D. that a few able physicians in Yedo began the study of the Dutch language and medicine, which finally opened the eyes of the intellectual class to western science and civilization. «Be a prime minister or become a physician, for they are both benevolent arts,» was a common saying in China, and it continues to be so in Japan until this day, though the maxim itself was forgotten long ago in China.

Heimin or the common people consisted of two classes. Those who lived in villages were called Hiyakusho. They were peasants. Those who lived in the towns were called Chonin. They were merchants, traders, and artisans. They were not allowed to have family names or bear swords. Merchants and traders had their shop-name, and used it before their personal names. Otherwise they named their particular trade. So did also peasants. They called themselves Hiyakusho so and so. But by exceptional merit, they were sometimes entitled to have family names and bear swords, which was considered a great honor. At first the Heimin were allowed to bear swords, but as it proved dangerous long swords were prohibited to them, A.D. 1644, and finally all swords were prohibited, A.D. 1668.

The town people, or Chonin, were put under the jurisdiction of a machi-bugyo or governor, but they were largely left to their own self-government. The Elders, called Machi-Toshiyori, were selected and appointed from them (there were three in Yedo). Below them, there were Nanushi, or headmen, for one or more streets (268 in Yedo). Under these there were Jinushi or land-proprietors, and Yanushi or house-owners, who performed various important functions for their wards. There were also Goningumi (five-men-association), consisting of five neighboring households organized for mutual help.

It was the same with regard to the administration of the villages. In each village there was a headman called sometimes Nanushi, but usually Shoya. He was elected by the peasants themselves from one of the most honorable families among them. His term of office was sometimes for life and sometimes for a number of years. There were also the Goningumi and its headman; deputies of peasants who participated in the administration of the villages, and sometimes there were Ojoya or great headmen who were superintendents over the headmen or shoyas of several villages, sometimes 10, 20 or more villages.

Below the Heimin class, there were outcasts and beggars, respectively called Yeta and Hinin. The Yeta class were butchers, and they were specially despised, as Buddhism taught men not to kill animals. These people were allowed to live only in certain districts and quarters, and there were some villages called Yeta-mura, where the Yeta class only dwelt.

In Yedo, these classes were put under the jurisdiction of special men, selected from their number, to govern them. In case a Heimin became a beggar, he could retrieve his position by industry. But if he married a beggar woman and begot children, he could return to his former class, but she and her children could not rise with him into the Heimin class.

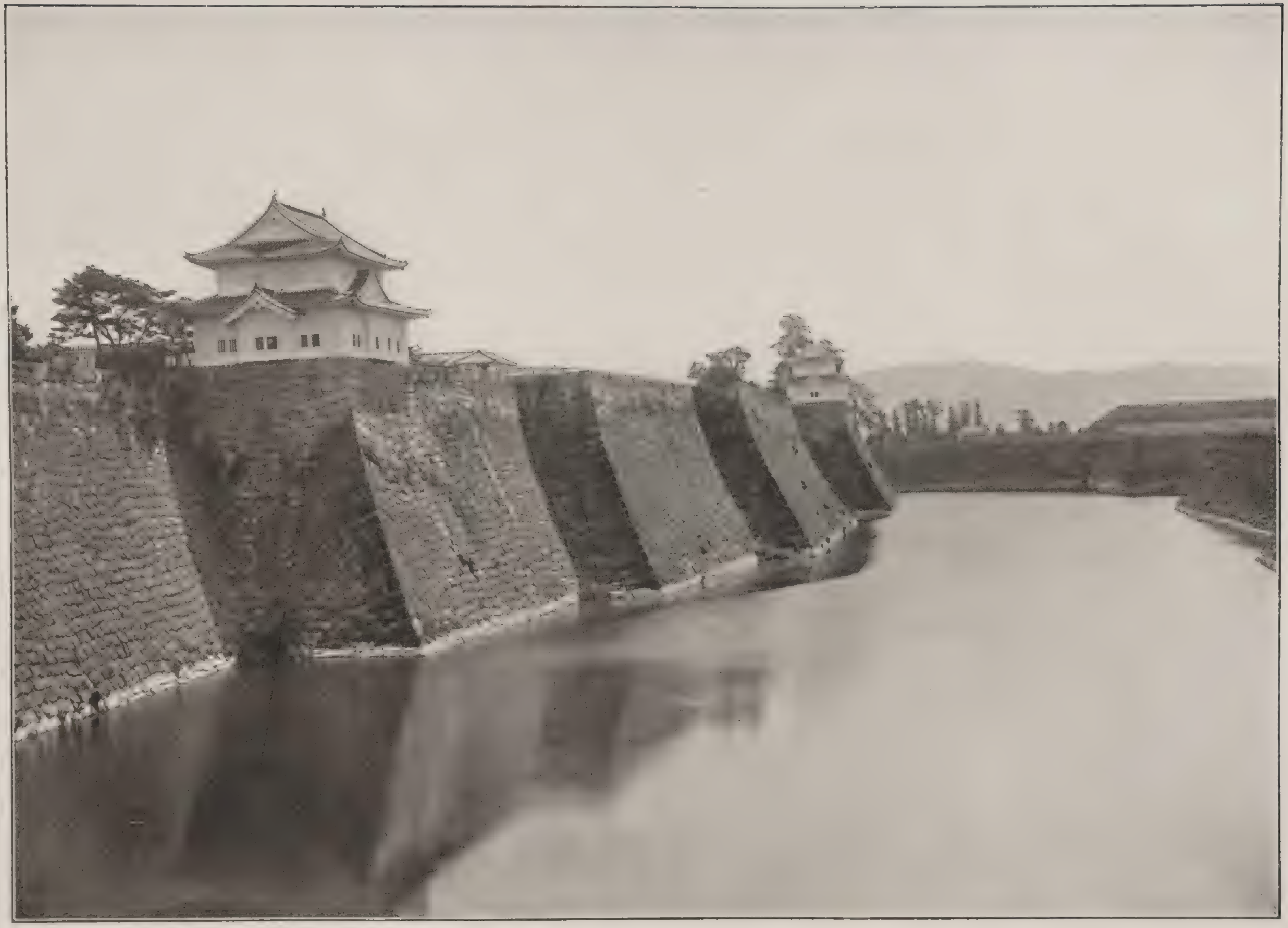
Three years after the Restoration (1871), all classes were allowed to intermarry with each other. And in the same year, the names Yeta and Hinin were abolished, and the outcasts and beggars were also incorporated within the Heimin or common people.

A kind of slavery existed from a very early period. That is, poor people sold themselves to the rich and noble. During the Kamakura period, there came to be a special sort of tradesmen called Hito-akibito, engaged in buying and selling servants. The government prohibited this kind of trade, but could not stop it. In the Ashikaga period, they kidnapped young boys and girls and sold them. This continued down to the Tokugawa period, when it was made a capital offence. The government at one time even tried to limit the term of engagements of the servants to 10 years. In fact, in 1872 long engagements were prohibited as slavish, and restricted to one year.

The morality of sexes has always been the weakest part of oriental ethics in general. It was so in Japan. Divorce was easy, and concubines and mistresses were permitted to the noble and the wealthy. But in spite of all irregularities and licentious practices in fact, monogamy has always been a legal marriage. That is, bigamy or polygamy in a literal sense was not recognized by the law. Only one woman was a man's proper wife. So there has been only one queen, properly so called. That was a rule, though there were some exceptions in some corrupt periods of Japanese history. In primitive Japan, a marriage was allowed between brothers and sisters of different mothers. It was a universal custom that a woman should not go over to her husband's house after her marriage. She staid at her own home, which the husband frequented as a visitor. On the marriage day, a bridegroom went to the bride's house, where there was a feast prepared. Even to this day, in the marriage ceremony a nuptial cup is first given to the bride, and after she drinks, it is given to the bridegroom. It means that she is the host and the bridegroom is the guest. It continued to be a custom for a long period of time, that the wife should remain at her parental home for several months or even several years after her marriage before she was taken over to her husband's house.

After the Kamakura period, it came to be a custom that the wife should be taken to her husband's home immediately after the day of marriage, which took place at her house, Later, the bride was taken to the bridegroom's home from the first, and the marriage ceremony itself was performed at his house. However, even during the Tokugawa period and in fact till to-day, a woman always keeps her own family name, which is used as her honorary title and shows her good breeding.

During the Kamakura period, a wife was able to have her dowry as her own property, which was not allowed to be mixed up with that of her husband. Even when her husband's property was confiscated, her property was not touched, except in case of heinous crimes such as treason, murder, and robbery. If she was divorced and a child was born after her divorce, a boy went to the father and a daughter to the mother, but until 10 years old, the boy was allowed to remain with his mother. It was the original custom in Japan that property should be divided among all children and even to the relatives. It was so in the Kamakura period. In case the owner did not execute his will before his death, the government did it according to its discretion. If there was no child or relative left to succeed



OSAKA CASTLE.

to his property, it was given over to the temples and the churches.

During the same period, land was sold freely, but the military class was prohibited to sell the beneficiary land given by the government as a reward. Later even hereditary land was not allowed to be sold to the lower class. During the Ashikaga period, primogeniture in the male line became more and more the rule for the succession of estates. And it was made the strict law during the Tokugawa dynasty. Division of estates was not permitted, and the eldest son inherited the whole property of his father, while it was made his obligation to support all his brothers and sisters. As the younger sons could not inherit any property from their father, they had to be adopted by a childless Samurai before they were permitted to marry, and unless they were very distinguished in talent and ability, they were not allowed to start a new family.

The Tokugawa government prohibited a peasant to change his occupation and to become a tradesman. He was not permitted to sell his soil, and divide it among his children in case it was not more than one cho (2.45 acres) in extent. In fact, all sale of land for perpetuity was not allowed except in the cities of Yedo, Kyoto, and Osaka. Even its transference was restricted by law, in order to prevent the accumulation of estates in the hands of a few large proprietors. Throughout the whole history of Japan, the legal principle relating to land was that the proprietary right belonged only to the State. In the year of the Restoration, 1868, the land belonging to the villages was turned over to the peasants, and the sale of land for perpetuity was legally allowed in 1872.

From very early times there was a ceremony called Gembuku, observed when children grew up to be mature. It was so called because the dress of an adult was to be worn from that time. It was called Ui kamuri (new cap), because a man's cap was given for the first time. The age was not fixed by law, but usually at 15 or 16. In the case of Emperors and rulers, the ceremony was performed even in childhood. It was performed sometimes at night and sometimes in day time, and it was considered a matter of great importance, especially by the military class. A master was needed for its performance. He was either a chief-man of the clan or family, or the suzerain to whom he owed his allegiance. He was called Eboshi oya or sponsor (Kamuri is a general term for cap, and Eboshi is a special term for a kind of cap formerly worn by the Japanese nobles). During the Tokugawa dynasty, a cap was omitted except in the case of court and territorial nobles. The retainers only changed the manner of hair dressing at this ceremony. Now this custom is obsolete.

Society in Japan as it has historically developed and as it now stands, is legally distinguished into four classes: (1) Kwozoku, or the Imperial family; (2) Kwazoku, or the Nobility; (3) Shizoku, or the old Samurai or Bushi; (4) Heimin, or the Common People.

1. Kwozoku.—The Imperial Family in Japan is the oldest existing royal family in the world. The Mikado or Emperor is the earliest institution, and stands at the basis of all other institutions in the country. The present Emperor is the 122d of the Imperial line. No King or Emperor or President has such unanimous reverence and love of his subjects. The people are very proud of the fact that the reigning Imperial family has descended from time immemorial in an unbroken line of succession to the present. Indeed, the Imperial family is now the emblem and embodiment of national immortality. It signifies the fact that Japan has never been conquered by the outside nations. It means that the Imperial house and the people are one and inseparable elements of the State. It signifies also that in spite of great social and political revolutions which the people have undergone in the past, there is something steady and consistent in the national character. Since the 8th century A.D. the Imperial family have reigned but have not governed. The noble families one after another took possession of the governmental power. Still they all governed in the name of the Emperor, or some member of the Imperial family. Throughout the whole history of Japan, the Emperor has been the fountain of honor and the bestower of the official degree of rank and title on all functionaries, including the Shoguns and the Daimyos. Before the present Constitution was promulgated (1889), the female succession to the throne was constitutional, and Japan has had six Empresses among the sovereigns of the past. Hereafter the throne shall be succeeded to only by male descendants in the male line.

2. Kwazoku.—This is the title of the nobility in Japan, legally adopted in 1869 when the old appellations of court and territorial nobles were abolished. However, the existing orders of nobility were created only in 1884, and the nobles were classified into five orders of Princes, Marquises, Counts, Viscounts, and Barons. Among them are three classes distinguishable. First comes the old court nobility called Kugĕ. They are the oldest families of all the nobles, some of them being more than 1,000 years in existence. Before the Restoration, they were all very poor and abject in condition. On account of the feudal system which prevailed they had no work but to attend the Emperor and discuss the matter of bestowing honorary degrees of rank and title. Next come the old Daimyos or territorial nobles, who were the former local hereditary rulers. Some families among them are seven or eight hundred years, and some about three hundred years old. They voluntarily gave up their lands and people to the Emperor in 1869, when they were made the local governors instead of Daimyos. But the system of local autonomy was entirely abolished in 1871, when they were forever removed from their provinces and removed to Tokyo. Last but not least are the new nobles created since 1884. Prominent among them are the statesmen and generals who broke up the Shogunate and the feudal system, established Parliament and the Constitutional government and brought to the successful issue the wars with China and Russia.

3. Shizoku.—This is the title legalized also in 1869, to be applied to the retainers of the

Daimyos. At first the lowest class of retainers were called Sotsu, but this distinction was abolished in 1872. They had been a privileged class, with hereditary pensions. The leaders among them were the chief movers in the abolition of the Shogunate and the Restoration of the Emperor to power. With the downfall of feudalism and the decree of universal military service issued in 1873, they lost their hereditary military function, and in the same year another degree was promulgated, announcing that the government was ready to commute the pensions of the Shizoku at the rate of six years' purchase for hereditary pensions and four years for life pensions—one-half of the commutation to be paid in cash, and one-half in bonds bearing interest at the rate of 8 per cent. Many of them voluntarily gave up their pensions for this meagre commutation, determined to earn their living hereafter by industry and trade. But there were also many who could not adapt themselves to this new condition, and so they were for some years the constant source of local disturbances and insurrections against the new government. But the vast majority of them entered the civil and military service in the new government, and also engaged in the work of education. The universal military service and universal common education, based on the western system, led by these men as captains and teachers, was wonderfully successful, as is shown by recent results.

4. *Heimin.*—To this class belong mostly the common people engaged in trades and commerce, field tillage and all kinds of manual labor. The distinctions between the Shizoku and the Heimin are only nominal and fast disappearing, for many of the former Samurai are now engaged in tilling the soil and in every kind of industry and trade, while those belonging to the former Hiyakusho and Chonin are legally equal to Shizoku in all respects. Universal military service and universal education are making them all equal or nearly equal in spirit and character. The Heimin fought as common soldiers against the Samurai class when they rose against the new government; they finally put down the Satsuma Rebellion in 1876, and in the wars with China and Russia, their courage, valor and devotion were signally displayed.

Even before the Restoration, the Heimin class had imbibed the chivalric elements of the military class in their theatres and Yose (houses where public entertainments were given), and now that education is made universal and the constitution has secured to them equal rights and privileges, it is no wonder that they are fast rising into power.

According to recent statistics (1903), the population was divided among the various classes as follows: Imperial family, 66; Kwazoku, 5,055; Shizoku, 2,168,058; Heimin, 44,558,287. It stood as follows in 1872: Kwazoku, 2,666; Shizoku, 1,282,167; Heimin, 31,825,963. The nobility was strengthened by the creation of new members. The Shizoku, notwithstanding their disorganization and poverty, were able to increase greatly in population, and their assimilation with the common class has been the most powerful means in raising the spirit and character of the whole nation.

Though the division into noble and servile classes has always existed in Japan, it was not a caste system in fact. Though a legal marriage between them did not take place as a rule, concubinage constantly infused democratic blood into the families of the higher class. When a wife was childless the sons of concubines became heirs, and the noble women were not so fertile as women of the lower class, the blood of aristocracy in Japan has become very democratic notwithstanding high pedigrees and pretensions. Moreover, as local and general wars were so frequent until the beginning of the 17th century, the ruined aristocratic families and their retainers were constantly forced into the lower class, so that there was a perpetual influx of aristocratic blood into the veins of the common people. This explains why, under certain circumstances, the Japanese aristocrats are very progressive and even democratic, and why the common people themselves are so aristocratic and love aristocracy as the natural form of social institutions.

Two things distinguish society in Japan from that of Europe and America. In the first place, family, and not the individual, is still the living social unit. Ancestor worship is still a living religion in every family. The freedom of faith is recognized by the constitution and there is no particular ecclesiastical organization sanctioned and favored by the State. So the people are Buddhists, Shintoists, Confucianists, and Christians, according to their individual tastes. But it may be said that ancestor worship is still common to all classes. In each family there is a legally recognized head, who has the reins of domestic government. Moreover, a council held by relatives is authorized and recognized by the law. The continuity of the family name and its succession is regarded as so important, that the adoption of sons and daughters is still practiced by those who have no children.

In the second place, the State is all in all in Japan. The idea of the State is exactly that of the ancient Greeks and Romans. The State is a whole and the individual a part. The State has existed so long and developed so strong that no one thinks of rights not bestowed and recognized by the State. In Europe, the Church existed before the State, and the strong and mighty influence it has still is known to all. In Japan, there is no conflict between the State and the Church. The State existed before the introduction of Confucianism, Buddhism, and Christianity, so that there has never been and can never be any religious association claiming rights above the State, as in mediæval Europe. So the State and the Church are completely separate. The State holds in its hand the entire control of education, marriage, and the civil status of every individual. Japan is wholly free from religious embarrassments in these respects. After half a

FUJIYAMA, FROM TOKAIDO ROAD.

century of great political and social transformations, all classes are in unison and equally progressive and conservative. There are some radicalists in politics and thought, but no anarchist. There are many conservatives, but no reactionary. The organizations and strikes of laborers have already begun, together with the introduction of the modern factory system and its defects. But the socialists as a party have as yet no existence in Japan. Herein lies the strength and weakness of Japanese society. Though strong and united as no other nation is, individually and socially speaking, Japan is still a youth and mediocre.

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4. Japan—Mental Characteristics of the Japanese. There are few subjects where anything approaching scientific exactness is more difficult, or even impossible, than those which fall under the general title of «Race Psychology,» The very facts which might serve as the basis for an acceptable and trustworthy conclusion are exceedingly abstruse and complex; they are indeed of such a character as to require for their detection and appreciation a trained and experienced observer. But supposing the facts to be admitted, there are then no well established principles under the guidance of which the facts may receive a satisfactory theoretical treatment. For there is no universal agreement as to the existence of definite race temperaments; while, with those observers who accept the theory of specific mental characteristics for different tribes and nations, the practical application of their theory to particular cases is not accustomed to produce very satisfactory results. Nevertheless, we are believers in the existence and predominating influence of temperament considered as manifesting itself in large collections of individuals who share the same admixture of blood, through long periods of time; we believe also that, while temperament is profoundly modified by changes in climate, in food and other economic conditions, and in the extent and forms of the prevailing social intercourse, it continues to manifest itself in many subtle and complicated but powerfully influential ways. In applying this belief to any particular people, however, one or two important considerations can never be safely lost out of mind. The first and most important of these is the spiritual unity of all the different races in one human race. This fact of an essential spiritual unity, as enunciated and illustrated by anthropologists like Waitz and others, may be accepted as a fundamental factor in the solution of all the psychological problems belonging to this class. As far back as we can go in history, and as far afield from the centres of race-culture to the extreme borders of barbarism and savagism, human nature appears to be essentially the same. Even that mythical being called «primitive man» is not exempt from this conclusion. And so long as we remain upon sound empirical grounds it must be admitted that a far wider gap exists between the lowest of the human species and the highest of the lower animals, than between the lowest and the highest of the *genus homo,* or the highest of this genus and its own most successful efforts to picture the nature of the angelic and the divine. Man's God is more like man than man is like the man-like ape. This consideration must, however, be modified by the following admissions. In every large group of human beings which have for a long time had essentially the same common ancestry, there is developed a peculiar mixture of mental, as well as physical characteristics, which constitutes for the average individual what may properly be called a race temperament. But, still further, in every such large collection of individuals, while a certain average quality may be detected as belonging to the great majority, many important differences must be observed. Thus all the different temperaments appear, in a more or less distinctly marked form, even among those peoples which are as a whole most definitely characterized by a so-called race temperament. And, finally, as the physical and social environment of any people, however exclusively its temperamental mixture may have remained, undergoes either slow or more rapid but important changes, the mental characteristics of the race seem to become altered or obscured. We believe, however, that they really remain a most powerful factor in determining the nation's development and destiny.

In attempting, then, to describe the mental characteristics of the Japanese it is assumed that they are in all essential respects *like ourselves*—whether by «ourselves» be meant Americans, English, German, French, or, as well, the more important races of both the Near and the Far East. Simple and even vague and inconclusive as the proposition may seem to be, the essential humanity of the race is the most indispensable consideration to be borne in mind by the observer, whether from the practical or the more strictly scientific point of view. This consideration, however, serves rather to emphasize the further truth, that a certain characteristic mixture of mental and moral qualities may be observed, which is quite worthy to be called the «Japanese temperament.» Here human nature has attained a highly specialized type. In a word, there is probably no other one of the foremost and equally populous nations of the world whose mental characteristics, as developed on a basis of race temperament, are more strongly marked. And the reasons for this are not difficult to discover.

So far as the obscure problem of the race origins of the Japanese can be solved by modern ethnographic authority, the most probable conclusion may be stated in the following way. The Japanese originated as a mixture of Tartar or Mongolian (in the larger and somewhat looser, but not altogether inappropriate use of the latter term) and Malay immigrants with the Ainus and traces of other indigenous elements. It is a not improbable conjecture that the varied and conflicting character of the elements which thus became combined accounts for some of the more puzzling features of that national temperament which has resulted from this mixture of races. Interesting differences characterize the Mongolian and Malay peoples; and both of these differ in important ways from what we know of the Ainus and other less known tribes indigenous to Japan. As supremely important moulding influences to determine the mental characteristics of the Japanese of to-day, two historical facts demand our attention. However different, or even conflicting, the original elements may have been, they were welded into a common typical form by a long period of comparative isolation and exclusion of other admixture with foreign elements. Thus, out of these very different and conflicting elements a basic temperament was formed which itself is strongly marked, is indeed rather unique. Through generations, and even through centuries (for the educational and artistic influences from China and Korea did not modify the result in an important way, so far as this temperament was concerned), the process of specializing by combining and recombining the same elements went on without interruption from outside sources. The second historical fact is recent. After centuries of physical and social isolation, such as is favorable to the production of a specific type, there has followed a half-century of rapid changes due to altered relations toward foreign influences. These recent changes have, however, as yet resulted in very little admixture of foreign blood. They have had, therefore, no important effect upon the temperament, or the hereditary mental characteristics of the Japanese as a people. But they have, of course, produced important alterations in the physical and social manifestations of these characteristics. On the one hand, they have had the effect to excite and to confuse, for the time being, the minds, the morals, the ancestral ideas and customs, of the people; and to make upon the superficial observer a variety of bewildering and contradictory impressions which is extremely unfavorable to a clear and trustworthy understanding of the most fundamental facts and the most effective influences. On the other hand, this period of rapid change is defining, deepening, and developing the Japanese temperament, and of course also, the essential mental and moral characteristics which rest upon it as on their base. Inasmuch as a large measure of adaptability to a variety of new impressions is especially characteristic of this type of temperament itself, it is reasonable to expect that the Japanese will in time adjust themselves to these recent changes without a total loss of or even an essential change in their national character.

When we come to inquire, therefore, as to what term shall be employed to designate the temperament of the Japanese, the answer may be given with a rather unusual degree of confidence by one who knows them intimately. For the ethnographic conditions and the historical influences have combined to give the nation a distinct quality. This temperament is predominatingly sentimental, although with considerable infusion of the choleric. The sentimental temperament is characterized by great sensitiveness to all kinds of impressions, especially those of a sensuous and æsthetical order; by varied, strong, and oftentimes sudden and even conflicting and tumultuous reactions; by an eager but somewhat naïve intellectual curiosity and a versatile gift of adaptibility; by a lively, picturesque, and concrete, but usually not profound or scientifically controlled imagination; by warm, responsive, but rather unstable emotions; by a splendid power to attain, under trying emergencies, the heights of moral and religious devotion and achievement, and yet a tendency to carry to extremes certain particulars, and thus to miss somewhat of the controlling principle of an ethical harmony; and a disposition to deal with moral and religious truths as though they are matters worthy of only a passing curious inquiry rather than concerned with the profounder insights and most important activities of human life.

If now we adopt this description as in the main characterizing that racial temperament which underlies and shapes the mind and life of the Japanese people at large, we must at once remind ourselves of certain important modifying considerations. As among every gifted and highly developed people, so in Japan, there are many examples of other temperaments or temperamental mixtures. And indeed, no so-called «race temperament» can remain *pure.* That intense and persistent energy, combined with intellectual sagacity and the power to organize and to achieve practical results by following up one's purposes with a consistent and unswerving determination, which is characteristic of the choleric temperament, has been well marked in the case of many of the great men of Japan. And, indeed, it has modified without essentially altering the sentimental temperament characteristic of the body of the people. This fact, however, enables us only the better to understand both the strength and the weaknesses of the mental constitution of the Japanese. When instructed and disciplined, as it was under the old régime among the Samurai, it produced many splendid examples of a noteworthy and admirable but one-sided chivalry. It has given birth to much art which is exquisite in its appreciation of natural beauty and of the more tender, as well as heroic, interests and relations of human life. It produced a system of nicely adjusted customs and manners, where appropriateness and a subtly adapted symbolism ruled over the conduct of classes, and gave an air of good breeding to all. And nowhere else, in the world's history, have there been more notable examples of supreme, self-sacrificing devotion to persons and to a chosen cause.

On the other hand, it must be admitted that a certain instability, or lack of steadiness, often amounting to fickleness, and a tendency to reverse movement, to change opinions, parties and sides, even to entertain contradictory plans and purposes, characterize the sentimental temperament. In this way must we account for the extremely puzzling nature, to the man of a different race temperament and of Occidental culture, of many of the mental characteristics and of much of the conduct of the Japanese people as a whole. In the same way may we explain—at least in part—the diverse judgment and warm liking or dislike which are apt to be evoked in the case of different persons who have had an equally good and long-continued opportunity for forming an intimate acquaintance with the subject. It is peculiarly difficult to know the Japanese at all thoroughly, and to maintain toward them an attitude of indifference. And it is highly significant of the real truth that those who know them best, through association in what may be denominated the most honorable and distinctly personal ways, with certain rather rare exceptions, like them best. While so subtle, complicated, and subject to varied impressions and to sudden, strong, and even contradictory reactions, is their type of character, that it remains not well understood, if not wholly misunderstood, by the great majority of observers. With this confessedly vague and imperfect, but—as we believe—suggestive and determinative characterization of the race temperament of the Japanese, we now proceed to a further analysis of their prominent mental and moral characteristics.

With regard to the fundamental appetites and passions of human nature, no well-defined difference appears between the Japanese and the inhabitants of the different highly civilized parts of Europe and America. Centuries of an almost complete disuse of animal food, combined with the climatic influences of those regions of Japan that are the most populous, may have had some important effect in bringing about an absence of the manifestation of physical vigor, and of that energetic and direct way of going about the business in hand which characterizes the Anglo-Saxon and Teutonic races. The philosophy of life which was introduced by Buddhism, and which has, together with Confucian ethics, influenced the upper classes and filtered down through the lower orders of the people, has also been of great importance. In such matters, in Japan as everywhere else, economic considerations are also very powerful. Whatever the causes may have been, the Japanese have never been, and are not now, so much given to gluttony and to intemperance as the people of Northern Europe.

In the past, and even down to the present time, the sexual relations of the Japanese have been characterized by a certain greater degree of looseness and lack of moral and social restraint than has been the case among the people of Europe and of North America. This has not been due, however, to any excess of sexual appetite or to deficiency in moral feeling or lack of a moral code. It has chiefly been due to the social constitution of the people, and to the fact that the prevailing ethical and religious opinions and principles did not emphasize the sexual relation as being, primarily considered, a matter of ethical concernment. We have, therefore, on the one hand a certain naïve openness of speech and of conduct in these matters, such as astonishes and shocks the reader of the Kojiki and of much of the older and more modern literature, as well as the observer of customs which have prevailed well down into the modern era. Such are phallic worship in religion, concubinage, licensed prostitution, promiscuous bathing and free exposure of the person, as well as a relatively low estimate put upon the value of sexual purity as a personal virtue, when considered apart from the sentiment of loyalty. On the other hand, there is in Japan a relative absence of the more coarse and brutal forms of sensuality; and on the part of woman a traditional willingness for self-sacrifice which it is difficult even to explain, and much less to justify, to the Occidental mind, but which frequently springs from the very noblest sentiments of devotion and loyalty. The changes for the better, both in opinion and in practice, which are taking place in the country, make it perfectly clear that inferiority, whether from the point of view of intellect or morality cannot be charged against the Japanese in this regard. Indeed, the traditional absence of hypocrisy with respect to the *morale* of sexual relations is to their credit rather than otherwise. It is also worthy of mention, and even of no small significance, that the more serious moral and religious didactic literature of the Japanese, as represented in dramatic form by the «No,» is almost absolutely free from any impure suggestions.

As to the other emotions and sentiments, the life of feeling among the Japanese corresponds in general to the type already described. Anger, jealousy, envy, grief, sympathy, and the domestic and friendly emotions, are quick to kindle, and tend to run to excess or to change to their opposites when they have either become themselves exhausted or have seized upon any observed or imagined reason for change. But the artistic feeling which produces a fine sense of propriety and a regard for personal dignity, reinforced by that carefully defined and legally guarded system of rules of behavior (especially under the Tokugawa dynasty), to which reference has already been made, serve to modify and repress the manifestation of these feelings. Even smiles and laughter come often to be the mask of grief and sadness rather than the expression of happiness and rejoicing. Hate and love, jealousy and sympathy, strong dislike and strong liking, hide behind an unmoved or courteous demeanor, and finally break forth to the surprise of the foreigner who is self-deceived, rather than deliberately deceived by others, through a lack either of insight or of sympathy. Thus the subtle, complicated, and indirect, rather than the open, simple, and frank character of the mental life becomes still further emphasized in the conduct of the Japanese. Here again, however, under the prevailing sense of honor and the ruling principle of loyalty, as the one belongs both to the temperament and to the historical development of the people, and as the other is the gift of the Confucian ethics emphasized and deepened by the same historical development, the very highest examples of a knightly and trustworthy manhood have been commendably frequent in Japan. [The sentiment of beauty, as a specialized form of feeling, is so characteristic a feature of the people, both in any attempt to discover the temperament of the race and also in the estimate of their present conditions, social and artistic, that it deserves recognition in another connection.]

More particular examination of the intellectual traits of the Japanese calls for something like the following analysis. These traits are such, however, as on the whole go with, or rather are an integral part of the sentimental temperament in its higher and finer forms of culture. And, first, we may note an exceedingly vivid, enterprising, and, so to say, hopeful intellectual interest and a widely varied intellectual curiosity. The average Japanese has an inquiring mind. This often manifests itself as a naïve and almost childish desire to know how natural objects are constituted and how manufactured articles are made. It is back of the quiet, open-eyed wonder with which the children stare at the manners and dress of the foreigner (marked by an almost complete absence of any tendency to rudeness or violence); and it shows itself in that semi-religious feeling of mystery with which the displays of freakishness, as well as of power, by nature are regarded. What has been called the «hopeful» character of this varied intellectual interest leads to the ready confidence that whatever any one else has made may as well, or even better, be made by the Japanese; and it is perhaps also influential in producing the so frequent conviction that even the fundamental mysteries of existence and of human life are not beyond the possibility of a new and much improved solution by some adventuresome young Japanese philosopher who may add the training of modern science to his own extraordinary native ability.

This native curiosity is undoubtedly at once nourished by, and also productive of an unusual versatility of intellectual operations and achievements. The Japanese mind is decidedly gifted in adapting itself to changed conditions, and adapting means to ends. This is the truth which underlies the charge so often made in recent times, that the Japanese are «merely imitative» and not «original» or independently inventive. It is scarcely necessary to remark in this connection that the claim to be *original,* in any very strict meaning of that word, cannot be fairly made by any individual or any nation. And, on the other hand, no people have produced a type of race-culture more strongly marked by distinct characteristics, or signalized by individual members of stronger character, than have the Japanese. It is the versatility and adaptability of the intellect of the race, rather than the merely imitative quality of their achievement, which is noteworthy. The notion, therefore, that Japan owes its recent, remarkably rapid progress entirely to its opportunity to borrow what other people had worked out for themselves in an original way, is quite indefensible in the face of historic truth. The whole history of Japan has been marked essentially by the same characteristics. Through all this history, foreign languages and literatures, manufactures and arts, arms and ships and modes of warfare, have been adopted, adapted and improved upon to meet the peculiar requirements and necessities of the national development.

These qualities of intellect result in rather unusual gifts of making a «synthetic seizure,» or picturesque mental presentation of the concrete object, or of some form of statement in which the general principle is embodied or applied. Such is apt to be the character of the work done by the form of imagination that suits best the other characteristics of the sentimental temperament. The Japanese language, which must, of course, be taken as the most immediate and trustworthy expression of the mental characteristics of the people who use the language, has remained, almost down to the present time, in the synthetic stage. It has an enormous variety of verbs, and verbal expressions, for the various modifications of those fundamental forms of activity such as are expressed in English by the words, «to put,» «to go,» «to do,» etc., when followed by different prepositions (a form of speech of which the Japanese language makes comparatively little use, since it has relatively few post-positions). The general form of action has never been analyzed out of its varied forms of application; but each one of these forms has been seized by the mind as a totality and apprehended in this its natural synthesis, so to say. Hence, on the other hand, there is a wonderful power of suggestiveness in single words or phrases; as, for example, when all the longing, love, and sweet sadness of parting from friends is compressed into the word *nagori-oshu,* or when one returns thanks for an invitation to dinner of the day before, by simply saying *sakujitsu* («yesterday»). This concrete and picturesque character of the working of the imagination is both illustrated and intensified by the use of honorifics and of the many periphrases which the recognition of class distinctions and of specialized forms of personal relation has tended both to produce and to enforce. Thus the impression of subtlety, complexity, and indirectness of mental characteristics is renewed and magnified.

It cannot be denied that the excellencies of the intellectual activities which characterize the Japanese have their correlated deficiencies. And these deficiencies are, in the main, just those which customarily belong to the sentimental temperament. Patient, prolonged, and carefully guarded observation of fact, with the judgment held in suspense until it can be tested by a sufficient accumulation of cases or by the well known methods of scientific induction based upon experiment, is neither natural nor easy for this temperament. Truths are discovered or proved, not so much by any strict adherence to logical processes as by a kind of mental seizure which depends upon the working of a lively and picturesque imagination suggesting to the curious intellect an answer to its problem. It is not likely, therefore—as it seems to us—that any similar proportion of minds great in the abstract sciences, or in those branches of learning where broad generalizations are made to repose securely upon foundations of inductive and deductive reasoning, will develop in the near future among the Japanese, as compared with the Germans, the English, the French, or the scholars of the United States. The higher forms of mathematics, logic, physics, chemistry, and even the psychological sciences will probably not receive an accession to their accumulated store of clearly ascertained and defensible principles, corresponding to the amount expended upon education by the New Japan. Still, inasmuch as intellectual curiosity and lively imagination count for much even in these sciences, the laudable ambition and exceptional talents of a few may in time make up for the deficiencies of the many in this regard. And it must not be forgotten that only the few in any race, or under any circumstances, educational and social, are gifted and successful in these higher regions of science. While in the prosecution of those forms of the natural and psychological sciences which depend chiefly upon an eye that is quick to perceive distinctions, and a mind sympathetic and ready as well as acquisitive in the collection of facts, the temperament of the Japanese is likely to be most productive of results to the benefit not only of Japan but of the whole world of science.

The development of philosophy in Japan is characterized by the same temperamental features. It has hitherto taken two principal directions and has been either practical—a philosophy of conduct—or speculative as a semi-religious and intuitively mystical theory of reality and of human life. The practical philosophy of Japan has derived its inspiration and its form of development chiefly from the Confucian ethics; it has therefore been the guide of notable statesmen and warriors, the doctrine of great teachers (who in Japan as everywhere else in the world, have been the chief influences for moulding the national life and national destiny), and the inspirer of the spirit of Bushidō of the Samurai class, who have been the strength alike of the Old and of the New Japan. The speculative form of philosophy has derived its sources principally from Buddhism. But nowhere else has the stimulus of the Buddhistic view of the world and of human life produced such a variety of more or less harmonious, but also, in their details, conspicuously or subtly conflicting speculations, as among the Japanese. In general these speculations, which are essentially considered different varieties of one kind of philosophy, follow the Indian type. They are poetical, mystical, intuitive, symbolic, and generally vague and inconclusive. They do not, however, anywhere attain the symmetry or proportions of the best examples of the speculative thinking of India. A philosophy that aims to base itself frankly and intelligently upon the particular sciences, and to attain a systematic and scientific whole by the use of logical methods, is neither easy nor congenial for the sentimental temperament. Here again, however, similar considerations of a modifying character are pertinent. Such philosophy is the product of few minds, and is appreciated and understood by only a few, among any race or with any species of race-culture. And philosophizing of the Oriental type, as modified by the mental characteristics of the Japanese, has its own place and value in the development of human reflective thinking.

The race-temperament and mental characteristics of the Japanese have shown themselves most conspicuously, and even resplendently, in two ways: the chivalry of war, and the exquisite sympathy, taste, and skill of art. Brave, proud-spirited, governed by sentiments attached to the forms of action becoming to the class, or rank, and appropriate for personal relations, rather than by considerations of either a utilitarian or strictly ethical character—such has been, in general, the character of the Japanese in war. Even through that unhappy period, during which the feudal lords and military chieftains were occupied with the attempt to exterminate each other, the same character was maintained essentially unchanged. To act as «in honor bound,» whether under the principle of *noblesse oblige,* or under the sense of obligation to render unquestioning service to one's superior, has been the rule of the true-spirited Japanese. And no Christian knighthood in mediæval Europe produced higher examples of devotion to honor and to duty—however mistaken the particular form which this devotion may have taken—than have characterized the entire history of Japan. Indeed, the way in which the spirit of chivalry descended upon all the orders of the people in their conduct of their late war with Russia is one of the marvels of human history.

The artistic temperament of the Japanese, under stimulation and guidance from teachers and examples from China and Corea, and from their own physical environment, has responded with a form of art which, in many of its characteristic features, is unique. The paintings, sculpture, and literature, which were the more direct product of the philosophical and religious conceptions of Buddhism (especially for a thousand years from the 7th century onward) closely resemble, in many of their principal features, the art of mediæval Christian Europe. But it is in their representation of natural objects, or their decorative art when natural objects or suggestions from nature are employed, that the artistic imagination and achievement of the Japanese is most distinctive and most admirable. Here we find a quickness and delicacy of perception, a tenderness and depth of sympathy, a wealth of suggestiveness which knows how to address the appreciative soul without details that obscure and confuse, such as have been nowhere else developed to the same degree. These qualities of Japanese art are the direct result of the race-temperament and mental characteristics of the people, as they have already been described. These aptitudes have not only produced celebrated artists and schools of art, but have also—which is a more difficult and distinctive thing—developed a people penetrated throughout with the appreciation and love of the beautiful, whether as produced by natural forces or by human skill. Emperors, shoguns, warriors, and abbots and monks, write poetry; contests of skill in poetical composition become interesting and exciting court functions; the ceremonials connected with the viewing of the cherry-blossoms or the chrysanthemums, or with the making of tea, are diligently cultivated by the nobility and by the leaders of the nation. On the other hand, peasants, fishermen, and coolies look in an admiring and worshipful way upon what of nature's life-work seems to other peoples trivial and uninteresting; they, too, collect and cherish pretty stones, shells, etc., treat with personal affection flowers, grasses, and shrubs, and take a sentimental pleasure in moon-viewing, in listening to the chirping of the cicada or the *kirigirisu,* and in the beauties of the temple grove or its treasures of brasses, carvings, and kakemonos. A branch just thrown across a misty sky, a bird just alighted upon a lotus-stem and opening its throat for song, a fish swimming against the current, as well as a tiger lapping water from a stream, or engaged in a life-and-death struggle with another tiger, the head of Fuji reflected in Lake Hakone—such are the themes which, with infinite variation in details, inspire both the pictorial and the poetical art of the Japanese. And if the critic is inclined to bring against such work the charge of those weaknesses which are undoubtedly characteristic of the æsthetical products and conceptions of the sentimental temperament, he may be reminded that the strength also of this kind of art consists in just this—its tender and sympathetic appreciation, and suggestive reproduction, of what a coarser taste regards as trivial or indifferent. That the Japanese are capable of historical painting in a spirited and large style, their past endeavors would seem to make clear. And when their pictorial and poetical compositions come again under the inspiring influence of philosophy and religion, there is good reason to hope that their artistic efforts of the similar *motif* and character will greatly excel those to which Buddhism gave birth. See JAPAN—HISTORY OF JAPANESE ART.

In estimating the moral characteristics of the Japanese it is absolutely essential to determine what we mean by morality. In the comprehensive but strictly appropriate meaning of the word, all races have essentially the same moral character. That is to say, they all have preferred forms of conduct, make value-judgments of the ethical type, are stirred and guided by feelings of obligation, approbation and disapprobation, merit and demerit, in view of different kinds of conduct; and they all hold themselves and others responsible under some theory of a voluntary self-control. As to what particular forms of conduct are preferred, and have attached to them the appropriate feelings, and as to what in action is deemed morally right or morally wrong, although there is really a much more fundamental agreement than is ordinarily supposed, there exists, of course, a great variety both of opinion and of practice.

With this general truth assumed, we may safely declare that the Japanese are as truly moral as any other race of civilized human beings. But the particular form which the moral code and the practice approved by the public conscience have taken has been chiefly shaped by the Confucian ethics, with modifications from the Buddhist religion. As has already been explained, the central principle of this ethics is loyalty—shown, according to the prevalent circumstances and relations, to the Emperor as the civil, military, and religious head of the nation, or to the liege-lord or military chieftan, to the parent, to the clan, to the sworn ally or friend. This principle of loyalty is oftentimes so overpowering in its influence as to obscure the other obligations of a symmetrical moral law, and even to produce startling and almost grotesque effects. For example, while it developed a carefully regulated code of suicide and blood-revenge, it also fostered the unreasonable and insane feeling of obligation to commit hara-kiri for the vindication of one's own honor, or murder in the execution of vengeance upon others. But when inspired by a worthy cause and guided by a due amount of practical wisdom, it has, as has already been said, been productive of a most admirable type, and of many splendid examples of a noble devotion to moral ideals. The less obtrusive, but from the Christian point of view, no less important virtues of pity, kindliness, humility, and resignation, owe their existence and their cultivation, here as everywhere, largely to the influences of religion.

In connection with this explanation of the Japanese type of morals, another consideration is not without importance. This kind of morality is personal, rather than theoretical or legal, in the more restricted meaning of the latter term. But it is also, of course, an affair of custom; hence the right and wrong of conduct is determined, not so much by the application of abstract principles, or of a so-called moral law, with its unconditional imperative and its universal claims, as by resort to the appeal to what is *proper* under different personal relations.

The relative absence of an established code of business morality, and the low condition of business morals, among the Japanese, is frequently remarked; and the fact cannot be denied. It does not, however, show any fundamental deficiency in the moral consciousness of the people, or even any relative inferiority in the average grade of the public morality in general. The deficiency is to be explained as growing out of historical conditions. For in the first place, in the Old Japan men of honor did not engage in business; they did not even in general regard the getting and expenditure of money as a matter that came immediately into touch with their right to consider themselves men of honor. There were, indeed, some honorable men in trade; but the honorable class did not, and could not, engage in trade. Besides, the considerations which influenced all classes in their financial transactions with each other were of the same personal sort, to which reference has frequently been made. Not the keeping of one's word or contract, as such; not the being fair, honest, and truthful with all as a matter of either principle or policy; but the being loyal to the person to whom your loyalty was pledged —this consideration overcame and often extinguished all other considerations. At the present time, a great crowd of untrained and uninformed multitudes, from the lower and the lowest classes, without experience or established moral principles and reputation, have rushed into all the various branches of labor, trade, manufacturing, and other forms of business. If, however, as seems probable, and even fairly certain, the instruction of the Government schools, and the experience of life, are permitted to mould and to guide the inherited temperament and prevalent mental and moral characteristics of the people, the Japanese will succeed in attaining the front rank of honor in the pursuits of peace, as they have certainly already attained that rank in the science and art of war.

As regards their religious nature and development the Japanese do not differ essentially from other peoples of the same grade of race-culture; while their more or less important characteristics of religious belief, sentiment and practice, correspond well to the national type of character. Religious superstitions of all the various kinds have flourished among the ignorant, here as elsewhere; although those of the more dark and cruel kind, such as characterized the Aztecs and much of Northern Europe, and are to-day prevalent in Africa and some of the South Sea Islands, do not appear ever to have taken a similar hold upon the Japanese. The physical horrors of the popular Buddhistic hell have been relatively impotent in Japan, either as inspiration or as restraint. Myth-making and miracle-mongering, such as result from the application of a lively imagination to religious and semi-religious conceptions, are nowhere more abundant. Invisible, divine spirits of all sorts, both good and evil (but chiefly kindly), dwell near to man and are ever ready to enter into personal relations with him. The religion of nature-worship in all its manifold forms and manifestations is inseparably connected with the æsthetical sympathy and artistic appreciation of natural objects and phenomena. While ancestor-worship and hero-worship both spring from and contribute to those sentiments of loyalty and devotion which are the spiritual impulse and moral principle of what has been noblest in the past life of the nation. When religious belief develops into a monotheistic faith, the conception of God is apt to be clouded by an imperfect apprehension of the nature of Personality and an inadequate estimate of personal values. Thus a tendency to a mystical and vague, rather than a logical or scientific pantheism, controls the thinking and shapes the conclusions of the philosophy of religion, or theology, among the Japanese; and agnosticism or atheism in religion is rather the result of indifference, or of intellectual weariness, or of the affectation of independent and modern views, than of scientific deductions or systematic reflection. When, however, the Being of the World is clearly apprehended as the Ideal of perfect Ethical Spirit, and man's relations to this Being are regarded as best symbolized under such terms, of a personal significance and value, as Lord, Father and Redeemer, the characteristic temperament of this race quite naturally and spontaneously, as it were, produces examples of religious devotion, self-sacrifice and heroism, which have rarely been equalled, and have never been excelled, in the religious history of the race.

We close this sketch of the mental characteristics of the Japanese with the repetition of the statement: that the subject is most complicated and difficult, and that all generalizations must be understood as having the value only of more or less highly probable opinions, and as admitting, of course, of many individual exceptions.

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5. **Japan.—History of the Empire.** *Introduction.*—The Japanese Empire has been ruled for above 25 centuries (2,567 years) under one unbroken line of sovereigns since the Emperor Jimmu, whose 122d descendant is the present Emperor. The people may be justly proud of their long history, the pages of which have never been polluted by any foreign conquest, and of that matchless continuity of their illustrious rulers, whom they were never tired of revering and loving, even while political supremacy was in subject's hands. Perhaps we may seek the main source of the harmonious unison of ruler and subject in that patriarchal administration adopted by Japanese from the earliest age; and besides, the singularly harmonious temperament of the people and the isolated position of their island in the sea seem to have contributed much towards forming a solid nationality.

Reliable calendars first came into use in Japan early in the middle part of the 7th century of the Christian era, so that the genuineness of dates given by ancient chroniclers to events lying still earlier must be considered doubtful. Modern specialists affect to find a prolongation of 500 to 600 years in that part of Japanese history, and that the Christian era is one century later than the Japanese.

The period prior to the Emperor Jimmu is called «Kamiyo» («Age of Deities»), and is filled with a mixture of legends and mythology relating to deities, regarded as ancestors of the Emperor, and their administration in the country. Among others, «Tenshodaijin» or «Amaterasu-o-mikami» («Deess Shining in Heaven») plays, in this period, the most important role as the lineal ancestress of the Imperial family. Her throne was on «Takama-ga-Hara,» the locality not yet ascertained, and it was she who pronounced that celebrated edict: «The Imperial family shall ever prosper as sure as the heaven and earth,» and bequeathed to her successors the Jewels, Mirror and Sword, venerated as the three sacred insignia of sovereignty.

The historic period may be divided into three great periods: (1) the Age of Imperial Administration; (2) the Age of Military Dictatorship; (3) the Restoration and Constitutional Imperial Administration; and these further sectioned into minor series.

THE AGE OF IMPERIAL ADMINISTRATION.

1. *The First Emperor Jimmu and the Development of the Empire.*—The Emperor Jimmu, the first emperor, valiant and wise, left with his forces the old palace of Hyuga, in the southern part of Kyushu, and settled in Yamato, the central part of Japan. There subduing the aborigines called «Cave-Dwellers» and some nobles who had migrated there from Takama-ga-Hara in a still earlier period, he was crowned as Emperor, and ordained the duties of his subjects of merit and those nobles who became submissive to him, including military affairs, rites, local administration, etc.

Such a distribution of duties was extended even to subaltern subjects, and as the original holder of an office bequeathed it to his son, who again passed it to his son in succession, names of professions in the course of time came to denote families themselves. These families possessed retainers and land property, and titles «Kabane» as Omi, Muraji, etc., varying according to the family dignity, were conferred by the Emperor upon their Headmen. Otomo-no-O-muraji Mononobe-no-O-muraji, Nakatomi-no-O-muraji, Soga-no-O-omi, etc., were the most influential of these titled families. If the need arose these families were to take arms for the Emperor—the very centre round which they were firmly united.

In the reign of the Emperor Sujin (the 10th) four generals were sent in four directions to extend the Imperial authority. A system of taxation was fixed for the first time, industry encouraged, and communication facilitated. Thus under the Emperor, the country made conspicuous progress.

Two rebellious tribes, however, arose in the west and the north, the former with the name of «Kumaso,» and the latter «Yezo,» to subdue which the Emperor Keiko, the grandson of the Emperor Sujin, despatched his son, Yamato-dakeru-no-mikoto. Being completely freed from internal trouble, attention was turned to Corea, whose southern portion was already in Japanese possession. The narrow channel separating Corea and Japan had been crossed constantly since the days of the prehistoric age.

The Empress Jingo, the wife of the 14th emperor, attempted an expedition to Corea, herself leading the forces, and succeeding in making nearly the whole of Corea dependent on Japanese authority.

The conquest of Corea had an important significance, not only because of the tribute she annually brought, but because of the liberal introduction of Indian and Chinese civilization, for at that time Corea was far ahead of Japan in culture. A number of Chinese and Coreans were naturalized in Japan and various new arts were cultivated by them. In ancient Japan, the gentlefolk were divided into three classes: (1) those descended from sovereigns; (2) those descended from deities of the prehistoric age; and (3) those descended from naturalized foreigners, as above mentioned.

In the reign of the 29th Emperor, Kimmei, in 552 A. D., the Corean envoy introduced images of Buddha and copies of the Sutras and strongly commended the virtues of that creed. Mononobe and Soga, two influential families who held great political antipathy toward each other, were widely separated in their opinions concerning the new religion, the former against it, and the latter for it. Buddhism, however, having found an able advocate in the renowned Prince Shotoku, the Soga family at last overcame the anti-Buddhist party.

The Prince Shotoku, being charged with the regency of the 33d Empress Suiko, executed reforms in various departments. He laid down, for the first time, a constitution containing the essentials of politics and ethics; introduced the use of the calendar; dedicated to Buddha a number of magnificent temples; and in 607 A. D., the first authorized ambassador was sent to China with the aim of promoting international intercourse. The arts of architecture, sculpture and painting made marked progress with the steadily growing popularity of the new creed, which necessarily led to the construction of many places of worship.

Thus the introduction of Chinese learning and Buddhism was the most significant epoch-making phenomenon in the whole range of Japanese history, and Buddhism left lasting traces in the national customs, disposition, and even in the politics of the nation. In the reign of the 35th Empress, Kogyoku, the loyal Nakatomi-no-Kamatari assisted Prince Naka-no-Oye and succeeded in checking and destroying the arbitrary exercise of power by the Soga family.

2. *The Era of the Taikwa Reformation.*—On the fall of the Soga family, the 36th Emperor Kotoku came to the throne, and with the help of the Heir Apparent, Naka-no-Oye, and acting on the advice of Kamatari and others, inaugurated, in 645 A. D., the famous reforms known in history as the Taikwa Reformation, after the name of the era which was settled upon for the first time.

In that reformation, in order to remove the wide interval between the rich and the poor, all lands and people in the possession of private individuals were confiscated by the state and distributed among the people with certain conditions. The Prince Naka-no-Oye reigned as the Emperor Tenchi, and established, based on the Chinese models, the various laws of punishment, administrative organization, education, conscription, taxation and other civil codes. Afterwards, in 702 A. D., these laws, which go by the name of Taihoryo, were supplemented and revised and were transmitted to posterity for a long period. The Emperor subdued the tribes of Yezo and Shukushin (in Manchuria), so that the Imperial authority was made known even in the modern Hokkaido. Corea, however, which had been the source of many troubles, was abandoned in this reign.

3. *The Nara Epoch.*—We now enter into what is known as the «Nara Epoch,» celebrated for its politics, Buddhism, and arts.

While the 43d Empress Gemmyo reigned, the seat of the Imperial Government, subject till then to frequent removals, was laid at Nara in Yamato (710 A. D.), and the palaces, and city and government buildings were planned to meet that international intercourse which was gradually growing close between Japan and China, the pristine simplicity being found unsuited to the capital.

One of the most noteworthy events in this epoch is the upheaval of the Fujiwara family, descendants of Nakatomi-no-Kamatari, an eminent leader in the Taikwa Reformation. Fubito, his son, also achieved deeds of merit; and Fubito's daughter was the first instance of a subject being raised to Imperial consort. Except a short interruption caused by internal quarrels, the Fujiwara family increased more and more in its authority, until the zenith was reached in the period called the «Heian-cho Epoch.» In that period, the subjugation and cultivation of the Yezo district and the encouragement of agriculture were noteworthy.

In accordance with the provisions of the Taihoryo, a university was established in the capital as well as local schools throughout the provinces, with the aim of training government officials—the subjects chiefly taught being law, history, mathematics and the Chinese philosophy. Hence in that epoch, scholars versed in those lines of learning were very numerous, and it was then that those historical and geographical accounts of Kojiki, Nihon Shoki, and Fudoki were compiled. Many students proceeded to China to finish their education, and some, such as Abeno-Nakamaro, obtained high position in China. Men of that epoch wrote good Japanese poetry, which is still preserved in a collection with the name of Mannyoshu. In that age the Japanese syllabaries, Kata-kana and Hira-kana, were invented to be substituted for the inconvenient Chinese ideographs.

Among the events of the epoch none is more noteworthy than the wide spread of Buddhism. This result may be attributed to the fact that it found many fervent devotees in the Imperial family. The Emperor Shomu built provincial temples (Kokubun-ji) for nuns and priests and endowed them with liberal donations. He moreover had a huge image of Buddha constructed, and put it in a large temple, Todaiji, at Nara, perhaps the largest wooden edifice the world has ever known. Record says that the Emperor Shomu adopted the tonsure and took a Buddhist appellation. The Empress Komyo, his consort, was also zealously devoted to Buddhism and founded a charity-hospital for medical treatment, and measures were taken also for rescuing foundlings. Among many priests of high reputation, Gyogibosatsu is recognized as the most eminent. He and other high priests who successively rose to fame were not satisfied with the mere preaching of doctrines, but showed great activity in building bridges and roads, and teaching the people to be industrious. There were, of course, priests who abused their religious authority—the destroyer of one of whom was the still celebrated loyal Wake-no-Kiyomaro. Carpenters, from the practice acquired in building temples, learned how to construct large edifices, and the workmanship of the temple idols is wonderful and never fails to dazzle those who visit Todai-ji, Yakushi-ji, and other old temples at Nara. Painting and weaving also made tremendous progress, and the storehouse called Shoso-in, formerly forming part of the Todai-ji and now in the Imperial possession, witnesses how far the civilization in that epoch advanced. It contains things used by the Emperor Shomu, among which are several articles illustrating the intermingling of the culture of India, Western Asia, and even Europe through the Chinese, and contains the census register, the Book of Taxes, etc., as old as 702 A. D. The wooden copies of Sutras, contained in many thousand small pagodas, sculptured by order of the Emperor Shomu, are perhaps the oldest extant samples of wooden printing. While the capital attained a high level in this epoch, it is undeniable that the rest of the country was still in a state of comparative ignorance.

4. *Heian-cho Epoch.*—In the reign of the 50th Emperor, Kwammu, the capital was transferred to Heian-kyo, 794 A. D., perhaps for administrative purposes. It was the modern Kyoto, which is, however, only half the size of the original. There more than 70 emperors reigned for above 1,070 years, until the great Meiji Restoration. The interval which separates 794 A. D. and the year of the establishment of the Kamakura Shogunate, is known in history as the «Heian-cho Epoch.» Another salient event in this reign was the complete subjugation of insurgents in the eastern Yezo districts by sending there Saka-no-uye-no-Tamuramaro.

Several reigns from Kwammu to the Emperor Ninmyo, his grandson, comprise the most prosperous part of the epoch. Learning made a marked advance, and the Emperor Saga is said to have been unique in his penmanship. Besides, many private schools were started by the court nobles.

Buddhism found two more able champions in Saicho (Dengyo Daishi) and Kukai (Kobo Daishi), the former of whom founded Yenryaku-ji on Mt. Hiei, and the latter Kongobu-ji on Mt. Koya. They are said to have taught the identity of the deities of Shintoism, the native religion, with those of Buddhism, which subsequently won the strong devotion of the people of all classes. Buddhism accordingly became the predominating factor in settling all matters relating to political, military and social occurrences. But Shinto shrines, such as Ise or Kamo, always held the people's hearts even in this ascendant age of Buddhism.

5. *The Zenith of the Fujiwara Family.*—The Fujiwara family which sustained a loss of prestige for a time again rose to an eminence when Fuyutsugu was appointed to a vital position called Kurodo-no-Kami. His daughter was elevated to be an Imperial consort, and bore a son, who came to the throne as the 55th Emperor Montoku. With Yoshifusa, son of Fuyutsugu, the Fujiwara family increased its power, for he was the first subject appointed Chief Minister of State, for which office till then none but Imperial princes had been deemed available. Moreover, he was charged with regency over the 56th Emperor Seiwa, his grandson, who was only nine years old when enthroned. Mototsune, his son, was appointed «Kwanbaku,» and after a time the custom of appointing the ex-regent to that position of importance became fixed. It seemed indeed, as though all the highest offices of State had become the exclusive monopoly of this family.

The Emperor Uda, being of a sagacious turn of mind, contrived to put a check on the arbitrary power exercised by the Fujiwara family by bestowing an eminent position on Sugawara-no-Michizane. Michizane's destruction, however, was soon accomplished by Tokihira, a minister of the Fujiwara, and his colleagues in 901 A. D. Thus the invulnerability of this family was once more demonstrated.

Although the next Emperor Daigo was celebrated for his illustrious virtues, and scholars and artists like Ki-no-Tsurayuki, Ki-no-Haseo, Miyoshi Kiyoyuki, Kose-no-Kanaoka, etc., were fostered under that reign, under an appearance of tranquillity and grandeur there lurked elements of effeminacy and corruption. The laws of Taihoryo were gradually being relaxed, and the arbitrary power of the Fujiwara family became uncontrollable.

While enjoying such an arbitrary exercise of power, the Fujiwara family was naturally subject to internal disturbances arising from the selfish ambitions among them. Every prominent member of the family sought to increase his own authority by becoming closely related to the Imperial family. At last, Michinaga (about 1,000 A. D.) became supreme and represented in himself the zenith of that splendid family. His three daughters became the consorts of three successive emperors and he was grandfather of three emperors. A writer depicted the events of these times in a work to which he gave the title «The Annals of Grandeur.»

This epoch was distinguished by great gaiety and splendor. Nobles lived in spacious and grand houses, dressed lavishly, and spent most of their time in reunions of poetry and music, and dilettanteish observation of nature. Japanese poetry, however, made a marked advance. Ki-no-Tsurayuki, by order of Emperor Daigo, compiled the «Kokinshu,» a collection of the best poetry, and this was followed by 20 similar collections. Another noteworthy fact is that national literature began to develop perceptible activity, while the Chinese literature lost much of its sway, owing to the custom of sending ambassadors to China being abandoned. Thus Chinese poetry was supplanted by national verses; and romance, sketches, etc., were written in the national syllabary. Tosa-Nikki, Genji-Monogatari, Makura-no-Soshi were the productions of most renown, and many lady courtiers in the reign of the Emperor Ichijo, and at the time when Michinaga was in power, occupied positions of literary preëminence. In short, while the period of the initiation of Chinese culture was passing, the national literature was steadily growing.

While the nobility in the metropolis were devoting themselves almost entirely to pleasure-seeking, administration in the country districts was entrusted to unprincipled officials. It was an important feature of the Taikwa reforms that all the land in the country became State property, and at the same time was allotted to individuals under certain conditions, which, however, in the course of time, fell into neglect. The rich acquired large tracts; to nobles and temples land property was granted, and moreover, uncultivated lands were suffered to remain in the possession of individuals to get them cultivated. Cunning people evaded the public duties by nominally transferring their lands to nobles and temples, but they themselves acting as stewards. Thus the land of private possession having greatly increased, not only the power of local authority, but also the revenue of the Government gradually diminished, and became one of the chief causes of the decline of Imperial administration.

On the other hand the rise of the military clans is a most noteworthy event in this epoch. During the reigns of the Emperors Kwammu and Saga the plan was introduced, mainly from the financial point of view of reducing some of the Imperial princes to the rank of subjects and giving them family names. Taira (Heishi) and Minamoto (Genji) were the most important instances. Some of these reduced princes acquired large influence in the districts administered by them, and each trained a large body of retainers in the arts of war, availing himself of the inefficiency of the conscript laws of the Taihoryo. Such was the origin of the military clans.

In 939 A. D., a man of the Taira clan, by name Masakado, in the eastern provinces, and Fujiwara-no-Sumitomo of the Fujiwara clan, in the western, rebelled against the Imperial authority, but were immediately defeated. These revolts afforded important occasions for clan ascendency. In 1031 A. D., Yorinobu, a grandson of Tsunemoto, who defeated Sumitomo, achieved success in the Revolt of Tadatsune of the Taira clan, and the two insurrections were quelled respectively by Yoriyoshi, the son, and Yoshiiye, the grandson. Previously, in 1019 A. D., Takaiye of Fujiwara frustrated the invasion of Kyushu by plundering tribes of Toi of Manchuria. His descendants secured a military stronghold in Kyushu. Thus, while the Fujiwara family was rapt in dreams of grandeur, the reins of power came into the hands of the military classes, composed of the clans Minamoto, Taira, and a branch of Fujiwara.

6. *The Age of the ex-Emperors.*—The unbridled omnipotency of the Fujiwara family began to wane in the reign of the 71st Emperor Gosanjo who was sagacious and austere and had no lineal relations with the Fujiwara family. His elaborate scheme of reforms, however, was not realized because of his untimely death. The Emperor Shirakawa, also a man of resolution, interfered with State affairs even after his abdication of the throne in 1086, which was the earliest precedent of that peculiar sort of government called Insei (Ex-Emperor's Administration).

Luxury in dress, magnificence of dwellings and fanatic devotion to Buddhism were the chief features of this epoch. Large temples in the vicinity of Kyoto, such as Yenryaku-ji, Onjo-ji, Kofuku-ji, etc., possessed rich properties, and each maintained thousands of sacerdotal soldiers, who if dissatisfied with any measures of the government, armed with bow and arrow, would make descent on Kyoto in great force to obtain their will. Accordingly, it was always to military men in the provinces that both the Emperor and the Fujiwara family resorted when feuds broke out or the Buddhist soldiers acted lawlessly, and thus the elevation of military men to positions of power was most natural.

The struggle for political preëminence by the Fujiwara family and the long years of moral corruption of the Heian-cho epoch, resulted in a disturbance in 1156 A. D. In that year the 76th Emperor, Konoye, died, and the ex-Emperor Sutoku, seconded by Fujiwara-no-Yorinaga, Minamoto-no-Tameyoshi and others, tried to ascend the throne once more; whereas the Regent Tadamichi, brother of Yorinaga, not being on good terms with his brother, with the help of Kiyomori of the Taira clan, and Yoshitomo, son of Tameyoshi, crowned Goshirakawa Emperor. Thus a bloody war called «Hogen Disturbance» ensued, which ended in the rout of the ex-Emperor. In this way the military classes forced their way into the administrative authority of the State. Three years after the Hogen Disturbance, an insurrection arose, known in history as the «Heiji Disturbance,» in which the power of the Minamoto clan was almost completely broken by the loss of Yoshitomo, its leader, and the Taira clan speedily attained ascendency. The period (1166-1185) is called the Taira Age. Kiyomori, by virtue of his success in the two disturbances, was appointed Chief Minister of the State, and all his kinsmen and followers were given prominent positions, and the reign of the Fujiwara family was practically over.

Arbitrary power, and especially the arrogant attitude of Kiyomori towards the ex-Emperor Goshirakawa, greatly incensed his opponents, and Minamoto-no-Yoritomo, a son of Yoshitomo, and Yoshinaka, his cousin, raised a force of troops in compliance with the mandate of the Prince Mochihito, a son of the ex-Emperor, and after several battles drove out the Taira party from Kyoto. In the tragic sea-battle at Dan-no-ura (1185 A. D.) the Taira clan was completely crushed by the forces of Yoshitsune, Yoritomo's younger brother.

THE AGE OF MILITARY DICTATORSHIP.

1. *The Kamakura Epoch.*—After a decisive battle at Dan-no-ura, Yoritomo was created Grand General of Expedition (Seii-Taishogun), founded the Shogun's government at Kamakura, and the Age of Military Dictatorship of about 700 years begins. Under a pretext of arresting fugitives of the Taira clan, or stray followers of Yoshitsune—his able brother with whom he was on bad terms—and of preventing disturbance in the future, Yoritomo had his relatives and partisans appointed as High Constables in each province and as superintendents of both public land and of nobles' estates, and applied a certain system of taxation on all land property (1185 A. D.). Thus Yoritomo, acting on the sagacious advice of Oye-no-Hiromoto, a man of great statesmanship,

succeeded in becoming the master of the State administration, and while the power of the former provincial governors appointed by the Imperial court and the headmen of nobles' estates gradually lost their authority, these newly appointed military officials steadily grew into what were called «Daimyos,» or feudal lords.

Profiting by the unfortunate precedents of the Fujiwara and Taira families, the mode of life laid down by Yoritomo was simple and frugal. Bravery, honor and loyalty were proclaimed the highest virtues, and if one were found guilty of any serious fault he must atone by suicide. Thus at this period the rules of the Japanese chivalry were clearly prescribed, though the spirit was not new. This soldierly spirit prevailed in literature and amusements, and this warlike age also witnessed the rise of the Zen sect of Buddhism.

The line of Yoritomo came to an end in the third Shogun, and after that the government fell into the hands of the Hojo family to which the Yoritomo's consort belonged, although the nominal Shogun was brought from Kyoto.

In 1221 A. D. the Emperor Gotoba attempted the destruction of the Hojo family, which attempt, however, utterly failed, and the property of those who espoused the Imperial cause was confiscated and divided among the Hojo's followers. Some of the Hojo's family were stationed in Kyoto to restore order, and to act as overseers, and, by the judicious and generous administration of such excellent statesmen as Yasutoki and Tokiyori, that family enjoyed the widest popularity. Yasutoki left a knightly code of 51 articles, which was respected as the basis of laws throughout the military dictatorship up to the Meiji Restoration.

In the reign of the 90th Emperor, Kameyama, when Tokimune, the son of Tokiyori, held regency in Kamakura, Kublai Khan, the Mongolian conqueror, sent envoys to Japan seeking her submission, but his proposals were rejected. In 1281 A. D., the Chinese and the Mongolian forces, above 130,000, together with the Koreans, made an invasion into Kyushu, and were defeated. The period of war and anxiety extended over 30 years, but perseverance and final success made manifest the national spirit of Japan.

Troubles about the succession of Emperors served as an excellent occasion for the Hojo family to obtain paramount power. The 96th Emperor, Godaigo, a daring and wise monarch, lamenting the decay of the Imperial authority, realizing the imbecility of Hojo Takatoki, and relying on the never failing loyalty of Kusunoki Masashige, Nitta Yoshisada, and others, at last succeeded in the restoration of administrative authority to the Imperial House (1333 A. D.).

2. *Revival of the Imperial Power in the Kemmu Era. The Northern and the Southern Courts.*—Ashikaga Takauji, a member of the Minamoto clan, and a man of distinction in the late war, knowing the dissatisfaction of the military classes in the partial distribution of rewards, and the court nobles' prejudice against men of arms, saw an opportunity to raise an independent army. Addressing himself to the newly created Emperor Komyo of the line of the Emperor Gofukakusa, he began a revolt against the Emperor Godaigo, and forced him to seek refuge in the Yoshino-Yama, the celebrated place of cherry-blossoms in the Province of Yamato. For a period of 57 years, dating from 1336 A. D., two lines of Emperors reigned simultaneously, one in Kyoto and the other in Yoshino, and this is therefore termed the age of Northern and Southern Courts. On the death of Kusunoki and Nitta, able defenders of the South, the Ashikaga family rose into supreme power. In 1392 A. D., the two Imperial houses were reconciled and united.

3. *The Muromachi (Ashikaga) Epoch.*—As the Ashikaga family placed the site of their Shogunal government in Kyoto at Muromachi, that period is known as the Muromachi Age. The 3d Shogun, Yoshimitsu asserted his authority by destroying such powerful generals as Ouchi Yoshihiro and Yamana Ujikiyo, who had become insolent by reason of their rich estates. He was also notorious for his love of arbitrary rule and luxury, well exemplified in his sumptuous villa, Kinkaku-ji, at Kyoto.

When Takauji laid his seat in Kyoto, he at the same time sent his second son, Motouji, the uncle of Yoshimitsu, to Kamakura to be governor there; but his descendants growing in power became ambitious, and were finally overthrown. With the fall of the governor at Kamakura, the whole of the Kwanto district was thrown into disturbance.

In the time of Yoshimasa, the 8th Shogun of the Ashikaga line, the disastrous war of Onin broke out (1467 A. D.), occasioned by a succession of troubles in the family of the Shogun and his followers. Hosokawa Katsumoto led one party, and Yamana Sozen the other, and Kyoto was the field of battle for 11 years and was miserably reduced to a state of desolation and ruin. Palaces and temples were burned to the ground with irreparable loss of treasures and documents.

After the war, territorial nobles returned to their castles and would not listen to the central Government. This age of constant contest, extending from the end of the 15th century to that of the 16th, is denominated the «Period of Military Emergency.» Hojo Soun was the most typical hero who attained a position of eminence by the sheer force of sword. In the meanwhile, Uyesugi in Echigo, Takeda in Kai, Imagawa in Suruga, Otomo and Shimazu in Kyushu, Mori in Chugoku, were exercising their respective dictatorships at their own sweet will, until the country was once more united under Oda Nobunaga and Toyotomi Hideyoshi.

During a century of continuous disturbances, literature and the arts sustained little drawback, for learning was conscientiously cultivated by priests of the Zen sect and poetry still continued to be the favorite pastime of court nobles and even of soldiers. In this age, the «Utai» (a dramatic romanza) made a marked development, together with the «No» dance, and nursery tales became a rich branch of literature. The Shogun Yoshimasa retired from the bustle of the disordered society to the picturesque temple Ginkaku-ji at Higashiyama in the vicinity of Kyoto, where he lived indulging in various amusements and especially in the «Cha-no-Yu» (tea ceremonial), and by his refined love of ancient caligraphs, pictures and curios gave a fresh impetus to this brilliant period of Japanese art, which is commonly called the «Higashiyama Period.» Ko-hogen Motonbu, one of the greatest masters of Japanese painting, initiated a new style, uniting the showy native school with simple but high artistic taste of the Sung and Yuan Dynasties of China, and became the founder of the Kano School.

While the peaceful intercourse between Japan and China was maintained by the Shogunate, the people of the littoral districts of Kyushu, Chugoku, and Shikoku, after the repulse of the Mongolian invasion, made frequent raids into China and Korea, which reached a climax in the age of the Military Emergency. In China the name of «Wako» («Japanese raid») was given to these pirates and they were greatly dreaded. For the introduction of the gun by the Portuguese in 1543 A. D., the propagation of Christianity by Xavier, etc., the despatch of ambassadors to the Roman Pope by various magnates of Kyushu, I refer to the article in this series on FOREIGN RELATIONS, by Professor Murakami.

4. *Oda and Toyotomi Period.*—In this state of the local autonomy, Oda Nobunaga greatly distinguished himself and was charged by the 106th Emperor, Ogimachi, with the pacification of the city of Kyoto. As the guardian of the Shogun Yoshiaki, he entered Kyoto, where he repaired the Imperial Palace, restored the poor nobles, and established order. In 1573 A. D. the Ashikaga Shogunate terminated with the expulsion of Yoshiaki by Nobunaga. He subjugated the Takeda clan of the Province of Kai, and was about to start on a campaign against the Mori clan of Chugoku, when he was suddenly attacked and killed by a vassal (1582 A. D.).

Upon Nobunaga's death, Toyotomi Hideyoshi, his tried vassal, afterwards Taiko, perhaps one of the most renowned participators in Japanese history, took his place. He subdued all the important territorial nobles in nine years and the restoration of domestic tranquillity was at last established (1590 A. D.). When the Emperor Goyozei paid a visit to his newly constructed mansion in Kyoto, Hideyoshi settled the Civil List, allotted land property to court nobles, and exacted from all generals an oath that they should reverence the sovereign, and they should not show any disobedience to the «Kwanbaku,» which position he held.

Availing himself of the valiant spirit of those times, Hideyoshi in 1592 made an expedition into «Ming,» via Korea, seemingly to be avenged of the Mongolian invasion in the Kamakura Period. The royal palace of Korea was taken by Japanese forces, and a large body of Chinese reinforcement put to rout. Although the Chinese suggestion of reconciliation was accepted by Hideyoshi, the fraud practised by Chinese envoys put him in such a rage that large forces were immediately mustered for the second invasion, which was frustrated by the death of Hideyoshi (1598 A. D.).

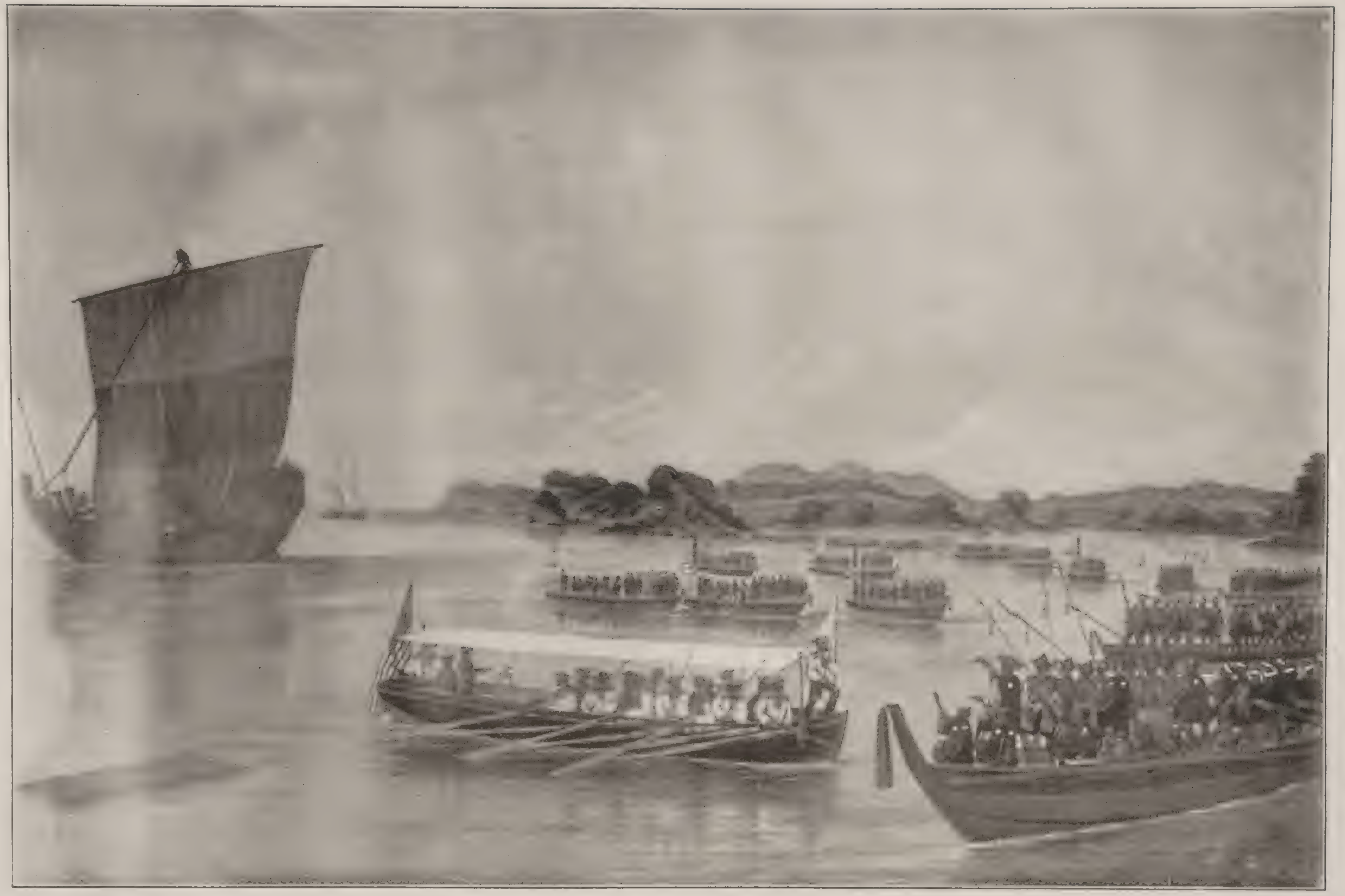
Being fully aware of the smouldering sentiments of hostility, Hideyoshi just before his death entrusted the administration of the State to the hands of Tokugawa Iyeyasu of Yedo (the present Tokyo), who was illustrious for his rank and renown. After the death of Hideyoshi, however, the generals—such as Ishida Mitsunari, Mori, Uyesugi and others—who had served under him, took up arms against Iyeyasu in the cause of Hideyoshi's son, Hideyori. The Tokugawa forces were led by Iyeyasu, assisted by Asano, Kuroda, Kato and others. The opposing armies met on the Sekigahara Plain in Mino, and the Ishida party was utterly defeated, so that the administrative power came wholly into Tokugawa's hands (1600 A. D.).

5. *Yedo (or Tokugawa) Epoch.*—Three years later Tokugawa Iyeyasu was appointed Seii-Taishogun, and founded a Shogunal government in Yedo, which naturally increased in size and grandeur. His administrative supremacy over feudal lords was secured by being generous as well as authoritative. The successor of Hideyoshi, ruling in Osaka, hoped to be restored to the position his father had occupied, and there flocked to his standard many thousands of «Ronins» (unenrolled samurai), but the result was an utter failure. Thus the illustrious house of Toyotomi having been destroyed, the country entered upon a long era of peace.

The measures contained in Iyeyasu's laws for territorial government were of the most prudent nature. To avoid the excessive autonomy of territorial nobles, every feudal lord was required to live every alternate year in Yedo; the construction of castles was placed under strict limitations and by means of a careful territorial distribution, nobles were prevented from forming allies. He knew how to give allegiance to the Imperial family, without surrendering any actual authority. The encouragement of learning and refined manners resulted in obliterating the cruel and rude customs of the people.

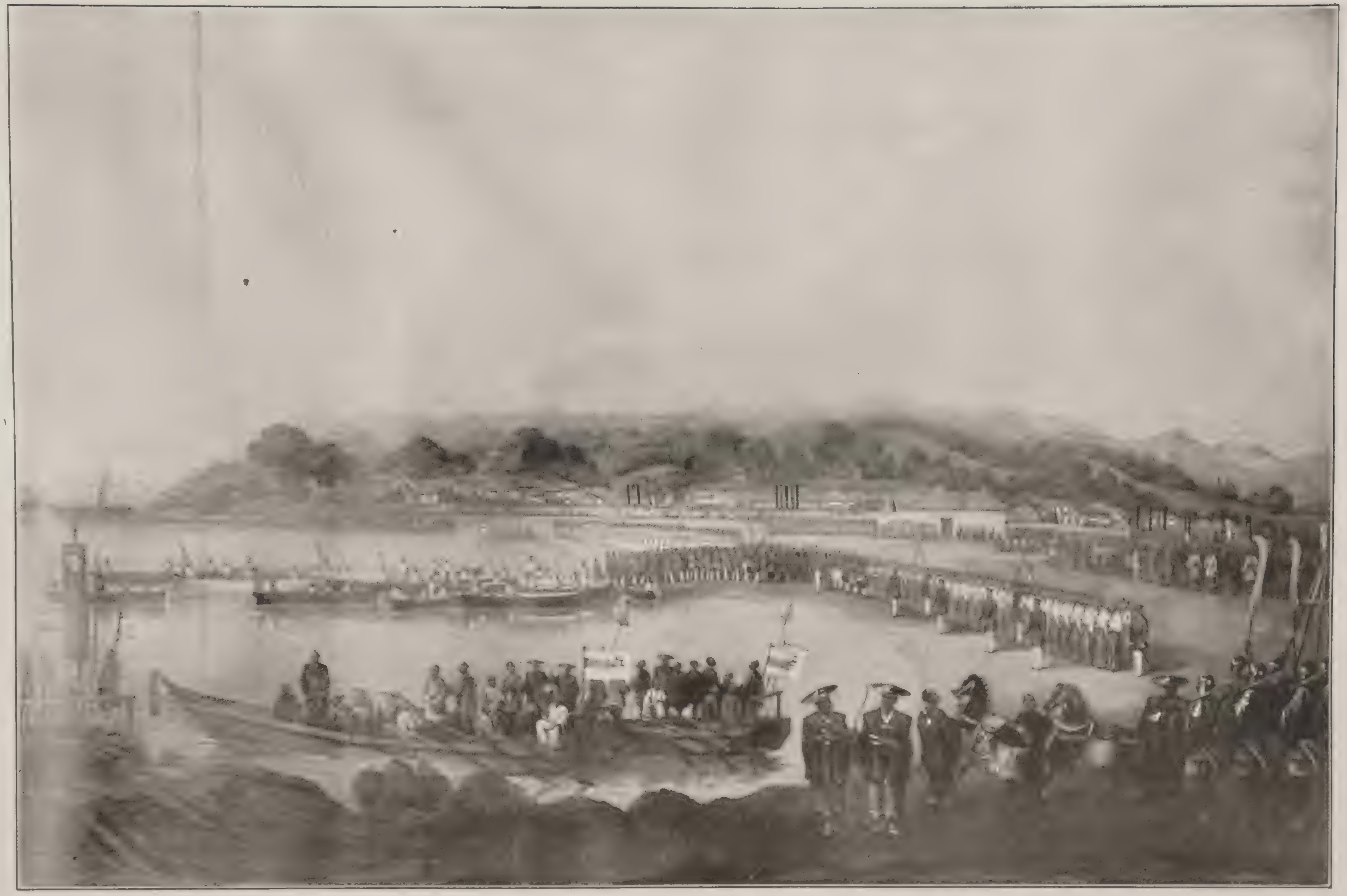
Believing it for Japan's commercial advantage that friendly intercourse should exist with Korea, peaceful relations were resumed, and it became a custom to have an embassy of congratulation sent from Korea on the occasion of the succession of a new Shogun. Under Iyemitsu, the 3d Shogun, a man of extraordinary ability, the organization of the Shogunal government was greatly perfected, and the supremacy of the Shogun was conspicuously enhanced. At this time the Government rigorously persecuted the Jesuits and their followers as dangerout to the welfare of the country, and Christian converts fled to Shimabara, where their headquarters was at last subdued, in 1638 A. D. It is believed that some of those defeated at Sekigahara sided with the Christians to be revenged on the Tokugawa. Fearing the spread of Christianity, strict laws were enacted for the prohibition of foreign communication, and no foreign vessels were permitted to enter except those of Korea, China and Holland.

About two centuries and a half, from 1615 A. D., the year of the fall of Toyotomi, down to the Meiji Restoration, was a period of tranquillity, broken only once by Christian insurrection, and in it culture made wonderful progress, and the war spirit perceptibly diminished. During the celebrated era of Genroku (1680-1709 A. D.) when the 5th Shogun, Tsunayoshi, ruled, the highest seat of education was established by the Shogun's order, and the grandson of the celebrated scholar Hayashi Doshun appointed its president. This encouragement of education was imitated by the feudal nobles, who also established schools in their respective provinces,



SCENE ON THE BAY OF YEDDO, JULY 11, 1853.

LIEUT. BENT IN THE MISSISSIPPI'S CUTTER PASSING THROUGH A FLEET OF JAPANESE BOATS.



FIRST LANDING OF AMERICANS IN JAPAN, July 14, 1853.

and vied with each other in getting men of learning. The most distinguished of these savants were Ogiu Sorai, Ito Jinsai, and Arai Hakuseki. In that period the «No» dance, «Joruri» music, and the dramatic play enjoyed wide popularity, and costumes and furnitures were of the most luxurious nature. It was at this time that the famous vendetta of 47 Ronins took place (1702 A. D.).

The empire being thus busily engaged in the cultivation of learning and arts, the administration of the Shogunate was characterized by inaction, and the military equipment began to be neglected. The 8th Shogun, Yoshimune (1716-1745 A. D.), on assuming administrative control, set himself to reorganize the Government by introducing the Kyoho reforms. He retrieved the poverty of the whole country by the enforcement of frugality and economy, and fostered the popular taste for martial exercise. He collected also a volume of laws, called «Hyakka-jo,» commended the Dutch learning introduced by Aoki Konyo, and encouraged industry. On the death of the Shogun Yoshimune, the political adjustment relaxed. Matsudaira Sadanobu then became the chief minister and set himself to enforce the Kwansei era reforms. Then succeeded the exceptionally prosperous eras of Bunka and Bunsei (1804-1829 A. D.), during which many evil practices crept in, but a great reform took place under Midzuno Tadakuni, in the era of Tempo (1841 A. D.).

In 1853 A. D., Commodore Perry came to Japan with his fleet. Several years before his arrival, both Russia and England had sought permission of the Government to carry on trade, but without avail. As the result of various encroachments of the Russians, and the disorderly conduct of Englishmen at Nagasaki, careful measures were taken for littoral defence, and the government ordered that any foreign ship approaching the coast should be fired on. Among the Japanese, however, many who had acquired the Dutch learning spoke against such a violent policy.

On the other hand the cry of «Loyalty to the Throne» became more and more fervent, for the people had learned how the military families of successive generations asserted their own authority at the expense of that of the Imperial House. The history of the past was widely studied in such a painstaking work as 'Dainihonshi' (History of Japan) compiled by Mitsukuni of Mito and his retainers. The studies of national literature, pioneered by a learned group of men, headed by Kamo-no-Mabuchi, Moto-ori Norinaga, etc., naturally stirred up still more the people's love for the Emperor.

The Shogun's government, though traditionally accustomed to the arbitrary exercise of power, was now perplexed, both by the Imperial court and the popular cry, and the necessity of coming to some terms with America and other foreign powers was felt. Moreover, the Shogunate was disturbed by an internal trouble about the succession. At this crisis, the courageous Ii Naosuke (Kamon-no-kami) was appointed Tairo (Prime Minister), and, in 1858 A. D., a temporary treaty was signed with five countries—America, England, France, Russia and Holland, and the succession problem was also settled.

The blame for having taken an audacious step of concluding a treaty without the Imperial sanction was directed at Ii, who, however, resolved to settle the disturbance by dismissing, sending into exile or to death all opponents of his policy. Amidst such a hue and cry, Ii was attacked and killed by the Mito Ronins, and the authority of the Shogunate rapidly diminished. The Mori clan of Choshu united with the Shimazu clan of Satsuma with a common view of destroying the Shogunate Government. Finding himself confronted by such difficulties, Yoshinobu, the 15th and the last Shogun of the Tokugawa, acting on the advice of Yamanouchi of Tosa, resigned the office of Shogun, and restored the administrative power to the Imperial Court in October, 1867, A. D. Thus the Tokugawa Shogunate ended with a brilliant history of 265 years, and the Age of the Military Dictatorship for 682 years came to an end.

RESTORATION AND CONSTITUTIONAL IMPERIAL ADMINISTRATION.

Subsequent to the restoration of the administrative authority and the overthrow of the Tokugawa Shogunate, the Shogun's household troops and some of the territorial nobles, owing to their dissatisfaction with the attitude of the Choshu and Satsuma clans, attempted revolts, all of which, however, were defeated.

In the first year of the Meiji era, that is the year next to the Restoration, the present Emperor issued a declaration emphasizing the fundamental essentials of his administration, as, for instance, that the management of the State should conform to the public opinion; that rulers and subjects should be united for the development of the nation; that the knowledge of the world should be sought in order to make firmer the Empire's foundation. In the 2d of the Meiji, the capital was transferred from Kyoto to Tokyo.

Even after the Restoration, the unification of the national administration was found impossible, for the land and the people were still in the possession of feudal lords. The four powerful clans of Satsuma, Hizen, Tosa, and Choshu, therefore, addressed to the sovereign a letter declaring their desire to restore their land and retainers to the Emperor, and all other nobles followed the same course. Then the «Han» (fiefs) numbering above 300, were replaced by «Fu» and «Ken» (prefectures), and governors to administrate them were appointed. Thus the Emperor came into full control of the land and people which had long been under the sway of territorial nobles.

Among various minor reforms, the distinctions of Kuge (court nobles), Daimyo (feudal nobles), Shi-No-Ko-Sho (samurai, peasant, artisan, and merchant) were abolished, and the people were divided into the three ranks of Kwa-zoku, Shi-zoku and Hei-min. The cue and swords of men were discarded, and the lunar calendar was replaced by the solar. A new law of conscription was issued declaring every man to be a soldier, and many codes of laws were enacted.

The Emperor also encouraged education by giving special attention to it, and the Imperial Rescript was announced to settle the fundamental basis of education. At present, there are numerous educational establishments, including universities, colleges, middle and common schools, etc. Railways, post, telegraph, and mail steamers were provided for facilitating communication. Though some conservatives were opposed to the introduction of Occidentalism, foreign civilization advanced with irresistible speed and energy, which advance, however, was happily modified by a strong national sentiment.

In 1875 a senate was organized for legislative purposes, and the assembling of local governors prepared the way for representative government. In 1889 the Constitution was promulgated amidst universal congratulation, and in the following year the first session of the Imperial Diet took place. Thus the constitutional imperial government of the nation was firmly established.

Since the first treaties were concluded with foreign nations. Japan has constantly been beset with international difficulties. Soon after the Restoration, an envoy was sent to Korea with renewed expressions of friendship, which action, however, met with an insolent reception. Incensed by several other insulting acts, Saigo Takamori and his followers insisted on the necessity for war. Another party headed by Iwakura Tomomi and Okubo Toshimichi opposed this view and defeated the advocates of recourse to arms. Thus a rupture took place in the cabinet and a civil war ensued. Though Korea afterwards entered into friendly relations with Japan, there were two parties in the country, one favoring Japan and the other favoring China, which condition often threatened serious complications. The Chinese attitude towards Korea—looking upon the country as Chinese territory—gave occasion for the Chino-Japanese War (1894-1895); and the failure of Japan and Russia to agree concerning their rights in Korea and Manchuria, resulted in the Russo-Japanese War (1904-1905).

The details of these recent wars, with those of other reforms since the Restoration, are treated in separate articles in this department, to which the reader is referred for additional information.

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6. Japan—The Japanese Constitutional Government. Among the jurists of Europe and America, it had heretofore been considered that constitutional government is only compatible with the social and political status of the Western nations, and furthermore that Oriental nations could never adopt this form of government, because they have no common ground upon which constitutional government could be planted; therefore when, in the year 1881, the Emperor of Japan announced, by the Imperial Edict, that constitutional government should be established at the end of ten years, the peoples of Europe and America thought that he had adopted a mistaken policy.

But the year 1890 came, and the first Parliament was convened in accordance with the Constitution which was promulgated the year before; and has continued ever since, Parliament having just completed its 23d session in the 18 years. Thus constitutional government in Japan, in spite of many boisterous meetings and much sensational discussion, which are by no means uncommon in Europe and America, must be considered a success.

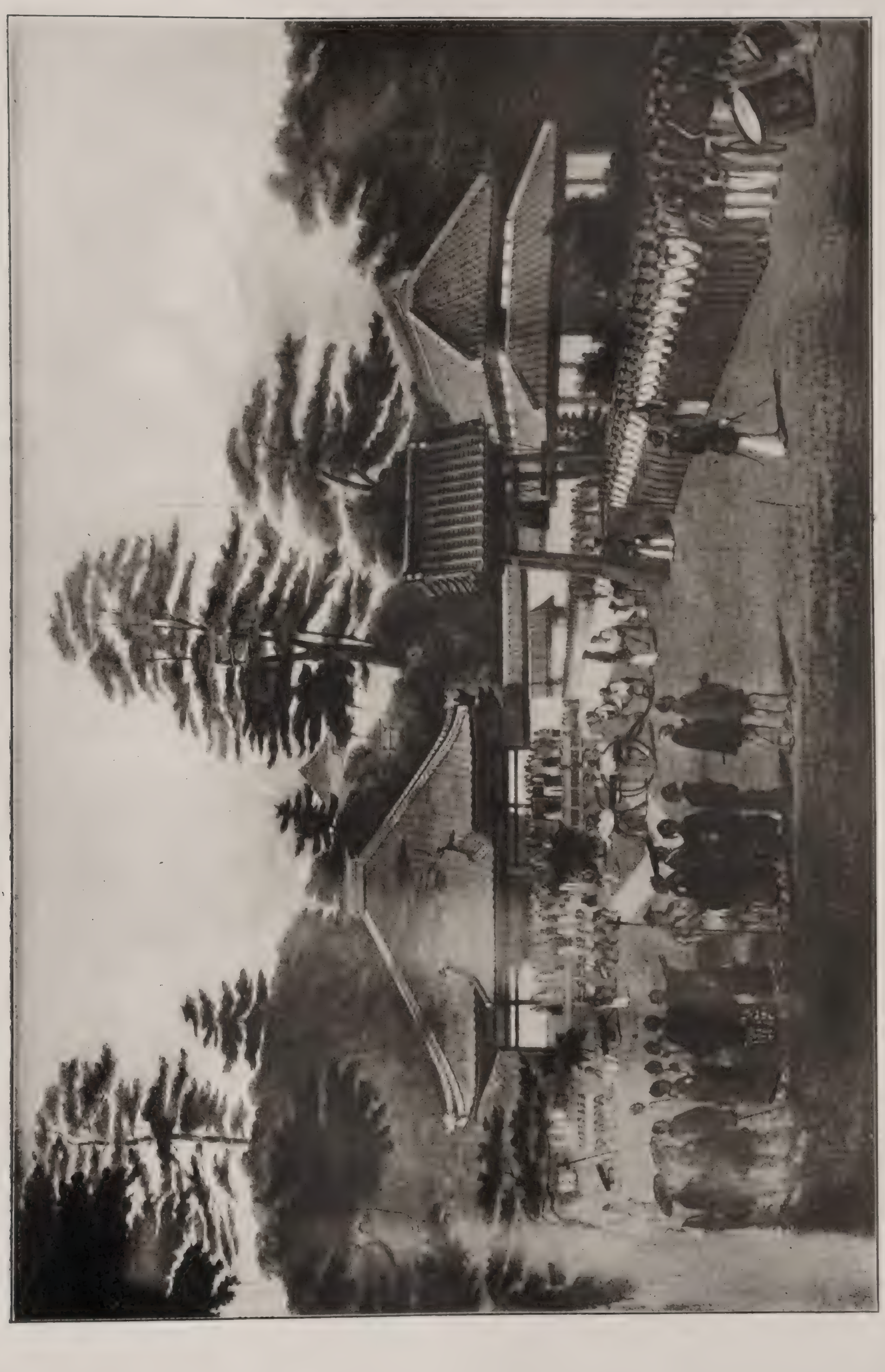
In order to explain why Japan, one of the Oriental nations, has succeeded in adopting the system of constitutional government, it is necessary to review some of the important facts connected with constitutional movements in Japan during the last 40 years.

On his ascension to the throne after the Imperial Restoration in 1868, His Imperial Majesty proclaimed the five articles of the Imperial oath, one of which marked out distinctly the future course of His Imperial Government, in the following words: «We shall henceforth seek knowledge and wisdom in an outside world and establish the National Assembly, where the important affairs of State shall be decided by public opinion.»

This is the fundamental principle of Japanese national policy, by which all the subsequent changes and reorganization, both political and social, were carried out and consummated. In 1875, the judiciary system was organized by establishing the Court of Cassation, to maintain the unity for the execution of the law, although there were already the District Court, the Provincial Court, and the Court of Appeals, but there was no Supreme Court where all the judicial matters in the Empire could be decided and unified. In the same year the Senate was established by the Imperial Decree, which clearly stated that in future all important legislative bills be brought by the Cabinet and discussed before the Senate. The changes placed the Japanese Government on the same organization as Europe and America—under the three branches of the Executive, Legislative, and Judicial. This might be called the first step in the Central Government to pave the way for constitutionalism in the future.

Now, let us turn to the reorganization of provincial affairs. In 1879, the law was passed in the Senate establishing a Provincial Assembly in all the provinces of the Empire. To this Assembly all the taxpayers send their representatives by election, and the Governors of the Provinces bring the annual estimates, which are discussed and voted upon by its members. Here we find again a system of self-government in local affairs, like that in Europe and America.

As soon as the people acquired the right to discuss and vote upon the provincial expenditures, they naturally desired to have the Parliament opened, where they might discuss and vote upon the national expenditures, in the same way as in the Provincial Assembly. This was urgently demanded by the political leaders outside of the Government, as the only means to interest the people in the welfare of the country, and they still further insisted that this was the principle of the Imperial oath of 1868. The public speeches and newspaper discussions on the question intensified the demands of the people, which had grown so strong as to compel the Government to adopt a policy to open the Parliament much sooner than had been intended, and the famous Imperial Proclamation of 1881 was issued, by which the Emperor declared a first Parliament



AMERICAN SAILORS IN THE TEMPLE GROUNDS, SIMODA, JULY 8, 1854.

to be opened in 1890. Thereupon the Emperor appointed Marquis Ito to go abroad on a mission to study the constitutions of Europe and entrusted him with the important work of drawing up the draft of a constitution. In 1884, after four years of close investigation of the European constitutions, he returned to Japan, and soon the committee was appointed to prepare the draft under the guidance of Marquis Ito. This committee consisted of Viscount Inouye (deceased), Baron Ito and the present writer.

During the five years from 1884 and 1885, Marquis Ito had personally directed the work of the committee and drawn up the draft, which was submitted to the Emperor for his approval. In the spring of 1888 the Emperor organized the Privy Council, and opened the meetings to deliberate upon the draft of the Constitution. The first meeting was held in May, and continued until January 1889, and was presided over by His Imperial Majesty in person, who attended every session of the council. After a close deliberation of nine months, the Constitution was promulgated by the Emperor in person 11 Feb. 1889, with solemn and gorgeous ceremony, in the throne room of the Imperial Palace, attended by the Imperial families, Ministers of State, Privy Councillors, Foreign Diplomatic Corps, all high officials, and Governors and Representatives of Provinces, and its proclamation was followed by national rejoicings and festivities.

Thus the movement for constitutional government in Japan began at first with the Imperial oath of 1868, and was continued in remodelling a political mechanism for a long duration of 23 years, and finally completed by separating the Government into the three branches of Executive, Legislative, and Judiciary, which are acknowledged principles of constitutional government in Europe and America.

But there is an important difference between the constitutions of the western nations and that of Japan. The constitutions of England and the continent of Europe are really the outcome of a popular uprising against the tyranny of rulers; in other words, constitutional government was demanded and established as the natural right of the people. Consequently even the constitutions of monarchial Europe were drawn up in such a way as to put the greatest stress and importance upon the popular right, and at the same time, the power of the sovereign was curtailed as much as possible. The constitutional history of Europe and America is a protest against the encroachment of the sovereign upon popular rights; but the Japanese Constitution emanated from the Emperor—fountain of power—and not from the popular right, as clearly stated in the Imperial oath. Before the people ever dreamt of a popular right or a Parliament, the Emperor had already marked out the policy of constitutional government in future, because his ardent desire was to elevate his country so as to enable it to take rank among the civilized nations of the West; and this is not only his wish, but is in strict accordance with a national policy bequeathed by his Imperial ancestors.

Following this national policy, the Constitution was drawn up with strict adherence to, and in preservation of, the traditional history of Japan and the fundamental principle of the Imperial government for 2,500 years. However, the form of the Japanese Constitution is practically the same as those of Europe and America; but with this difference, that the texts of the Japanese Constitution only contain the fundamental principle of State; that is to say, the Prerogative of Emperor, Rights and Duties of People, Powers of Parliament, Powers and Duties of Ministers of State and Privy Councillors, and Judiciary and Finance. All these are embodied only in the 76 Articles of the Constitution.

Here we naturally meet a question—how can the national affairs be administered under only 76 articles? When, however, we examine the Japanese Constitution minutely, we find that it was drawn up so as to separate as many articles as relate to «Rules and Proceedings of Parliament,» «The Laws of the Election of Members of Parliament,» and «The National Budget,» and these are embodied in the supplementary laws of the Constitution, and enacted at the same time. Why was such a separation necessary? Because when a first Parliament is opened, the Government as well as the members, in discussing national affairs, might find it necessary to make some changes in the articles therein. If such a change affect the text in the Constitution, it might afford a good opportunity for some unscrupulous politician to try to change the fundamental principle, and even if he failed in his attempt, it could certainly lessen the weight of the Constitution, but if these articles are separated from the constitutional text, then they can be easily changed and amended so as to meet any need.

This is particularly so in regard to «The Law of the Election of Members to the Parliament,» because the qualifications of members and many details connected with the election must be modified from time to time so as to meet the future requirements of the progress of people and the change of national conditions; as was done in 1900 when the law was modified to meet the requirements in regard to the qualifications of electors and candidates.

The Japanese Constitution is divided into seven chapters, comprehending 76 articles.

Chapter I relates to the Emperor; Chapter II to the Rights and Duties of the Subjects; Chapter III to the Imperial Parliament; Chapter IV to the Minister of State and Privy Council; Chapter V to the Judicature; Chapter VI to the Finances; Chapter VII to the Supplementary Rules.

Chapter I relates to the Imperial sovereignty. The present Emperor of Japan is the direct descendant of the first Emperor Gimmu, who, after having conquered all the tribes, became the sole ruler of the nation in the year 660 B.C. During a period of more than 25 centuries, one unbroken line of emperors has succeeded to the imperial power, a unique exception in the history of monarchies. This fact was strongly emphasized in Article I by stating that «the Empire of Japan shall be reigned over and governed by a line of emperors unbroken for ages eternal.»

Under this chapter the royal prerogatives are summarized as concisely as possible in a few articles, yet conceding all the ancient rights and powers of the Emperor which had been so long in the hands of the Japanese sovereign. In regard to the royal prerogative, European countries have enumerated in their constitutions all the rights and powers of the sovereign so fully that they have greatly handicapped the royal will; but the Emperor of Japan, so long as he does not interfere with the Constitution, can exercise his ancient right to the full. According to the Constitution, the three powers of state, the Legislative, Executive, and Judicial, are invested in the person of the Emperor, who is the life and centre of the whole political mechanism. Japan, by the method she pursues in connection with her sovereign, gets rid of the idea once prevalent in the 18th century, that legislative, executive, and judicial powers should be independent of one another.

Chapter II deals with the rights and duties of the Japanese subject in conformity with European system. When feudalism held sway in Japan, the people were divided into four distinct classes: the military, the farming, the artisan, and the merchant. Civil and political rights were enjoyed only by the military, but at the imperial restoration, in 1868, class distinction in politics was abolished; and by the new Constistution civil preference has likewise been put aside. Each Japanese subject, therefore, in his political and civil rights, is now on an equal footing with his neighbor. Moreover, he has acquired the freedom of speech and writing together with that of publication, and the privilege of holding and attending public meetings and forming associations; liberty to choose a place of residence; and, finally, he is granted the freedom of religious belief and worship. Nor can a Japanese be arrested, detained, tried, or punished except according to law; nor can a dwelling be entered or searched without a magistrate's warrant. The right of property and the privacy of correspondence are considered inviolable except by a provision of law. Each subject has an equal eligibility for civil or military appointments, and for any other public office; and no preference is given to family or order. The right of petition, which in an early period of their constitutionalism was so much sought after by the Anglo-Saxons, and won at last after fierce opposition, was granted to Japanese subjects as a free gift of the Emperor.

In Chapter III the organization of Parliament is divided into, first, the House of Peers, and, second, the House of Representatives. The organization of the two Houses is not mentioned in the Constitution, but is left to ordinary laws, in order to meet the requirements of time, and to be modified accordingly. Qualification and the electorate, too, must vary with social and political progress; but the Constitution itself cannot be changed like ordinary laws.

The parliamentary organization greatly resembles that of England, but its power is more limited. If we compare the Japanese Parliament with that of England and with the Congress of the United States, we see a greater resemblance to the American Congress than to the English Parliament; for the latter has almost the sole right of sovereignty and can wellnigh act as it pleases, and even change the Constitution itself; while the former must obey the provisions of the Constitution, and can do nothing outside of the power already sanctioned thereby. There is, however, a striking difference between the Japanese and the American constitutions, for in the United States the Constitution proceeds from the people; in Japan from the Emperor. Therefore the Japanese Parliament may be styled a non-sovereign, legistro-financial assembly, for it is convened by the Emperor to deliberate upon questions of law and the national budget. If we compare the constitutions of three countries, namely, England, the United States, and Japan, we have a marked dissimilarity: in England the sovereign power rests with Parliament; in the United States with the people; and in Japan with the Emperor. Here we have an excellent specimen of three constitutional forms of government. The first we may call a constitutional parliamentary government, the second a constitutional democracy, and the third a constitutional monarchy.

The Japanese Parliament has many powers, which are enumerated in the Constitution, but if we take the more important ones, they are four in number. The first is to deliberate upon and discuss points of law brought either by the government or by its own members; the second, to examine and vote upon the national budget; the third, to receive petitions from the people, and to question the government upon any matter relating thereto; and the fourth, to present an address to the Emperor upon grave questions of national affairs, or to report to him upon the condition of ministerial confidence.

Chapter IV relates to the ministers of state and privy councillors. There is, possibly, no question of constitutional law further from solution than that dealing with the responsibility of ministers—and to what extent their responsibility reaches, and to whom the ministers are really responsible.

In almost every country governed by a constitution it is acknowledged by custom or usage that the ministers are responsible to the Parliament for the management of national affairs, and by this means the Parliament has already gained the whole power of sovereignty, or is endeavoring to gain it at the expense of ministerial stability.

From this article we infer that the Japanese ministers are responsible only to the Emperor—not to the Parliament—for the management of national affairs; and ministerial responsibility arises simply from the the advice they have given to their sovereign as councillors. But when we examine their position towards the Parliament from a practical point of view, we find the ministers with a twofold responsibility, —one direct, to the Emperor, and the other indirect, to the Parliament. Notwithstanding the fact that the ministers of state are appointed by the sovereign personally, and their official position is entirely dependent upon the royal pleasure, Parliament, by means of an address to the Emperor, controls the conduct of ministers in regard to national policies. This indirect responsibility comes from the position of the ministers towards the Parliament in relation to questions of law and the national budget.

The Privy Council is the supreme deliberative body attached to the sovereign, whom it advises whenever it is consulted upon important questions of national policy. Its function is, first, to decide disputes arising from the interpretation of the Constitution, or the quasi-constitutional laws, such as the Law of the Houses, the Election Law, the Law of Finance, and the like, or disputes in regard to the budget or other financial measures; and, second, to deliberate upon amendments to the Constitution, or amendments to the quasi-constitutional laws. Thus the Constitution creates the two media in the system of government through which the national affairs are managed: the one, the ministers of state, who guide the national policy and transact all the administrations of government; and the other, the Privy Council, which advises the sovereign whenever he consults with that body.

We now come to Chapter V. According to the system which prevailed in Japan during the time of feudalism, the department of justice was under the control of the State, and judges were dependent upon the minister of justice. But as the influence of the military class under the feudal system increased, all the political powers passed into their hands, and consequently judicial power was under the guidance of the chief of police, and so continued till the time of the imperial restoration, in 1868. Immediately after, however, the judicial authority was centered in the Emperor. Thus the Japanese fully recognized the legal maxim that the sovereign is the fountain of justice, and that all judgments should be pronounced in his name; and this recognition is clearly stated in Article 57 of the Constitution, which says that «the judicature shall be exercised by the courts of law, according to law, in the name of the Emperor.»

The judicial organization of Japan is much the same as that of the Western nations, for the court is divided into the following classes, namely: first, the District Court; second, the Provincial Court; third, the Court of Appeals; and fourth, the Court of Cassation. The judges are appointed by the Emperor; but he can select only those who possess the proper qualifications according to the provisions of law. In order that a trial may be conducted with justice and impartiality, the judges are appointed for life, independent of dismissal either by the Emperor or by the Parliament, and they can be discharged from their office only by a sentence passed by the criminal court, or upon the disciplinary trial, whose rules and proceedings are to be decided by law.

Chapter VI deals with finance. The Constitution attaches great importance to financial affairs, for it has made many improvements on European systems which have been the result of the keen observation of the most practical financiers. For instance, the national budget is first presented to the House of Representatives in a form similar to that of most constitutional countries in Europe; but the House of Peers has the same right to examine it and vote upon it as the Lower House; and by these means, while giving the Upper House more power than a mere adoption or rejection of the budget *in banc*, it restricts the absolute power of the House of Representatives over the annual budget. In this respect, the Japanese Constitution more resembles that of the United States than that of Great Britain. A careful investigation of the English parliamentary control over the national budget has shown that there was a time when that Constitution allowed the same right to the House of Lords as to the House of Commons; but in the course of years, the latter gradually gained a full sway over the question of national finance. Yet since the peers pay as heavy taxes to the treasury as the commons, they should not be deprived of the right to vote on this question. This is one of those anomalies of the English Constitution which can be explained only by its peculiar history and tradition. Therefore it is unnecessary to follow the example of Great Britain in a new country like Japan, as she has her peculiar history and a different condition of national finance.

Another instance of divergence is that of the expenditure, which, according to the Constitution, is divided into two classes, the immovable and the movable. In regard to the immovable, Article 67 states that «those already fixed expenditures, based by the Constitution upon the powers appertaining to the Emperor, and such expenditures as may have arisen by the effect of law, or that appertain to the legal obligations of the government, shall be neither rejected or reduced by the Imperial Parliament without the concurrence of the government.» Under this head are included the civil list, ordinary expenses required by the organization of different branches of the administration, and by that of the army and navy, the salaries of all civil and military officers, and outlays that may be required in consequence of treaties concluded with foreign nations; the expense of the House of Parliament, annual and other miscellaneous allowances to the members, government pensions and annuities, the interest on the national debt, redemption of the same, and other outlays of a like nature. These expenditures are fixed by the Constitution, which, being the highest and the fundamental law of the country, cannot be changed by any process of ordinary legislation. Thus all those expenditures which are necessary for the existence and continuance of the national government are secure from reduction or rejection by either House. This provision may be compared with those regulations relating to the English Consolidated Fund; and a similar protective clause has recently been made in several German states, namely, Brunswick, Oldenberg, Hanover, and Saxe-Meiningen.

The movable expenditures, consisting of all those items exclusive of the immovable expenditures which are either casual or temporary in their nature, are annually brought before the Parliament for discussion and approval.

Our last chapter is devoted to the supplementary rules, and has special reference to the amendment of the Constitution, which can be made only by the Emperor.

By the adoption of the constitutional government, Japan has shown to the whole world that she is following in the steps of the civilized nations, and the record of the last 18 years of her Parliament has shown to Europe and America that Japan has mastered the most intricate mechanism of constitutional government.

And again by adopting the constitutional government, Japan not only entered into the family of civilized nations, but has shown to the world that the constitutional government is not monopolized by the Caucasian race. Moreover, Japan by her earnest study of 19th century science, by her keen appreciation of the fruit of civilization, and by her strong perception of national responsibility, has entered into the arena of Constitutional Government and mastered thoroughly the same principle acknowledged in the civilized nations of Europe and America.

Baron Kentaro Kaneko,
Privy Councillor, Tokyo.

7. Japan—Foreign Relations. The first foreign relations of Japan were, as might be expected from the geographical position of the islands, with the peninsula of Korea. The dividing strait with the islands of Iki and Tsushima situated, like stepping stones, at convenient distances, can not have been very difficult to cross even in primitive boats. We accordingly notice that there existed from the earliest times close relations between these two countries, and in the beginning of the Christian era Japan was exercising a sort of protection over the Kingdom of Nimana. The kings of Silla, on the other hand, had so much influence over the tribes in the south of Japan as to instigate them to revolt against the central government. Continuous troubles caused by them induced the Empress Jingo to set out on an expedition to Korea. This invasion, however, was so unexpected that when the Japanese army landed on the coast of Silla, 200 A. D., the King asked for peace without offering the least resistance. The kings of Kulei and Paikchyoi soon followed his example, and the three kingdoms of Korea became vassal states of Japan. They promised to pay annual tributes and the Japanese Resident at Nimana was entrusted with their supervision. They, however, very often failed to keep their promise, and had to be as often chastised. They, moreover, waged frequent wars against one another, and Japan had always to interfere in the interest of the weaker state. Many Residents, too, taking advantage of the great distance from home, attempted to make themselves independent, and armies had to be sent to punish them. Thus the dominion over Korea was the cause of endless trouble to Japan.

In 562 Silla conquered Nimana and did away with the Japanese government which had existed there for about five centuries. Silla grew further in power, and allying herself with the new risen Tang rulers of China conquered Paikchyoi in 662, and Kulei in 668. Japan's attempt to check the progress of the allies was of no avail and her influence in the peninsula came to an end.

The intercourse with Korea, however, was not wholly stopped. Silla sent embassies, although with frequent interruptions and often in hostile attitude, and when the new Kingdom of Pohai arose in the 8th century, her embassies came very often, so that there used to be interpreters for their language in Echizen, and those for that of Silla in Tsushima. When in the 10th century Silla was overthrown and the later Kingdom of Kulei arose, the official relations with Japan were stopped, but commerce went on as before.

The intercourse with Korea was highly beneficial to Japan. Korean weavers, embroiderers, potters, blacksmiths, shipwrights and other artisans were encouraged to establish their industries in Japan. Physicians, astronomers and painters were also invited. The study of Chinese literature was introduced by two Korean scholars, Achiki and Wani, in the latter part of the 3d century and thus the way was opened for the adoption of Chinese characters. In 552 the King of Paikchyoi presented to the Emperor of Japan an image of Buddha and a copy of the sutras. Notwithstanding the strong opposition on the part of many influential adherents to the national worship, Buddhism gained ground steadily. In the train of the new religion came priests, temple architects, sculptors, painters, musicians, etc. These, together with Korean emigrants, who settled in large numbers in different parts of Japan, helped to give a great impulse to the progress of arts and industries.

The Japanese seem to have come into contact with the Chinese for the first time in Korea, where numbers took refuge from the terrors of constant wars in their own country. Later on, some of these, like the Hadas and the Ayas, settled with all their families in Japan.

In those times merchants from different parts of Japan were accustomed to go to China via Korea. In the beginning of the 4th century the Court sent an envoy to Wu with the object of engaging weavers. Afterwards embassies were sent from time to time during the rule of the Sui and the Tang dynasties, the first embassy to the Court of Sui leaving Japan in 606. These embassies were accompanied by a large number of priests and students. These latter came back after a stay of some years full of new ideas. They helped to reorganize the government and make new laws, and introduced improvements in social organizations. They gave a new stimulus to the study of the Chinese classics and thus prepared the way for the growth of the national literature. Two forms of syllabics—*kata-kana* and *hira-kana*—were both their inventions. They brought back with them such useful plants as tea, cotton and orange, and also helped to bring about the progress of arts and industries. In short, they played a very important part in introducing the Chinese civilization.

These embassies had to be stopped at the end of the 9th century, when the power of the Tang emperors became very weak and China was plunged in a frightful state of wars. They were not renewed when the Sui dynasty came to reign, but Japanese priests still continued to visit China, and commerce was even more active than before. The Japanese authorities encouraged the coming of Chinese vessels by opening new ports in the interior, and conferring special honors upon Chinese merchants.

When the Mongol-Tartars overthrew the Sung emperors, and the new dynasty of Yuen began to reign, the great emperor, Kublai Khan, conceived the idea of annexing Japan, and sent in 1268 an envoy demanding immediate submission. This and other embassies were sent back without any reply. The Khan, enraged at this slight, sent a fleet of 450 vessels against the island empire. In 1274 the fleet proceeded to the western coast of Kyushu, after ravaging the islands of Tsushima and Iki. The Japanese army made a stout defence and kept the enemy from landing for more than a month, when a violent storm destroyed many of the invading vessels and the remnant sailed away secretly by night. This disaster only helped to enrage the Khan still more, and when his envoys were put to death in 1279 by the order of Hojo-Tokimune, he fitted a large fleet of 4,000 vessels with 100,000 soldiers and 10,000 Korean contingents. All this time Japan was not idle. The western coast of Kyushu was strongly fortified, and soldiers flocked there from all parts of Japan to defend their country. The immense fleet came in 1281, and began to attack the forts at once. The Japanese suffered very much from the enemy's guns, but they were able to prevent the landing of the enemy for more than two months. The number, however, might have finally told, when for the second time the elements came to Japan's help. On the 16th of August, 1281, a typhoon attacked the coast and shattered the whole fleet of the Mongols; a few thousand survivors took refuge on a neighboring island, but were either killed or taken prisoners. It is said that out of the whole army only three were able to escape alive. Such was the end of the grand fleet of the mighty Khan. Japan might well be proud of her stout resistance, and rejoice over her miraculous deliverance.

After this defeat Yuen emperors relinquished forever the conquest of Japan and even became friendly. Commercial relations were re-established, and in the middle of the 14th century we find semi-official Japanese vessels going annually to China—the so-called Tenryuji vessels, the proceeds of whose commerce were to be used for the benefit of the temple.

At the end of the 14th century, Choo-Yuen-Chang, the founder of the Ming dynasty, after expelling the Mongol invaders, sent an embassy to demand that Japan acknowledge China's sovereignty, but the Japanese government angrily refused to do so. The Chinese emperor, however, thought better of it, and made it a policy of his house never to attempt the conquest of the islands. In the 15th century the Ashikaga shoguns sent frequent embassies to the court of the Ming sovereigns, and commerce was very flourishing. Hakata, Hyogo and Sakai were the chief ports of foreign trade. The most important articles of import were textile fabrics, dye-stuffs and drugs. Copper coins were brought in large quantities, as Japan did not yet coin her money.

During the troublesome times which followed the decline of the power of the Yuen dynasty many lost their livings in China and turned pirates. Many Japanese adventurers joined the bands of pirates and plundered the coast towns of China. Their junks were known as «Bahan» vessels and were held in fear all along the coast. The government was incapable of suppressing them. To exercise closer supervision over the pirates, the Ming government sent passports to be given by the Japanese government to merchants going to China. Japan's relations with China continued in this state till the time of Hideyoshi.

In the end of the 16th century Hideyoshi, having brought into subjection all the princes of Japan, and put an end to internal disturbances, conceived the idea of conquering foreign countries. This was a skilful stroke of policy on his part as the newly subjugated princes would forget their own dissatisfaction in the glory of the nation. From his unprecedented successes he also seems to have come to believe in his mission of grand conquests. In 1590 he sent an Envoy to Korea to demand her to recognize Japan's suzerainty and also to tell China to do the same. As Korea refused to do either he made immediate preparations to invade the peninsula. In April 1592 a land force of 130,000 soldiers and a fleet manned with 9,000 sailors left from Kyushu. The army landed at Fusan, and was everywhere victorious. The capital was taken, the King fled, and two young princes of the royal blood were taken prisoners. Two Chinese armies sent in succor were defeated one after another. These signal defeats induced China to sue for peace. After some negotiations seven articles of peace were agreed upon, and a truce was concluded, the greater part of the Japanese army withdrawing from Korea. In these articles Hideyoshi demanded among other things the cession of one half of Korea, and as pledges for peace in future, the marriage of a Chinese princess with a Japanese prince of the Imperial blood, as also the giving in hostage of the Korean Prince Royal. The Chinese emperor did not ratify these terms, but thought Hideyoshi could be appeased by making him King of Japan. When in 1596 an envoy came to Japan with the imperial patent to that effect, and its purport was made known to Hideyoshi, the latter became so enraged as to throw the document on the ground and summarily dismiss the envoy. Renewal of the war was at once declared and in February of the following year the Japanese forces again left for Korea. The second campaign was not very successful at the outset. The Japanese suffered great losses from the combined Chinese and Korean armies. When they began to gain advantages and assert their superiority over the enemy the death of Hideyoshi (13 Sept. 1598), made the recall of the army necessary.

Iyeyasu, who was intent on promoting the material prosperity of Japan, wished to cultivate friendly relations with China and Korea, and tried to remove the feeling of enmity by restoring the captives of war. In 1606 Korea sent an embassy and renewed her commerce with Tsushima, but China repulsed the advances of Iyeyasu, and forbade her subjects to trade with Japan. Nothwithstanding this, all through the Tokugawa period Chinese merchants came in large numbers to the port of Nagasaki.

Japan was brought to the notice of Europeans for the first time by Marco Polo. His description of Zipangu, immensely rich in gold, made a deep impression on the mind of Europeans, and it is a well known fact that Columbus had the discovery of the island in view when he set out on his westward voyage. It was, however, in 1542 that the Europeans first reached Japan. In that year three Portuguese adventurers, Antonio da Mota, Francisco Zeimoto and Antonio Pexoto by name, met a violent storm on their way from Siam to Ningpo, and after drifting for some days on the broad sea arrived at the islands in the south of Japan.* According to a trustworthy Japanese account† the first arrival of Europeans was at Tanegashima off the coast of Satsuma in 1543. But the «big ship with a crew of more than one hundred men of strange forms and unintelligible language» seems to have been other than the junk of the three adventurers. This ship seems to have come after the discovery was made known by the adventurers. The Portuguese commerce once opened grew in importance very rapidly. Already, in 1546 we find no less than three Portuguese vessels in Japan at the same time.

The Jesuit missionaries helped to bring about further growth of commerce. In 1547 a certain Yajiro of Kagoshima,* who having committed a homicide took refuge in a temple and became a bonze, was taken to Malacca in a Portuguese vessel. There he met Francis Xavier, who was one of the first members of the new order of Jesuits, founded in 1540, and was engaged since 1542 in the conversion of the East. Following Xavier's advice, Yajiro went to Goa and entered the Jesuit College of Saint Paul. He was baptised a short time afterwards, and was henceforth known as Paul of the Holy Faith. In 1549 Xavier left India taking with him Paul and his two servants, and two Jesuits —Father Cosmo de Torres and Brother Joãa Fernandez,—and arrived at Kagoshima on the 15th of August of the same year. After preaching about a year in Satsuma, Xavier was obliged to leave on account of the violent opposition of the Buddhist priests. He went to Hirado—Firando, as the Europeans used to call it—and thence to Yamaguchi. Xavier also visited Miako, the capital, but finding it in a state of great confusion consequent to the wars he gave up the idea of preaching there and returned to Yamaguchi. In November 1551 he left for India from the port of Hiji in Bungo. His stay in Japan was a little over two years and he made only about 700 converts, but he conceived such a good opinion of the convertibility of the people, that he wrote to Rome strongly recommending the sending of more members of the order. In order to facilitate the voyage, he proposed that the Viceroy of India or some rich merchants should be induced to send regularly trading vessels laden with pepper and European goods, which would sell very profitably. He urged that they must catch «every one by his own bait.» Xavier's suggestions were acted upon. Beginning with three in 1552, Jesuit missionaries were sent from time to time, and encouragement of the Japanese trade resulted in its rapid growth.

The Portuguese vessels first visited the ports of Satsuma and Bungo. Xavier induced these vessels to come to Hirado when he removed there, and so long as Christianity was favored the port remained a flourishing centre of foreign trade. But when in 1559 the Prince of Hirado acceded to the demand of the Buddhist priests and ordered the missionaries to leave the place, they persuaded Portuguese captains to visit other ports. In 1570 they entered the port of Nagasaki for the first time, and as the harbor was very convenient and the Prince friendly to the Christians it was made the port for Portuguese commerce. A few years later the Prince of Omura presented Nagasaki to the Church. The Jesuits made it the headquarters of their mission, and many churches and convents were built. The Portuguese settled there in large numbers, and Japanese merchants flocked from all parts of the country. Nagasaki, which was a small fishing village, soon became a very flourishing commercial town. After the conquest of Kyushu, Hideyoshi confiscated the territory and appointed a Bugyo to look after the government of this important town. At that time there were 23 streets and the hills had to be cut and the sea filled up, to make room for building houses.

In 1557 the Portuguese were allowed by the Chinese authority to establish a commerical settlement in Macao. The Portuguese vessels called at that port on their way from Goa to Japan, and leaving it in the end of June or early in July, they reached Nagasaki usually in about 20 days. In leaving Japan they had to sail by the northeast monsoon, which continued to blow from October to March, so that these vessels stayed in port during three to six months. This was the busiest season there. The chief articles of import were raw silk, cotton goods, silk and woolen stuffs from Europe, India and China, leather and glass wares of Europe, and spices of the Southern Islands. In return, the Portuguese merchants carried gold, silver and iron, rice, flour, ham and dried fish; lacquer wares, screens and arms were also exported. The trade was very lucrative and Macao owed its prosperity almost entirely to Japanese commerce.

In the meantime, missionaries were making steady progress. Many princes of Kyushu embraced Christianity and under the patronage of Nobunaga Christianity got strong foothold in central Japan. In 1582 the Christian Princes of Bungo, Arima and Omura sent at the suggestion of Father Valignani an embassy to Spain and Rome. Before this the Prince of Bungo sent an envoy to the Viceroy of India in the vessel by which Xavier returned to Goa, and afterwards, courtesies were exchanged between them. The Prince of Hirado also entered into communication with the Viceroy. But this was the first embassy to Europe. The embassy consisted of two young men of about 16 years of age, relatives of the Princes, and two samurais, a little older, with some Japanese and foreign

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*Antonio Galvão, 'Tratado dos descobrimentos antigos e modernos,' etc. Lisbon, 1563.

†An essay on the introduction of fire-arms by Nampo, a learned priest of Kagoshima, who flourished at the beginning of the 16th century. Fernão Mendez Pinto's claim to the discovery of Japan has misled many writers. A manuscript history of the Church of Japan, up to 1634, compiled by Jesuit Fathers residing in Japan at the time, now in the Ajuda library at Lisbon, refute Pinto's claim, and describes the book as "written more for amusing one than for telling the truth."

*The history of the Church of Japan points out that the name Angero, which appears in most European books, is a corrupted form of Yajiro, who as a bonze adopted the name of Ansei.

Jesuits. They left Nagasaki in February 1582, and, stopping on the way at Macao and Goa, arrived at Lisbon in August 1584. Thence the embassy went to Madrid and were received in audience by Philip II. Nov. 1584. They then crossed the Mediterranean from Alicante to Leghorn and went to Rome via Pisa and Florence. On 23 March 1585, they made a public entry into the city and were received in a public consistory by Gregory XIII. The Pope died shortly after, so that the embassy had to wait for the dispatches till Sixtus V. was elected pope. They left Rome in the beginning of June, and after visiting Bologna, Ferrara, Venice, Mantova, Milan and Genoa, where they were very cordially received by the princes and doges, crossed the sea to Barcelona and thence went through Spain and Portugal to Lisbon. They set sail from the latter port in April 1586, and arrived at Nagasaki in July 1590.*

In Europe the embassy was a great success; the work of the Jesuits in Japan was highly appreciated and among other things they got the exclusive right of evangelizing the country. But on arriving at Japan they were greatly disappointed. The Prince of Bungo was already dead, and his successor was neither so powerful nor so zealous for the interest of Christianity. The Prince of Omura was also dead. Father Valignani, who accompanied the embassy from Goa as the Viceroy's ambassador, was granted an audience by Hideyoshi, but with the express condition that there would be no talk on religion and in his answer to the Viceroy Hideyoshi stated his reasons for expelling the Jesuits and prohibiting Christianity. The edict, however, was not strictly enforced. In 1592 there were altogether 125 Jesuits—40 Fathers and 85 Brothers—and 166 native catechists in 20 houses and residences, one college and one seminary. The number of the Christians steadily increased by the combined efforts of these workers.

By this time there were many missionaries well versed in the Japanese language. Many of these devoted themselves to the translation of religious works. As Valignani brought a quantity of European type with him many of these, like ‘Doutrina Cristã’ (Amakusa 1592), ‘Contemptus Mundi’ (Amakusa 1596), etc., were printed in Romanized Japanese. They also printed ‘Dictionarium Latino-Lusitanicum ac Japonicum’ (Amakusa 1595), ‘Vocabolario da Lingoa de Japão’ (Nagasaki 1603), and ‘Arte da Lingoa de Japão,’ by Father João Rodriguez (Nagasaki 1604). All these rendered great service to foreign preachers. Many religious works were also published in Japanese and must have given further facilities to the mission work.

In the 16th century the Philippine Islands were frequented by Japanese pirates, of whom mention has already been made. In 1574, only four years after Legaspi took possession of the city, a Japanese corsair attacked Manila at the head of 600 men and was about to take it, when relief arrived and obliged him to retire. Being re-enforced by the pirate Limahon, to whose famous band he belonged, the corsair returned to the attack some days later, but was again repulsed, and finally left the Islands. In 1581 another band of Japanese pirates was driven out of Cagayan after a bloody fight with the Spaniards. But it was in 1584 that we first find mention of the coming of the Spaniards to Japan. In August of that year a ship from Manila bound for Macao entered the port of Hirado by the captain's almost incredible ignorance of the seas. The Prince of Hirado seized the opportunity to send a letter to the Governor, asking him to send a letter with missionaries every year. The vessel left for Macao in October, but we hear no more of the affair. In the spring of 1592, Hideyoshi sent an envoy to the Governor of the Philippine Islands demanding him to recognize the sovereignty of Japan, and threatening him with an invasion in case he hesitated to do so at once. The embassy with Harada-Magosichiro at its head arrived at Manila, 29 May. Magosichiro was well known in the city which he had previously visited as a merchant. At that time the number of the Spanish soldiers in Manila was small and wholly inadequate to defend the place. As it was rumored that the warlike preparations then in progress in Japan were really intended for the Islands, the Philippine Government thought it better to dissimulate and gain time. Pretending that the low birth of the envoy made the embassy suspicious, and that they could not understand the letter as there was no one to interpret it,* the Governor, Gomez Perez das Mariñas, sent Fray Juan Cobos with a letter and some presents to Hideyoshi. At the same time he wrote urgent letters to Mexico and Spain informing the King and the Viceroy of the situation, and asking for an immediate re-enforcement. Father Cobos arrived in safety at Hirado, and saw Hideyoshi at his headquarters at Nagoya in the province of Hizen. He left with a letter of Hideyoshi confirming the first, but his ship was wrecked off Formosa, and only the ship of the second Japanese ambassador, Harada-Kiyemon, reached Manila in the end of May 1593. Making the loss of Hideyoshi's letter another pretext the Governor sent a second embassy. Fray Pedro Baptista saw Hideyoshi at Nagoya and sent his answer to Manila by one of his suite, he himself remaining as hostage with other Franciscans of the embassy. A council of chief officials at Manila which met on receiving this letter, 24 April 1594, was of the opinion that a downright refusal to submit would only serve to irritate Hideyoshi and precipitate his invasion, and decided to send a letter expressing their willingness to continue friendly relations with Japan and promising to answer more particularly on receiving instructions from Madrid. By this time Hideyoshi must have become aware of the duplicity of the Philippine Government, but he was then so deeply engaged in the Korean war that the idea of invading the Islands, if he ever really entertained it, had to be given up for the moment. In 1596 a richly laden Spanish galleon called *San Felipe* encountered a violent storm on her way from Cavite to Acapulco and took refuge in a port of Tosa. Hideyoshi forfeited the ship with all its goods. It is said that the captain, wishing to impress the Japanese with the greatness of Spain, pointed out on a map of the world all the Spanish possessions, and when asked how all those territories were obtained, explained that it was by sending missionaries first, and then soldiers to co-operate with the converts in subduing them. This alarmed the authorities, confirming them in the suspicions they already entertained. Hideyoshi immediately ordered Father Baptista with five Franciscans and some Japanese who were in their service to be put to death on the charge of having preached Christianity contrary to his edict. The new Governor, Don Francisco Tello, demanded restitution of the forfeited goods and satisfaction for the execution of the ambassador and his suite, 1597. Hideyoshi answered by simply stating that a ship wrecked on the Japanese coast belonged by right to him, and that the priests were executed because they disregarded the laws of the country and were laying plans to get possession of Japan. Don Francisco did not make any further protest. The commerce with Japan to which the Spanish settlement owed its supply of provisions, iron, nails and other material for shipbuilding, was so important that the Philippine Government was ready to overlook any slight rather than lose it.

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*Many documents relating to this embassy, among which are some letters of the ambassadors in Japanese, are still extant in the Italian archives, especially in the Vatican archives, and the State archives of Rome, Florence, Venice, Mantova, Modena, Milan and Genoa. The more interesting of these have been published: G. Berchet, ‘Le antiche ambasciate Giapponesi in Italia,’ (Venice 1877), and Boncompagni Ludovisi, ‘Le prime due ambasciate dei Giapponesi a Roma’ (Rome 1904).

*A Spanish translation of the letter still preserved in the Archivo de Indias, at Seville, proves that this was a mere pretext. The translation, probably made by some Chinese, almost exactly corresponds with a Japanese draft in existence. Many other documents relating to this affair are preserved in the same archives.

When Iyeyasu succeeded to the Government he adopted an entirely different attitude towards the Islands, as he did towards Korea. He asked a Franciscan Father in Japan to communicate to the Governor his desire to maintain friendly relations with the Islands. In 1602 he sent an embassy to Manila and the Governor, Don Pedro de Acuña, cordially responded to it. In compliance with the request of Iyeyasu he sent vessels to the port of Uraga yearly. Iyeyasu also wished to establish commercial relations with Mexico. He repeatedly asked the Governor to make his desire known to the Viceroy. When in 1609 the galleon *San Francisco* was wrecked on the coast of Kazusa and Don Ridrigo de Vivero, ex-Governor of the Philippine Islands, who was one of the passengers, visited Suruga, Iyeyasu mentioned his desire. Don Rodrigo, seeing an opportunity for the Christianization of the land and the expulsion of the Dutch who had established a factory at Hirado, promised to use his influence to bring about the desired relations and consented to make the voyage to Mexico in a Japanese ship. The ship registered 120 tons, and had been built some years before by William Adams, an English pilot who had been in Japan *since 1600.* Fray Alonzo Muñoz, a Franciscan Father, left in the same vessel with the letters of Iyeyasu to the King of Spain and his minister, the Duke of Lerma. The *San Buenaventura* set sail from Uraga, in August 1610, and reached Matanchel in October. This was the first Japanese ship that ever sailed to Mexico.

In April 1600, a Dutch ship called the *Liefde* arrived at Bungo. It was one of the five ships and left Texel, June 1598, with the intention of reaching the Molucca Islands by way of the Strait of Magellan. The crew, of whom only 18 survived, remained in Japan. In 1605 the captain, Jacob Quackernack, sailed from Hirado in a junk of the Prince with a letter of Iyeyasu and a passport for the Dutch vessels that would come to Japan. In 1608 the directors of the Dutch East India Company, hearing that a truce for 10 years was about to be concluded between Holland and Spain on the basis of maintaining the status quo, sent a despatch boat to the Commander of the fleet in the East instructing him to make treaties with as many native princes of the East as possible, and especially with Japan. Admiral Verhoeven accordingly ordered two ships, the *Roode Leeuw met Jijlen* and the *Griffoen,* to Japan. They arrived at Hirado, 2 July 1609, established a factory there and left 3 October, with a letter to the Stadtholder and some passports from Iyeyasu. After the arrival of the *Liefde* the Portuguese and the Spaniards tried every means to induce the Government to send the Dutch out of Japan, but Iyeyasu in pursuance of his policy of encouraging foreign commerce, steadily refused to take such a step.

When Don Rodrigo arrived at Mexico an expedition was about to leave for the discovery of the Isles of Gold and Silver, which was said to be situated near Japan. It was decided that Sebastian Vizcaino should go first to Japan and thank the Government for the courtesies shown to Don Rodrigo and thence to set out on the voyage of discovery. Vizcaino left Acapulco, 22 March 1611, taking with him the Japanese merchants who accompanied Don Rodrigo, and arrived at Uraga, 10 June 1611. He was received by the Shogun and Iyeyasu with great ceremony. With permission of the Government he sounded the eastern coast of Japan and then set out from Uraga, 16 Sept. 1612, on the voyage of discovery. After sailing about for many days the ship suffered so much from the storms that Vizcaino was obliged to enter Uraga again, 7 November. This time he encountered a reception quite different from the first. The enemies of the Spaniards insinuated that the soundings of the coast were made with a view to the coming invasion and Vizcaino's silence about the Isles of Gold and Silver was also commented upon as a treacherous act. These added to the dislike the authorities had entertained of the overbearing attitude of Vizcaino. Vizcaino was baffled in all his attempts to get a vessel to take him back to Mexico. He was obliged to accept the proposal of Date-Masamune, a powerful prince in the North of Japan, to take passage in his ship. The ship was to carry an embassy of Masamune to the King of Spain and the Pope, with the object of asking them to send Franciscans to teach Christianity in his dominion, for whose voyage Masamune offered to send ships to Mexico every year. The moving spirit of the embassy was Fray Luis Sotelo, who wished to open a field of action for his order. With the same object he had promoted the embassy of 1610, but there was no news of Father Muñoz. He grew impatient and determined to go himself.

He was aware of the desire of Masamune to open commerce with Mexico. He saw his opportunity in the embarrassment of Vizcaino, and persuaded Masamune to send Vizcaino and his crew to Mexico in his ship. He himself undertook to go with Hasekura-Rokuyemon, a retainer of Masamune, to make a commercial treaty with the court of Spain. The ship set sail from the port of Tsukinoura, 28 Oct. 1613, and arrived at Acapulco, 25 Jan. 1614. Thence the embassy proceeded to Mexico and embarking from Vera Cruz, 10 June, entered the port of San Lucar on the 5th of October. They were magnificently entertained in Seville, where they took a letter of Masamune* with his presents. The embassy proceeded to Madrid, and had an audience of the King, 30 Jan. 1615. Taking passage from Barcelona in a ship bound for Genoa the embassy arrived at Rome, 25 Oct. 1615. Pope Paul V., who was impatiently waiting for the arrival of this second embassy from Japan, received them with great honors. He recommended the King of Spain to accede to the desire of Masamune and nominated Sotelo bishop of the north-eastern part of Japan. Hasekura was made a noble, and the samurais of his suite citizens of Rome. The embassy left Rome, 7 Jan. 1616, visited the Grand Duke of Tuscany on their way, and retraced their steps from Genoa to Seville. Considering the religious zeal of the King of Spain, this embassy was expected to accomplish its object easily, but it was doomed to share the same fate as that of Father Muñoz. Muñoz arrived at Madrid at the end of 1611, but his mission proved a failure. Fray Diego de Santa Catalina was sent after long delay as envoy and arrived in the ship of Masamune at Uraga, August 1615, but as the letter of Phillip III. said nothing about the commerce, the government refused to accept the presents, and dismissed Fray Diego in disgrace. In default of any other vessel Fray Diego made another voyage in Masamune's ship, contrary to the orders of the Viceroy, and arrived in Mexico. 1 March 1617. The failure of Muñoz's embassy was mainly due to the strong opposition on the part of the merchants of Manila, who desired to monopolize the Japanese trade. In the case of Masamune's embassy, another factor entered. The Jesuits, fearing that its success would secure to the Franciscans the same advantages that the embassy of 1585 did to themselves, used their powerful influence to bring about its failure. The persecution of 1614 was made use of to discredit the embassy. Neither the recommendations of the Pope and the Municipality of Seville nor the utmost efforts on the part of the embassy were of any help. The embassy had to leave for Mexico in 1617 without having accomplished its mission. In the spring of 1618, they embarked at Acapulco in the ship that was waiting for them since the previous year and sailed for the Philippine Islands. Hasekura returned to Japan in 1620. Sotelo, who was placed under strict vigilance of the authorities, finally succeeded in evading it and embarked for Japan, 1622. He was easily recognized, thrown into prison and put to death, August 1624.

The attempts to establish a regular trade with Mexico ended in failure. But all this time the foreign commerce of Japan kept steadily growing. In 1612 two Dutch ships arrived at Hirado. These were the first ships sent from Amsterdam after receiving the news of the establishment of a factory in Japan. The Dutch commerce was now regularly established.

In 1613 another competitor entered the field. The East India Company of London, which long cherished the idea of trading with Japan, at last sent, in April 1611, Captain John Saris with the express object of establishing a factory in Japan. Captain Saris arrived 11 June 1613 on board the *Clove* at Hirado. William Adams, whose presence in Japan was known in England, was sent for, and with his help ample privileges were obtained, and a factory was established at Hirado.

After the death of Iyeyasu, 1 June 1616, the Shogun adopted a new policy toward the foreigners. He began with ordering the Dutch and the English to recall their agents at Osaka and Yedo, and to limit their trade to Hirado and Nagasaki. He adopted a more severe measure towards Christianity, and seeing that the missionaries continued to come from the Philippine Islands against his repeated orders, he prohibited the visit of Spanish vessels in 1624. An embassy, which came from Manila in 1625 to ask for the renewal of the trade, was sent back with orders to come no more.

The English and the Dutch, confined to the small market of Hirado, began a sharp competition between themselves, and even went so far as to fight with each other in the street. The English suffered very much from this competition, and felt themselves greatly relieved when a Treaty of Defence was made between the two nations. A part of the Fleet of Defence was stationed at Hirado and used to go out on piratical expeditions from that port and return there with prizes. This was the busiest time for the English factory (July 1620—August 1622). Very soon after the fleet was disbanded, the factory was dissolved as unprofitable, and the members of the factory left for Batavia, 24 Dec. 1623. The rejoicing of the Dutch at this event did not last long.

In 1624 the Dutch founded a commercial settlement in Formosa with the consent of China. There they found many Japanese already trading with the Chinese. Formosa, then known as Takasago, seems to have been a favorite rendezvous of Japanese pirate vessels, and since the time of Hideyoshi several attempts were made to subjugate the island. Such being the case the Japanese vessels that entered the port refused to pay the customs duties levied by the Dutch. Hamada-Yahyoye, captain of a junk, was especially offended at the treatment he received and took to Japan 16 natives of Sinkan as ambassadors sent to offer the sovereignty of the island to the Shogun, 1627. The Shogun received them at the court, and sent them back with presents. A few months later Pieter Nuyts, Governor of Formosa, went to Japan to notify the Government of the occupation of Formosa and to negotiate for the prohibition of Japanese junks going to Formosa. But he was not even received by the Shogun, and returned to Formosa greatly offended. When Hamada arrived there with two junks in 1628, the Governor threw the natives into prison and confiscated the Shogun's presents. He then took on shore all the arms in the junks and tried to keep the junks till he had consulted the chief factor of Hirado on the steps to be taken. Hamada called on the Governor with some companions and taking him unaware made him prisoner. The Dutch came to the rescue in large numbers but could do nothing lest Nuyts should be killed. After some negotiations Nuyts was released in exchange for five hostages, among whom was his young son. Restitution was made for the damages suffered by the Japanese, and the junks were allowed to leave in company with a Dutch ship which carried five Japanese hostages to be exchanged with the Dutch at Nagasaki. On their arrival the Government threw the Dutch hostages and the more important members of the crew of the Dutch ship into prison, sequestrated the ships at Hirado and put strict watch on the Dutch factory.

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*The letters of Masamune to the city of Seville and the Pope are still kept in the municipal archives of Seville and the Vatican library respectively. Correspondences, resolutions, reports and other documents relating to the embassy are abundantly preserved in the municipal archives of Seville and the Archivo de Indias. Documents from the Vatican and the State archives of Venice and Genoa have been published in the works of Berchet and Boncompagni-Ludovisi already referred to.

Greatly alarmed at this news the Governor-General recalled Pieter Nuyts to Batavia and sent an envoy to Japan to explain the Formosa affair, 1629. But the Japanese Government remained inexorable and insisted on the surrender of the fort in Formosa. The Governor-General decided to make Nuyts the scape-goat. When he arrived in 1632 and was delivered to the Government, other prisoners were released, the Dutch trade was restored and the claim to Formosa was given up. Nuyts himself was released in 1636.

After strict measures had been adopted to stop the entrance of missionaries, Japanese priests educated abroad were sent. The Government now resorted to a strict supervision upon Japanese junks engaged in foreign trade and the Japanese coming back from abroad, 1633. Finding this still inadequate the Government prohibited all Japanese junks to go abroad under severe penalty, 1636. This put an end to an active trade with Siam, Anam, Cambodia, Champa and most important places of the Malay peninsula, which had continued to grow since the time of Hideyoshi and with whose sovereigns the Tokugawa Government used to carry on correspondence. In many of these places there were considerable Japanese settlements; the Japanese soldiers of fortune sometimes played very important rôles, like Yamada-Nizayemon in Siam.

The Portuguese merchants were shut up in an artificial island, Desima, in the harbor of Nagasaki, 1635, and all the descendants of the Europeans in Nagasaki and Hirado were sent away. In 1637 the peasants of Arima, who had been long groaning under heavy taxes, rose against their oppressors. The Christians of Amakusa joined them. After some delay the Government forces arrived. The Christians defended themselves very bravely in the castle of Hara, some 40,000, women and children inclusive, against 120,000 trained soldiers. The siege lasted for more than three months, but the castle was finally taken by a general assault.

This revolt made the Government even more suspicious of the Christians, and suspecting that the Portuguese were at the back of the rebels decided to put an end to the Portuguese commerce, which although broken in 1610, when the Prince of Arima attacked the *Madre de Dios* in the harbor of Nagasaki as the captain had refused to appear before the authorities and answer the charge of having murdered some Japanese who visited Macao in 1608 in a junk belonging to the Prince, and the ship was accidentally burned and all the crew perished, was restored in 1611 by Dom Nuno Sotomaior who came as ambassador of the Viceroy. Two vessels which arrived in 1639 were sent back with orders never to return under penalty of death, and when in 1640 an embassy came from Macao, the ambassadors with all their suites excepting 13, mostly blacks, were executed and the ships sunk.

In 1647 an attempt at the renewal of the trade was made by Dom Goncalo Siqueira de Souza, who came to Nagasaki as Ambassador from Portugal to announce its independence from Spain and the accession of John IV. to the throne, but it proved a failure. Another attempt was made in 1685, when a junk with 12 Japanese was wrecked off Macao, but the captain of the vessel that took them to Nagasaki was sent back with strict injunctions to return no more.

The relations with Portugal, however, lasted so long that they have left many indelible traces. In the Japanese language there are numerous words of Portuguese origin, some of which are so perfectly naturalized that their foreign origin does not strike one at once. Such are: boro (bolo, cake), kompeito (confeitos, comfits), pan (pão, bread), karuta (carta, cards), biidoro (vidro, glass), shabon or sabon (sabão, soap), batteira (bateira, boat), rasha (raxa, cloth), jiban (gibão, undershirt), birodo (veludo, velvet), kappa (capa, cloak), zambo or zabon (zamboa, pompoleon), marmero (marmelo, quince), etc.

When the Portuguese ships were sent away in 1639, the Dutch thought that they had now got the monopoly of the trade, and it was made an occasion of a fête at Batavia. But they were very soon undeceived. In November 1640 they were ordered to demolish the new stone warehouse at Hirado, and the next year they were removed to Nagasaki. They were closely confined in the small island of Desima which they were seldom allowed to leave. There they were allowed to carry on commerce on a limited scale under strict supervision of the authorities. All these measures were taken to prevent the entrance of Christian missionaries. Every conceivable device that might be resorted to by them was carefully provided against. The Government succeeded so well that after the execution of some missionaries who came in 1643, only one more attempt is recorded. In 1708 a Jesuit Father, Giovanni Battista Sidoti, landed at an island near Satsuma, but was discovered and sent to Nagasaki and thence to Yedo where he died in prison 1715.

The policy of seclusion was carried out. Besides the Dutch only the Chinese and Koreans were allowed to trade with Japan, and embassies were sent from Korea on occasions of the Shoguns' assuming the Government.

During the centuries that followed, the only notices Europe had of Japan were through the Dutch. Engelbert Kaempfer (1690-1692), Charles Peter Thunberg (1775-1776), and Philipp Franz von Siebold (1822-1830), all physicians to the factory of Nagasaki, contributed above all others to the knowledge of Japan in Europe. The works of Isaac Titsingh, J. F. van Overmeer Fisscher and G. F. Meijlan, who were directors of the factory, gave further information about Japan.

Whatever Japan received of the material civilization of Europe was through the Dutch. Especially after the Shogun Yoshimune (1716-1745) did away with the proscription of European books, so far as they had nothing to do with Christianity, the study of Dutch books became very popular. Many scientific books were translated from the Dutch, and great progress was made in mathematics, astronomy, medicine, natural sciences and military arts. The official visits paid from time to time by the directors of the Dutch factory, usually accompanied by physicians, were the opportunities eagerly seized by the savants of Yedo to learn more about Europe and her science. The Dutch scholars came to be leaders in thought and many of them played a very important part in bringing about the new era.

At the end of the 18th century this state of quiet seclusion in Japan was disturbed. The English, who were baffled in their attempt to renew the trade in 1673, when they sent the ship *Return* from Formosa, repeatedly visited the Japanese seas after 1791. In 1813 and again in 1814 vessels sent from Batavia by Lieutenant-Governor Raffles tried to take the factory at Nagasaki in the English hand, but were thwarted by Director Hendrik Doeff. Before this the Russians, who had been gradually proceeding southwards from Kamchatka since the beginning of the 18th century, made several attempts to open intercourse with Japan. In 1792 Lieutenant Laxman came to Matsumaye with some Japanese who were wrecked in the Okhotsk Sea and was directed to Nagasaki for negotiations. In 1804 Count Resanoff accordingly came to Nagasaki, but his mission was a failure. In 1813, Captain Rikord was sent back with Golownin from Hakodate with a notice that Japan desired no commerce. In 1837 the *Morrison*, fitted out by an American firm at Macao to return some shipwrecked Japanese, visited the bays of Yedo and Kagoshima, but was driven off. In 1848 Commodore Biddle, who commanded the American fleet in the China Sea, came to the Bay of Yedo with two warships to ascertain if the Japanese ports would be opened and was sent back with a negative answer. An embassy, which King William III. of Holland sent in 1844 with the express object of persuading Japan to open her ports to European nations, equally failed. When, however, Commodore Perry entered Uraga with a fleet of four ships, 8 July 1853, and delivered a letter of President Fillmore, asking «friendship, commerce, a supply of coal and provisions, and protection for the shipwrecked people,» and returned for an answer early the next year a treaty was concluded and signed at Kanagawa, 31 March 1854. Japan consented to open the ports of Shimoda and Hakodate to the American trade.

In 1858 a new treaty was made with the United States, substituting the port of Yokohama for Shimoda, and promising to open Nagasaki, Kobe and Niigata or another port on the western coast of Japan. On the basis of these treaties, Japan concluded treaties with Great Britain, Russia, the Netherlands and France (1854-1858) and at somewhat later dates with other Powers of Europe.

The opening of the country after so many centuries of isolation could not be effected without opposition. The Shogun's government was severely criticized for having taken such a weighty step without having first asked the sanction of the Emperor. Ii Kamon-no-Kami, Prince of Hikone, was assassinated as being chiefly responsible for the conclusion of the treaties, 24 March 1860. The Emperor repeatedly ordered the Shogun to take vigorous measures for the expulsion of foreigners. The Shogun's government tried to explain this state of affairs to the Powers and requested them to withdraw, but the Powers would not consent to do so. The hostile act of the Prince of Nagato towards foreign vessels passing the strait of Simonoseki, and frequent outrages committed by samurais against European residents caused great trouble to the Government. These and other troubles induced the Shogun to resign and restore the power to the Emperor, 9 Nov. 1867. The Government of the Emperor now took a measure adapted to the need of the times and ratified the treaties, and the Emperor received foreign representatives in audience, 1867. The expulsion of foreigners was, indeed, a cry raised for gathering those who were against the Shogun's régime.

Having once given up her policy of seclusion, Japan exerted herself to the utmost to enter into closer relations with foreign countries. When the vexatious problem of revision of treaties was finally solved after so many abortive attempts (1892-1897), the whole country was thrown open to foreigners and all the restrictions hitherto imposed on them were removed. After her co-operation with the Western Powers during the Boxer trouble in China (1900) Japan was fully admitted to the comity of civilized nations.

In recent times Japan was more than once brought to the verge of war with China: in 1874 when a Japanese army was sent to Formosa to punish some aboriginal tribes in the south for having repeatedly murdered the Japanese subjects wrecked on their shore, and in 1879 when China objected to Japan's making the Ryukyu Islands an integral part of the Empire by converting them into the prefecture of Okinawa. But the rupture came when China refused to acknowledge the independence of Korea. The war opened with the naval encounter off the coast of Yashan, 25 July 1894, and ended in a complete defeat of China. A treaty of peace was signed at Simonoseki, 17 April 1895. China acknowledged the independence of Korea; ceded Formosa and the Pescadores to Japan, and promised to pay a war indemnity.

The interference of the three Powers—Russia, Germany and France—which obliged Japan to give up the possession of the Liaotung peninsula, was very much resented by the nation. The exchange of Saghalien with the Kurile Islands in 1875 was always regarded as an act of injustice on the part of Russia. Russia's advance in Manchuria and her growing influence in Korea alarmed Japan, and war finally broke out, 8 Feb. 1904. After a succession of brilliant victories, both by land and sea, for Japan, peace was made by the Treaty of Portsmouth (q. v.), 5 Sept. 1905. That part of Saghalien, south of the 50th parallel of North Latitude was ceded to Japan. Russia promised to withdraw from Manchuria and acknowledged Japan's special interest in Korea. The new Convention between Japan and Korea, 17 Nov. 1905, established Japan's position in Korea.

Japan's status as one of the Great Powers was established by her successes in the wars with China and Russia, and found its recognition in the offensive and defensive alliance Great Britain concluded with her in January 1902 and August 1905. See ANGLO-JAPANESE TREATIES.

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8. Japan—The Samurai. *Definition and Etymology.*—Samurai, now domiciled in the dictionaries of European languages, is a strictly Japanese term, being derived from a verb—*samurau,* to attend, to wait upon, to serve. Samurai, therefore, meant originally a person who attended upon another—naturally upon his superior. But the use of the term was confined to honorable and personal service, and as in the course of time, under the régime of feudalism, class distinctions and different grades of honor were instituted and certain kinds of service, notably the military, became more exclusive, the term samurai was applied only to those belonging to the military class of the feudal clans. In a wide sense it included the whole of the military nobility, the warrior class: though in a more usual and restricted sense, it meant the inferior nobility exclusive of the *daimyo,* much like the English knights bachelors, whom Blackstone defines as «the most ancient though the lowest order of knighthood.»

The idea of what the samurai was, can, perhaps, be better conveyed by comparing him with his compeer in Europe than by a mere etymological explanation. Almost every nation has had at one time or another—especially under the régime of feudalism, but even prior to it—something like the usage of knighting, whether it was done by means of a formal rite or not. Cæsar speaks of the institution of *soldurii* in Aquitaine; Tacitus mentions that of *comitati* among German tribes; the Romans had *equites aurati;* Mediæval Germany had *Ritterschaft;* France her *chevaliers;* in fact continental Europe boasted of the existence of *Milites medii.* It can scarcely escape the most cursory glance that several of these terms bear an etymological relation to the horse, obviously because the knights served on horseback, whereas the common soldiers marched on foot. It is interesting to note, however, that the English word knight has no reference to a horse—its original meaning being the Saxon cniht, signifying *puer, servus* or attendant, this possessing a significance strangely parallel with samurai. Samurai is, or was, explained as being strictly of Japanese origin; but as is the case with every word in the Japanese vocabulary, there is either its equivalent in pure Chinese or a sinified expression for it. In fact, both in literature and formal speech, it was considered more dignified to adopt the sinico form; so that the term *Shi* (the nearest Chinese equivalent for gentry), or *Bushi* (fighting nobility), or *Buké* (warrior family), came to be used almost as commonly as the pure Japanese original. In contrast to the sinico Bushi may be mentioned its archaic equivalent in purest Japanese. The word *mono-nofu* or *mono-nobe,* literally «article bearer;» *i. e.* the wearer of arms—more especially the sword, which was the distinguishing article worn by the order. Some derive it from a word meaning thing-doer, one who acts or does anything, the most important thing of course being fighting. Still another archaic term is *masu-rao,*—strong man, and though this was used in contrast to weak woman, and therefore meant simply masculine personality, it was often applied in the sense of samurai. Both *masu-rao* and *mono-nofu* are now used almost only in prosody.

History.—As has already been hinted at, the germ of the institution of a separate class comprising the fighting force, can be found in the term samurai. But it took centuries of gradual development for it to assume a narrow exclusive meaning. Formerly there was no separate class of warriors. Whoever was possessed of two brawny arms and two stalwart legs, joined an army in times of need, and whoever added to strong limbs the possession of a powerful will and stout heart, became a leader. Even after the leadership, gained by personal superiority, became hereditary, the fighting force was not separated from the mass of the population. The industrial, which was almost entirely agricultural, and the military, or militant, classes were not differentiated.

When the bugle sounded, the peasants left their plows and hurried to the front. At the end of the war, they plodded back to the fields. Such an arrangement sufficed for the maintenance of peace so long as the central authority was strong enough to be feared and its order easily respected, or, what amounts to the same thing, so long as local life was too weak to assert itself in opposition to the central will. But the constant warfare of the middle ages necessitated division of labor—consequently of social classes, and by the end of the 8th century we notice that the samurai formed a pretty clearly defined order.

About the 9th and 10th centuries, the governors of the provinces were not only appointed from Kyoto, where was the seat of government, but were usually despatched from among the court nobility, much like the prefects of the Roman Empire. They served a number of years in the country, feeling like exiles, always yearning to go back to the court and the capital. While such feeling was general there was little danger of local life becoming strong or turbulent, but as the population grew throughout the Empire, and villages developed into towns, the service of a prefect changed to one less onerous and fatiguing. The more ambitious shared with Cæsar the sentiment that they would rather be first in a mountain village than second in Rome. Such men would willingly stay in their provinces, where they would surround themselves at least with a body-guard and perhaps with an army, particularly if they had danger to fear from any source. They took pains to have ready a certain number of trained fighters for emergency. Governors who by these and other means gained influence and power in their localities, were soon rooted in them, so that when their term of office expired they either begged for postponement or flatly refused to be moved. Oftener still did it happen that the offspring of the prefects were left behind in the provinces and these were naturally treated with deference by the people. As they and their relatives increased in number, they came to form a class between the high nobility and the rest of the population. They were naturally possessed of landed estates; for in spite of the fact that private ownership of land was forbidden by law, as there was little control exercised by the court, the local magnates actually owned large tracts of land in their own names. It was the owners of large manors (*shoyen*) who were called «great names» (*daimyo*), and these surrounded themselves with armed protectors, to whom the ancient title of *mono-nofu,* or samurai, was applied. This was a quite common origin of hereditary governorship, which later developed into feudal relations. It is not to be inferred that this was the chief cause of feudal institutions. The growth of feudalism was so gradual that no definite dates can be assigned to each step of its progress; but in the 12th century, when Yoritomo inaugurated the régime of feudalism, the samurai order was in full swing of development and continued to flourish during succeeding centuries, until it was abolished in 1871.

We must bear in mind in following the history of the samurai that they never formed a close corporation. The class was kept up by heredity, but was never wholly exclusive. It was recruited from among the peasants, or even from the much despised merchants, provided the candidates proved themselves efficient in any branch of military art. It was also possible for the samurai to adopt promising boys from other classes than their own. While the order could thus be replenished from outside, such of its members as proved unworthy of its privileges could be excluded,—as for instance by being deprived of their rights of samurai by their lords (daimyo) or by having their lands expropriated. This would leave them without the means to maintain their livelihood, not to speak of their pretensions. Even at present the samurai are recognized under the appellation of *shizoku* (*shi*-class); but this is only a name, implying neither rights nor duties. In 1871, when they were mediatized, many of them surrendered even their title. Their revenues, which had been given them in so many bushels of rice a year, were commuted into interest-bearing bonds and their peculiar privileges were taken away, to make place for the general conscription whereby the whole nation was, so to say, raised to the rank of the samurai, as far as the right of fighting for the country was concerned. Still the order contained about 400,000 families, or 2,000,000 souls, and in every way formed a formidable power in the empire. Primarily a fighting order, the samurai were political rulers in times of peace. In the four-fold classification of the people, they were at the head,—the rest being the tillers of the soil, the artisans, and lastly the merchants.

As an army they comprised the bravest and cheapest defense of the nation; as an economic factor they were the most important land owners; and considered merely as consumers they created the chief demand for the finer products of manufacture and art; as an intellectual power they were scholars in every field of knowledge, whereas the priests, if deeper in their studies, confined themselves to Buddhistic lore; as a moral potency they set the standard for the entire nation, and it is in this last aspect that we shall treat the samurai in this article. The moral teachings of the samurai are contained in an unwritten code of ethics, which, for want of a better name, may be called Bushido.

Bushido.—Literally «the way of the warrior,»—means the principles which should guide the samurai in his dealings with himself and with the rest of the world. It means the *noblesse oblige* of the fighting order, the Precepts of Knighthood. It may be roughly rendered as the moral notions of Japanese chivalry. Very often the term is employed in a broad sense when it includes more than moral precepts, bringing within its compass the technical arts which a samurai was expected to master. Of course these arts were mainly of a martial character, *e. g.*—fencing, jiujutsu, horsemanship, the use of the spear and of the bow and arrow—later of the gun. As improved methods of warfare were introduced, the technical part of Bushido training lost its importance, except as an efficient mode of physical exercise; but its ethical part is still a spring at which the Japanese people drink and refresh their moral existence.

Before proceeding with a resumé of its precepts, it may be well to dwell more fully upon the fact that Bushido is not a written code of morals. It possesses neither a Bible nor a Koran, and though the writings of Confucius and Mencius furnish it with no mean ethical principles, Bushido is neither Confucianism nor Mencianism. There is no systematic treatise on the principles or precepts of Bushido, and if now and then an attempt was made at one, it failed of general acceptance. Like a Volkslied or proverb, it is the product of many minds that put a word there or changed it here, and which the mass of its followers sanctioned as true to their experience; or—to take a more diginified example, its growth was like that of the British constitution, unformulated and unwritten, but not the less with mighty power to accuse or excuse man's action. It consists largely of the *modus operandi* of right conduct and soul discipline. The last expression—soul discipline—is used advisedly, as I hesitate to use freely a more exalted term—spiritual culture. If asked to enumerate the articles of faith and of the ethical doctrines of Christians, one might answer by presenting a copy of the Bible or perhaps the Nicæan creed or a treatise on theology; but if asked to tabulate the duties of an English gentleman, one would feel the inadequacy of any systematic treatise. The letters of Chesterfield cover but a small fraction of a gentleman's duties, and Froissart's Chronicles and the Waverley novels do not form a system. This is exactly the case with Bushido. Japanese literature is not altogether wanting in attempts at a more or less orderly presentation of the samurai's duties and privileges; but none rose to the rank of a classic and none was adopted as a standard. The samurai belonged to different clans, being retainers of different lords. Though the daimyo were usually in hostile relations one to another, and though their retainers necessarily shared in these relations, still there was the consciousness of a common bond, the sense of identity of interests among them. They knew their vocation and interests, as distinct from those of other classes of the community, were the same regarding themselves, irrespective of the differences of the clans in which they served. *Bushi wa aimi tagai* («the samurai are the same one with another»). Being so closely allied in their calling and interests, it was only natural that they should come to adopt—even without mutual consultation or joint session—the same rules of conduct, primarily, as I imagine, in their public quasi inter-state, or literally inter-clan, relations, and later in their private conduct.

It is almost axiomatic that the ethical obligations of any social, exclusive class show wider divergences than the laws of morality which unite man to the world in general; in other words, a class such as the samurai has a very high conception of some responsibilities and yet it may tolerate the most lax ideas in others. It cannot be denied, as Crozier says in his 'Civilization and Progress,' that «the code of honor which regulated the intercourse of the upper classes in the old aristocracies had much more influence on their conduct than the ten commandments.» The strength and weakness of any class morality lie just here, and this is true of Bushido. In its eagerness to foster the masculine virtues, it neglected the proper education of the gentle sex; in its one-sided appreciation of military valor, it discarded industrial worth; in its exaltation of samurai prerogative, it set at naught the commonest rights of the plebeian order. But it is not the shortcomings of Bushido which have impressed the nation, but its practical precepts. What is deficient and defective in this moral régime can be remedied and supplied by the growth of democracy, which is irresistible, whereas the qualities it has impressed upon the nation are such as cannot easily be promoted by democratic institutions. To give a few of the more prominent moral sentiments particularly cherished by Bushido, we will briefly describe its sense of honor.

In Japan it is more usual to employ the word *renchi-shin* (literally, the sense of shame) as equivalent to the sense of honor, which characterizes every repertoire of knightly virtues. The worst thing which could be affirmed of a samurai was that he knew not shame. The two conceptions of honor and shame are so intimately allied that they not only seem inseparable but the reverse and obverse of the same thing. Honor sounds like an accretion gained over and above one's ordinary lot, and shame savors of something of which one is deprived. Shame is a painful sensation which accompanies the knowledge of guilt. It is what Kant would call the natural and immediate punishment for one's own conscious commission of sin or omission of duty. It is the self-knowledge of disturbed moral equipoise, and the more perfect the balance the more sensitive is it to the slightest disorder. Shame is the most delicate index of moral health, and the bushi was required to distinguish what constitutes shame and to avoid it. Like the English word shame, *haji* means first of all a painful sensation excited by a consciousness of guilt or impropriety, in which case it was a spiritual experience of an individual, irrespective of his relation to others; but it also means, secondarily, reproach or contempt incurred from outside.

It may be asked by what standard was the guilt or innocence of a deed, involving honor or shame, to be decided. A deed or thought that in the least clouded the lustre of the immaculate mirror of the mind was forthwith deemed shame. This simple faith in human nature was accepted as an axiomatic truth, no attempt being made to demonstrate it philosophically or theologically. Shame, therefore, was not explained; it was to be felt and avoided. As to honor,—the opposite of shame,—it was identified with a good name, and hence with reputation and fame. The error into which young samurai fell so easily and so naturally was to confound these and to endeavor to acquire name—rather fame—by means of any sort. Hence emulation and rivalry sometimes went beyond the limits of commonsense and wisdom. Another danger to which samurai youths were exposed was a false sense of shame—*malus pudor*. Misfortunes which could be rationally explained, or in Western lands would be termed «acts of Providence,» were often construed as deeds for which the individuals concerned held themselves responsible, and so many a useful life found a self-sought end. We are disposed to think that the emphasis placed on conscience as the criterion for honor or shame, for virtue or vice, for good ar evil—sharing as it does the practical doctrines of Socrates and the mystic tenets of Jacob Boehme and George Fox—was on the whole a healthy and beautiful teaching to follow, being based on the very root of moral consciousness.

The exaltation of benevolence was a logical outcome of a practical accompaniment of a sense of shame. Malice would be fatal to the highest instinct of honor, benevolence alone being consistent with it. By benevolence it meant love commingled with pity and mercy, which one feels towards one's inferiors. It was *par excellence* a virtue of princes. They represented divine powers, ruling over their subjects with authority derived from heaven. This theocratic idea explains the comparative beneficence of the feudal régime. Paternal government was also based on the assumption that the ruler mediates between heaven and man, and though weakness of the system is apparent, it must be borne in mind that absolutism and feudalism were largely built on moral principles. Benevolence, however, was not altogether to be confined to the rulers. Every samurai was to be mindful of it in his transactions with his inferiors, with the weaker sex and with weaker men—with defeated enemies. It was considered disgraceful in samurai to take advantage of the weakness of others. Strategy and *ruse de guerre* were of course entirely justified in warfare; but even then some warriors went so far as to give ample opportunities to their enemies for due preparation. In private life, too, benevolence and the gentle virtues—magnanimity, forgiveness, mercy and pity—were ever extolled as befitting the noble occupation of the samurai. «Superior men hate sins but not the sinner,» said Confucius. It may not be amiss to observe here that the religious instinct of Japan, as expressed in Shintoism, never invented a hell, though it looked for a spacious firmament as an abiding place for the souls of the dead. In fact it has rarely spoken of sin except as defilement or contamination.

As benevolence is a virtue which the superior observes towards his inferiors, it is largely that of a ruler to his subjects. As to the subjects themselves,—the samurai proper,—Bushido laid particular stress on what may be called the reverential virtues: namely, those which men should observe in their dealings with people above them, such as loyalty towards their lord and master, filialty to their parents, and, in the case of the woman, obedience to her husband.

Of loyalty it has been said that it is the most deeply implanted virtue of the Japanese race. To be faithful in serving the master was equivalent to loving the country with which he is identified. Patriotism and loyalty therefore are hardly separable in Japanese ethics. In the feudal period, loyalty meant faithful service to a daimyo, who in his turn owed allegiance to the Emperor. Percival Lowell has charged the Japanese with impersonality. In one sense he is right; in another he is quite astray. In no other code does personality preponderate as in Bushido. One may say that an anthropomorphic element dominates the precepts of Bushido. The samurai were men of action, speculation being either an intellectual pastime or a method of mental discipline, and they were interested in concrete things. They cared little for abstract principles which regulate the relations between lord and retainer; their concern was to serve their daimyo with all their soul and body. And yet it must be noted that in personally serving his master (a man in flesh and blood) the samurai was not required to be a slave, pandering to every freak or fancy of a despot. If he thought his lord wrong, faithful service demanded that he should lead him into the right path. An unscrupulous flatterer who made it his trade to satisfy the self-will of his ruler, gained no place «i' the story.» If all his admonitions and requests availed nothing he resorted to the last appeal of disembowelment.

Allied to loyalty was the virtue of filialty so often dwelt upon in the precepts of knighthood. Under the feudal régime, each samurai had to furnish a certain number of armed men according to the amount of revenue granted him by the daimyo. As each holder of a benefice, that is to say, each head of a family, was held responsible for military service, the family and not the individual was the social and political unit. Added to this fact was another, namely, the custom of ancestor worship. These two considerations made family relations, compact and rendered the chief of the family an important moral and social factor. If the Arab practice of polygamy is kept up not solely by amorous sentiment but from an economic motive, neither was the feudal integrity of a family maintained wholly by moral regard. Whatever may be the sociological aspect of filialty, upon it and loyalty is founded the entire fabric of Japanese morals. This explains the important rôle the father plays in the economy of a feudal society. Moreover, the conservative ethics imported from China, hallowed the traditional ancestor worship of the race and it is clear without further explanation what filial piety must mean in the moral system of Japanese feudalism. Few motives of action are stronger in the Japanese mind than the glorification of his family.

In comparison with the father, the mother was not counted a social or political unit, and this fact helped to enhance her value within the family. It is only reasonable to expect woman's share to be small in a militant society, such as feudalism produces. At the same time, when a father's service is largely concerned in the welfare of his lord and of the community, the government of the household and the education of the children are naturally left to the mother. This has been distinctly true among the samurai. The assistance rendered by woman to the general welfare, and more particularly to her husband, was called *naijo*—the inner help—the service hidden from unconcerned eyes. It was a work directly known and appreciated only by the members of the family and chiefly repaid by the sons in their filial love and pious remembrance. Hence, though little note was taken of woman's position in public, within the family it was not much inferior to that of the *pater familias*. Woman's influence in Bushido was largely exercised through her position as mother. The education of the samurai was in its earliest stages naturally left to her. And here it is important to note that, while among the diamyo concubinage was usual and the children, legitimate or illegitimate, were frequently reared by nurses, the samurai could ill afford to keep mistresses and the bringing up of their children was considered the proper work of the mothers. This explains the general superiority, both physically and intellectually, of the samurai over the daimyo.

A point of great moment in the education of the samurai youth, was the inculcation of courage, bravery and fortitude. The arts of war and the technique of warfare were of much less importance than the mental and moral aptitude of the fighters. When two combatants confronted each other on the field, the question was not which party should win, but who would prove himself the braver—even though defeated. Children were therefore taught to admire daring deeds and deeds of endurance. In the pedagogics of Bushido, children were often subjected to severe tasks, in order to inure them to hardships. The pangs of cold, of hunger, of fear or dread, were almost systematically imposed upon them. They dared not shirk sorrow or pain. How could they when honor might at any time require them to commit *seppuku*,—disembowelment?

In Japanese anatomy, the *hara,* which is the comprehensive region between the breast and pelvis—including the stomach, gall-bladder, spleen, liver and intestines, was believed to be the seat of the soul. This view was shared by the Greeks who used the terms *thumos* and *phren* for the same part of the body, and also by the Hebrews, who looked upon the bowels as the seat of passion and compassion. We know that there are important ganglia in the abdomen and how susceptible they are to any emotion. The custom of splitting the abdomen, though it may at first seem ridiculous, came from the idea that if one's spirit resides there, one can show by disemboweling himself his innermost thoughts and the motives which actuated him. Seppuku was thus thought the most honorable mode of ending one's life and was therefore confined to the samurai class. It is a great mistake to look upon it merely as a process of committing suicide. It was sometimes imposed as a legal punishment in which case there was no actual cutting of the abdomen, but decapitation by a *kaishaku,* who was often the friend of the condemned. Disgrace of the father, that is of the family, name, is of all things the hardest for a samurai to endure.

The training of a samurai was no light work. Indeed his whole career was far from being smooth and easy. Constant vigilance was the price of his status. If fighting had been his only vocation, we might have had a quarrelsome, bloodthirsty animal, and such a type was not wholly wanting, though it was despised as that of a «boar»-samurai. When it existed it was chiefly found among the young, and it was exactly this rude type with its haughty, swaggering manners, which attracted the notice of foreigners. But this low type was far from the ideal of Bushido. Intellectual culture combined with a strong will, refinement of manners that would not sink into effeminate mannerism or obsequious conventionality, superiority in the two accomplishments of war and peace, of military and literary arts. (*Bun-bu Ryo-do*), was the goal aimed at. In speaking of the ideals of Bushido one cannot help calling to mind the guardians of Plato. It is not by accident or jest that Mr. Wells has chosen the name of samurai for an ideal social class in his 'Modern Utopia.'

Striving after an ideal, imperfect as it may have been, the life of a conscientious samurai was a strenuous one, and so in popular literature his lot was often bewailed; for, like all wholesome moral systems, Bushido taught more of duties than of rights. The samurai had few rights above the commonalty, and what rights they enjoyed did not amount to any substantial benefit. If he had a desire for wealth, a merchant's lot could better secure this. If his inclination were for mere pleasures, he might well envy a tradesman. If his taste lay in literary ease, religious retirement would assure him that. Luxuries he had to forego and even his pleasures were regulated. In spite of some degree of laxity which public sentiment tolerated, the strict régime allotted him only a certain kind of dance, of music and of pastime. The two swords which it was the privilege of the samurai to carry, served more as a reminder of the dignity and responsibility of his calling than of its privileges.

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9. Japan — Education. *Introduction.* — In 270 A.D. the king of Korea sent his ambassador to the imperial court of Japan. This led to the adoption of the Chinese learning, which, for more than 1,000 years, was the most important factor in the Japanese educational system. From time to time Japan sent special missions and students to China for study, while many Chinese and Koreans went to Japan and were naturalized.

With the advent of Chinese learning Confucianism soon became the foundation of Japan's moral and literary education. About this time Buddhism also entered the country. It found devout adherents at the court, and priests went in large numbers to China to study Buddhism and its literature. Out of the joint influence of these two, her social refinement was attained. Early in 701 A.D. we find an educational system laid out in the Taiho Statute.* A state university was founded in the capital, Kyoto, and provincial schools were established in the provinces, while powerful families in the provinces founded private schools to educate their own children and those of their relatives and retainers. It was maintained that the basis of all good actions lies in filial piety, and copies of 'Kōkyo,' or the 'Treatise on Piety,' were distributed throughout the empire and every home had a copy. Thus moral education was encouraged. At this epoch literature also flourished among the women of high class. But the pen was soon obliged to give way to the sword. The powerful families in the provinces waged war upon each other, while at the court people passed most of their time in composing effeminate poems, and seldom cared to enter deeply into the study of literature. On the other hand, the military class had no spare time to devote to learning, and literature became the sole monopoly of the priests. They taught their neighbors' children in the annexes to the temples, hence came the word «Terakoya,» or children's house of the temple, which institution survived even until the establishment of the modern elementary schools.

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*Name of the era.

In 1603 A.D. Tokugawa Iyeyasu founded the Bakufu or Shogunate in Yedo. When peace was restored, he encouraged arts and learning. In 1691 A.D. Tsunayoshi, the fifth Shogun, founded a college which was the origin of the «Shoheiko,» the highest seat of Chinese learning in Yedo. Distinguished scholars came out of this school and literature again prospered. Feudal lords in the provinces, following the example of their feudal chief in Yedo, also set up schools for the sons of their retainers. These may be called the public schools of the time. There were also many private schools established by scholars on their own account, who taught young men Chinese classics. These schools, it must be remembered, chiefly taught the doctrines of Confucius and Mencius, together with literature and history. «The common people need not be profoundly taught; they should be made chiefly to rely upon the rulers,» was the educational policy of the government. But after the middle ages, the Terakoya prospered and was free to all. During the régime of Tokugawa, peace continued for more than 250 years, which led to the rapid development of *belles-lettres.* The pure Japanese literature, rivalling the Chinese classics, began to gain much attention, and it soon made wonderful progress and attained a height heretofore unknown. The intercourse with foreign countries became more frequent under the early Tokugawas and by the study of the Dutch language the enlightenment of the West was introduced into the country. Many people studied medicine, physics, chemistry, etc., together with the foreign military science. Later, the Bakufu itself established in Yedo an institution called the «Bansho-torishirabe-sho,» the Place for Investigating Foreign Books, and also a medical school called the «Igakusho,» *i. e.* the Place for Medical Study, which gave a great impetus to the study of Dutch. Towards the close of the Tokugawa régime, some began to study English and French books also, while others went abroad for study by the order of the government and in unauthorized cases ran away from the country for the same purpose. In short, learning which had declined during the middle ages again prospered during the Tokugawas, and besides the prosecution of the Chinese literature and philosophy, there arose gradually a new field of the western science, producing many distinguished scholars even among the common people.

In 1867 A.D. the Shogunate came to an end, which led to the restoration of the imperial power. All institutions, and especially the system of education, were radically reformed. In 1872, the «Gakusei,» *i. e.* the Educational Code, was promulgated. The basis of the new system was laid. The empire was henceforth to be divided into eight university districts, each one of which was divided into 32 middle school districts, while each middle school district was again subdivided into 210 elementary school districts; and the schools of the corresponding grade in each district were to be established. But it was found that this system could not be well carried out in its entirety, and many revisions of the ordinances relating to universities, normal schools, middle schools, elementary schools, etc., had to be decreed, but no fundamental changes have taken place since that time. In 1890, the ordinance for the elementary schools was revised and a system of compulsory education was adopted. On 30 Oct. 1890, the Imperial Rescript with regard to education was proclaimed and the moral basis of Japanese national education was definitely settled. The English version of the Rescript reads as follows:

> KNOW YE, OUR SUBJECTS:
>
> Our Imperial Ancestors have founded Our Empire on a basis broad and everlasting and have deeply and firmly implanted virtue; Our subjects ever united in loyalty and filial piety have from generation to generation illustrated the beauty thereof. This is the glory of the fundamental character of Our Empire, and herein also lies the source of Our education. Ye, Our subjects, be filial to your parents, affectionate to your brothers and sisters; as husbands and wives be harmonious, as friends true; bear yourselves in modesty and moderation; extend your benevolence to all; pursue learning and cultivate arts, and thereby develop intellectual faculties and perfect moral powers; furthermore advance public good and promote common interests; always respect the constitution and observe the laws; should emergency arise, offer yourselves courageously to the State; and thus guard and maintain the prosperity of Our Imperial Throne coeval with heaven and earth. The way here set forth is indeed the teaching bequeathed by Our Imperial Ancestors, to be observed alike by Their Descendants and all subjects, infallible for all ages and true in all places. It is Our wish to lay it to heart in all reverence, in common with you, Our subjects, that We may all thus attain to the same virtue.
>
> The 30th day of the 10th month of the 23d year of Meiji.
>
> (IMPERIAL SIGN MANUAL. IMPERIAL SEAL.)

This Rescript is the foundation of the moral education of the Japanese people. After the new educational system «Gakusei» was established and its details proclaimed, many foreign scholars were employed and a great number of students were sent abroad to study. Japan now naturally entered a transition period which blindly welcomed new ideas and as blindly dispensed with old ones. Some radical followers of the new learning espoused the American utilitarianism which they half understood, while others loudly advocated the French idea of liberty. Then came the German system of philosophy and methods of education. To oppose these tendencies there arose the «Kokusui hoson shugi,» *i. e.* the principle of preserving the country's traditions. In the midst of darkness and confusion which these conflicting elements occasioned and enhanced, appeared the above Rescript, which set at rest much of public anxiety and enlightened the educational world.

One great advantage of Japanese education is its complete separation from religion. Any conflict on this subject is unknown. In 1899, the Minister of Education issued an instruction to the effect that all government and public schools as well as those schools the curricula of which are fixed by ordinances, should teach no religion whatever in the school hours or even outside of them. This instruction made the separation between education and religion complete.

Ever since the restoration, the whole nation has striven to advance education, in spite of incessant political troubles, civil and foreign wars. The improvement not only in the equipment of schools, but also in the personnel of the teaching staff, is continually being made the object of special attention by the Department of Education. The following table shows the gradual increase of pupils and students in different scholastic institutions:

Kinds of Schools.	1906	1902	1897	1892
Elementary Schools	5,348,213	4,980,604	3,994,826	3,165,410
Blind and Dumb Schools	1,433	797	313	198
Middle Schools	104,968	88,391	52,671	16,189
High Schools for Girls	31,918	17,540	6,699	2,803
Colleges	4,904	4,361	2,679	3,070
Imperial Universities	5,821	3,612	2,255	1,308
Special Schools	25,054	17,888	11,729	9,428
Technical Schools	165,125	36,656	19,932	4,335
Normal Schools	18,924	17,982	8,830	5,357
Higher Normal Schools	960	531	473	80
Higher Normal Schools for Girls	361	331	171	84
Special Institutes for the Training of Teachers	154	......	......	......
Institutes for the Training of Technical School Teachers	175	131	99	......
Miscellaneous Schools	133,292	96,184	68,040	77,448
Total	5,841,302	5,265,008	4,168,717	3,285,710

If classified according to the nature of instruction given, Japanese education may be divided into three distinct parts, viz., general, special, and technical. If classified according to the grade, it comprises the three degrees of elementary, secondary, and higher education. General education consists in teaching of such subjects as are essential to the people as a whole. It is given in schools belonging to the elementary and secondary grade, such as the elementary schools, other schools of a similar grade, kindergartens, normal schools, middle schools, high schools for girls, other schools of a similar grade as the two preceding, higher normal schools, etc. Special education consists in the teaching of the advanced sciences and arts and constitutes mostly the domain of higher education, including the universities. Technical education consists in the teaching of all those sciences and arts necessary for preparing the pupils in trades, agriculture and industries. The technical schools which belong to the elementary grade are the supplementary technical, the apprentices', agricultural and commercial schools of the lower grade. Those which belong to the secondary grade are agricultural, commercial and industrial schools of the middle classes, while higher industrial, higher agricultural or higher commercial schools come under the head of higher education.

Educational Administration.—The highest central authority which directs the affairs relating to education is the Imperial Department of Education. Since 1871 it has its seat in Tokyo and constitutes one of the nine departments of the Imperial Japanese Government. The Minister has entire control of all educational matters of the Empire, except those placed under other departments on account of special reasons. For instance, the Peers' School is under the control of the Imperial Household Department; Military and Naval schools under the Departments of Army and Navy; Schools for Mercantile Marine, for Post and Telegraph are under the management of the Minister of Communications; while all schools in Formosa are controlled by its Governor-General under the orders of the Minister of Interior. The Minister issues the departmental ordinances, instructions, etc., in exercising his administrative powers.

As the assistant officials of the Minister there are a vice-minister, three heads of bureaus, councillors, a private secretary, secretaries, inspectors, examiners of school books, compilers, technologists, clerks, etc. The three bureaus are styled respectively the General, the Special, and the Technical. The secretariat of the Minister is divided into five sections, viz., those of private secretary, drafting, accountant, school books and charts, and architecture, and each section has a director who is generally one of the secretaries. The vice-minister assists the Minister in managing the affairs of the department and has the immediate superintendence of the works of the different bureaus. Each head of the bureau takes the charge of his own bureau and is responsible for its affairs. The Bureau of Special Education takes charge of the affairs relating to higher education; the Imperial universities, high schools, special schools, the Imperial Academy, the government library, museums, etc., coming under its control. The Bureau of General Education takes charge of the affairs relating to general education; normal schools, middle schools, high schools for girls, elementary schools, kindergartens, schools for blind and dumb, educational associations, etc., are under its surveillance. The Bureau of Technical Education takes charge of the affairs relating to technical education; industrial schools, agricultural schools, commercial schools, apprentices' schools, supplementary technical schools, etc., being under its cognizance. For the purpose of inspection, five regular inspectors act for the Minister. Their duties consist in inspecting the state of education throughout the country, but while they are in Tokyo they also serve in the different bureaus and assist in managing their affairs. The whole country is divided into five inspecting districts, having each one inspector who sees to the affairs of his district. They generally change the district in their charge once in every two years. They inspect the condition of educational administration and the state of school education, hygiene and finance, etc., giving such advice and instruction as may be necessary. During their tour they submit to the consideration of the Minister any question calling for speedy action, and when they return at once report to the Minister orally, and within a month send in a written memorandum. Besides these permanent inspectors, there are professors in higher and other schools, etc., who are provisionally charged with additional and special duties of inspectorship on particular subjects.

The Superior Council of Education which exists in virtue of the Imperial decree of 1898, discusses weighty questions on education submitted to them by the Minister, or they may submit their views on education to the Minister. Its members consist of directors of schools, administrative officials who have either directly or indirectly some relation to education, scholars and men who have had experience in the work of education. Under the superintendence of the Minister there are also several standing commissions for special matters. For instance, the Commission for Examining the Qualification of Teachers has the charge of testing and examining the candidates who wish to become teachers of normal, middle, or high schools, etc. The Japanese Language Investigation Commission has been instituted for the purpose of investigating subjects relating to the Japanese language, and has for its principal aim the improvement of the mother tongue. As can be inferred from its historical changes the Japanese language has been greatly influenced by Chinese literature; and the fact that it was largely written with Chinese characters has caused a great difference between the spoken and the written language. The improvement of the language is therefore an important question. The Board of Seismology investigates and experiments to find the best suitable construction for guarding against the effects of earthquakes, and pursues scientific investigations for predicting earthquakes. The Board of Geodesy manages affairs connected with the International Geodetic Society and investigates various subjects bearing on geodesy. The Special Observatory for the Measurement of Latitudes is occupied with affairs connected with the measurement of the variation of latitudes in accordance with the contract entered into between the government and the International Geodetic Society. The Commission for the Compilation of Catalogues of Scientific Literature conducts the affairs connected with the International Committee organized for the same purpose. The Commission for the Examination of Medical Practitioners takes upon itself the work of periodical examination of physicians. A similar commission exists for the Examination of Pharmaceutists. The aim of the Imperial Academy is to promote the advancement of the sciences and arts and gives assistance in propagating the salutary influence of education in general. It has 60 members, chosen from among the most distinguished men of learning; foreigners who have rendered special service to science and art are made honorary members. Besides these the Minister has the control over the Imperial Library and the Central Meteorological Observatory.

The principal local instrument of education is the Governor. The whole empire with the exception of Formosa is divided into one Do, three Fu and 43 Ken, each of which has a local governor. Each governor takes charge of administration of his locality. All Do, Fus and Kens are local administrative districts and are at the same time self-governing corporations. Each governor has inspectors under him who attend to school matters under his jurisdiction and is mainly responsible for the expedition of educational affairs. Fu and Ken are divided into Gun, and each Gun has its chief official called «Guncho,» who is in turn assisted by an inspector on matters relating to schools. Cities, towns and villages are also self-governing corporations, and have a mayor or a headman. The mayor or headman manages the educational affairs relating to cities, towns and villages, respectively. It is designed that a school committee should exist in every Fu, Ken and Gun, as well as in every city, town and village, but at present they exist only in cities, towns and villages. The local governors specially appoint school physicians for every public school, but at present those schools established by villages, as well as those of poorer districts with a population of less than 5,000, may be exempted.

PRIMARY EDUCATION.

Elementary Schools.—The government began to take serious notice of national education after the Imperial restoration (1868). Previous to that people who wished their children taught, sent them to «Terakoya,» where they obtained the rudiments of knowledge, as already mentioned. In 1872 the «Gakusei,» or the Ordinance for Educational System, was issued, and elementary schools were established, part of the expense being borne by the State. In 1879 this ordinance was replaced by another called the «Kyoikurei,» or the Ordinance of Education, which was again revised in the following year, and also again in 1884. The Kyoikurei was followed in 1886 by the «Shogakkorei,» or the Ordinance relating to Elementary Schools. Thus the basis of the present educational system was gradually laid. In 1890 further revisions were introduced, and in 1900 the present system was adopted, which was also partly revised in 1907. The aim of the elementary schools is to teach the foundation principles of moral and popular education, giving such knowledge as is essential for life, care being also taken to develop the physique of the children. Religious teaching having no place in the Japanese system, the foundation of the general education consists of the moral, the intellectual, and the physical training. There are no preparatory schools in addition to the middle schools, as in some countries. Hence everybody, rich or poor, high or low, must first enter the elementary school. Thus the Japanese elementary schools give, in the strictest sense of the term, the national education. The only exception to the rule is found in the Peers' School where the boys of the high classes are taken.

Elementary schools are divided into two kinds, viz., the ordinary, and the higher. The former has a course which extends over four years, while in the latter the course varies from two to four. Compulsory education is enforced in the elementary schools. Four years compulsory education has proved insufficient and the government has recently prolonged this period by two years, thus making compulsory education to last six school years. In the higher elementary schools a more advanced grade, or in other words continuation of the ordinary elementary school course, is given. A considerable portion of the elementary schools have both of these grades. All elementary schools may have a supplementary course. The course must not run for more than two years, and the subjects, and the season of the year in which they may be taught, are determined according to the requirements of the locality. Unlike the system of some German states, these courses are not yet compulsory. Cities, towns and villages must all establish their own ordinary elementary schools. But if a self-governing corporation is too poor or there exists some special reasons against establishing its own school, the education of its children may be entrusted to other corporations, or it may have a school in common with some others. Higher elementary schools not being compulsory are generally established by self-governing corporations on the approval of their local governors. Private persons can also establish elementary schools on the same condition. The school age begins at the sixth and continues to the end of the fourteenth year. Attendance at school commences at the beginning of the school year after the children reach their sixth year, and ends with the completion of the ordinary elementary school course. Guardians or those who exercise the parental right are required to send children to public elementary schools until they finish the ordinary course. If they wish to have the children taught at home or in private schools, they must first apply for permission to the authorities. In no case, except the absolute poverty of the guardian or the idiocy, deformity or illness of the children may they be excused from these responsibilities. Children still in the age of compulsory education may not be employed to the neglect of their education. According to the latest statistics 97 per cent. of boys and 93 per cent. of girls of school age are studying in schools. Formerly the custom was not general among the common classes to educate girls, but guardians are now beginning to see the need of educating the girls as well as the boys.

TABLE SHOWING THE PERCENTAGE OF SCHOOL POPULATION RECEIVING THE PRESCRIBED COURSE OF INSTRUCTION.

	Boys.	Girls.	Boys and Girls.
1905-6.........	97.72	93.34	95.62
1904-5.........	97.16	91.46	94.43
1903-4.........	96.59	89.58	93.23
1902-3.........	95.80	87.00	91.57
1901-2.........	93.78	81.08	88.05
1900-1.........	90.55	71.90	81.67

The subjects taught in the ordinary elementary course consist of morals, Japanese language, arithmetic, and gymnastics. Such subjects as drawing, singing or manual work may be added, according to the choice of the locality. For girls, sewing may be added. The subjects taught in the higher elementary schools are morals, Japanese language, arithmetic, Japanese history, geography, science, drawing, singing, gymnastics. For girls sewing is added. If the higher course is only two years, either science or singing or both may be left out, and manual work may be added. If the course runs for three years or more, singing may be omitted and manual work added for girls, while for boys manual work, rudiments of agriculture or commerce may be given. In such a case the boys are made to choose one of these extra subjects. If the course runs for four years, English language may be added. All these additional subjects may be optional. In the new six years compulsory system the subjects of both the ordinary and the higher elementary schools have been somewhat changed. If any subject in the regular course is found unsuited to the physical condition of a child, he may be excused from it. As regards the curriculum above mentioned, a provision which minutely explains how each subject should be treated is found in the Regulation for Carrying Out the Imperial Ordinance relating to Elementary Schools. For instance, morals are taught with the Imperial Rescript as the basis, the aim being to form good character and to induce the pupil to act in accordance with moral precepts. It is begun with lessons on filial piety and brotherly love, friendship, diligence and frugality, respect, faith and justice, courage, etc., and the children are gradually led to understand the general duty and obligations to the country and to society. At the same time care is taken to elevate their character, to strengthen their will, to cultivate their enterprising spirit and encourage their love for public virtues as well as their spirit of patriotism and loyalty. For girls such virtues as chastity are specially explained. Wise sayings, exemplary deeds, proverbs, etc., are made use of to warn as well as to edify them. Since the olden times, moral education has always been pursued with much attention in Japan, and now, the spirit and the teaching of the Imperial Rescript has become the fundamental principle of Japanese life and pervades every home throughout the Empire. The school year of elementary schools commences on the first day of April and ends on the last day of March of the following year. On the anniversary of the accession of the Emperor Jimmu, the present Emperor's birthday, and on New Year's day, teachers and children assemble in the school to celebrate the occasion and generally employ the day to promote moral instruction. First they sing the «Kimigayo,» the national anthem, salute most politely the photographs of the Emperor and the Empress, and the director reads the Imperial Rescript. In public schools of ordinary elementary grade established by cities, towns and villages, tuition fees cannot be generally charged. In special cases, however, a small amount is charged after permission is obtained from the authorities. As compulsory education obliges even very poor people to send their children to school, it is proper that all expenditures should be borne by the corporations. In higher elementary schools tuitions can be charged.

Kindergartens.—A kindergarten after the pattern of Froebel was first established in Tokyo in the Higher Normal School for Girls. Now the number reaches as many as 313. The object is to train children of three years and upward, until they reach their school age. These institutions are to help to complete home education in the sound development of the mind, the body and of good habits. The subjects of training consist of games, singing, conversation and hand work. The kindergartens are frequented mostly by the children of middle or high classes. Such kindergartens as are prevalent in Europe and America where poor children are kept and trained, are yet few in Japan. Competition of life among the lower classes is not so great as to leave parents destitute of means for training and bringing up their children.

Schools for Blind and Dumb.—In schools for the blind and dumb general education is imparted. The grade is that of elementary schools, but there is a professional course which aims to enable them to earn their own living. These institutions, together with kindergartens, come under the Imperial Ordinance relating to Elementary Schools. The education of the blind and dumb has not kept pace with the progress made in other spheres of education, but the government has shown a disposition in recent years to give more attention to the development of this work. The Tokyo School of Blind and Dumb is a government institution. The school is divided into ordinary and professional courses. In the ordinary course Japanese language, arithmetic, conversation and gymnastics are taught, and in the professional course music, acupuncture and massage. The ordinary course for the dumb includes reading, composition, arithmetic, written conversation and gymnastics, and in the professional course drawing, carving, joinery and sewing. There is also a training course for teachers.

SECONDARY EDUCATION.

Middle Schools.—Secondary education is conducted in the middle schools for boys and the higher schools for girls, and consists in giving pupils the knowledge and arts essential for the middle classes of society, and also prepares them for special education. Their equivalents are found in the secondary schools of England, lycée of France, gymnasium and hoehere maedchenschule of Germany. In Europe and America the schools where secondary education is given have for the most part preparatory departments of their own, while the Japanese middle schools or high schools for girls have none, the elementary schools acting as preparatory institutions.

The middle school deals with intermediate education coming between the university and the elementary school. After several revisions the present ordinance for the middle school was issued in 1899, and departmental regulations for carrying it out were enacted in 1901. The Hokkaido as well as each Fu and Ken must establish at least one middle school. The Minister of Education can order Fu or Ken to establish middle schools when he deems it necessary to do so. Cities, towns and villages can found their own middle schools if they do not impede in any way the progress of the elementary schools. Private individuals may set up middle schools also.

Boys of 12 or older, and who have passed the second year of their higher elementary course or have similar attainments, are qualified to enter the middle schools. But the increase of these schools, though remarkable, having trebled during the last 10 years, does not afford sufficient accommodation and the applicants have to be admitted by competitive examination. The course extends over five years and a post-graduate course of under two years may be added. The school year begins on the 1st of April and ends on the 31st of March of the following year. The number of school days must be over 200 in a year. The number of pupils must not exceed 400. In some particular cases it may be increased to 600. The maximum number of pupils in one class is 50. The subjects taught are morals, Japanese and Chinese, foreign language, history, geography, mathematics, natural history, physics and chemistry, rudiments of political economy and law, drawing, singing and gymnastics. The foreign language may be either English, German or French, but at present the language taught is practically English. Rudiments of law and political economy and singing may be omitted for the present. The programme of every subject is fixed, as it is in the case of elementary schools. The Imperial Rescript is the basis of morality here as elsewhere. Moral principles that may form a character suitable for the middle or higher class of society are taught here. The teachings of Confucius and Mencius which enforce piety to parents and loyalty to the sovereign have been firmly rooted for over 1,000 years in Japanese homes. Bushido* is also an effective teaching for inculcating high moral standards and is freely referred to in these classes.

The textbooks are chosen by the director among the works approved by the Minister of higher grade. Besides they are entitled to get the governor's sanction before he can adopt one. If the director deems it desirable to use a book which has not yet received the approval of the Minister, the governor may sanction its use provisionally if the Minister gives the permission.

The pupils, while they are in the school, are exempted from military service, and when they graduate they may join the army as one-year volunteers. The middle schools not established by either government or local bodies have not these rights, unless they are so approved by the Minister of Education. Graduates from middle schools established by the above two authorities have the qualifications to be appointed under-officials. Graduates of any middle school may apply for admittance to any special school of a higher grade. Besides they are entitled to get a license without examination to become elementary school teachers. This middle school or liberal education is recognized as the indispensable basis for entrance to all higher national institutions of learning.

High Schools for Girls.—The general education of women, as already stated, began with the Restoration. It is true Japan has produced many distinguished women scholars who have left immortal names in the field of literature, as well as in other spheres of life, but as a rule under the old régime among the common classes women's education was looked upon as a matter of no great moment. In the early stages of the new system, girls were comparatively few who followed the prescribed course of education in the elementary schools, in spite of the effort of the department. To encourage woman's education the department founded girls' schools in Tokyo and also sent girls abroad for study; but in consequence of the conflict between the old and the new ideas the education of girls did not receive such hearty response from the public as in the case of boys. Within the last decade, however, public feeling toward the education of women has radically changed, the people have come to attach almost, if not equal, importance to the education of their daughters to that of their sons. The daily attendance of girls at elementary schools is 93 per cent., while that of boys is 97 per cent. of those of school age. The middle classes now consider it indispensable to send their daughters to the high schools.

At first, the provision for girls' schools was included in the Ordinance relating to middle schools, but in 1895, they were made the subject of special regulation, and in 1899 the Ordinance for High Schools for Girls now in operation was issued. The aim of the girls' schools, corresponding to the middle schools for boys, is to give the pupils an advanced grade of general education; the aim in the education of women is primarily to make good wives and wise mothers. In this respect the prevailing opinion is not unlike the German. The American ideas of giving university education has as yet no place in the Japanese public educational system.

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*See Prof. Nitobe's work on 'Bushido.'

The course of study, which extends over four years, may be prolonged or shortened by one year. In addition to the regular course, however, a supplementary course not exceeding two years may be provided, so that the girls may study during seven years where the longest course is open. For the benefit of those who wish to study such arts as are necessary for women, a special course may be established. A special course may also be instituted for those graduates who desire to pursue special branches of study. The regular course consists of morals, Japanese language, foreign language, history, geography, mathematics, sciences, drawing, household management, sewing, music, and gymnastics. Foreign language, which may be either English or French, may be omitted, or may be made optional. Music may also be omitted for those who have no aptitude for it. A study of pedagogy or of arts or both may be added as optional subjects. In a school of shorter course no such optional subjects can be provided. The subjects taught in the supplementary course may be chosen from those taught in the regular course. The special art course extends over two or even four years. The subjects are morals, Japanese language, mathematics, science, drawing, household management, music, gymnastics, besides useful arts for women. But mathematics, science, and drawing may be made either optional or be omitted. As to music, it may be left out for those who have no ability. The special course for the graduates extends over two or three years. Graduates may receive certain favorable treatment when they apply for the qualification of elementary school teachers. Other regulations are similar to those of the middle schools and the provisions in the Regulations for Carrying Out the Ordinances for Middle Schools are generally adopted for use here also.

HIGHER EDUCATION.

High Schools.—Higher education is given in the universities and special schools. There are also a number of schools called high schools or Koto Gakko. They are not in themselves complete institutions of higher education, but simply teach preparatory courses for the universities. In some respects they may correspond to the colleges in America. In Europe and America those who complete their secondary education can at once enter universities, as well as higher technical schools. But in Japan, the high schools which prepare the pupils for the universities intervene between the universities and the middle schools. Each high school is divided into three departments. The first department teaches preparatory course for those who enter the colleges of law, and literature; the second department for those who wish to study the course of pharmacy, or enter the colleges of engineering, of science and agriculture, while the third department prepares those desirous of entering the college of medicine. In these schools, special attention is paid to the teaching of foreign languages and more hours are allotted to them than to other subjects. If the middle schools were efficient enough to give general education of the standard required by the universities the *raison d'être* for these institutions would disappear. But the three years of high school education does much good in the way of building up the boys' physique and character, as well as in giving a more advanced knowledge of foreign languages. The languages taught are either English, German or French. During the time they are in school pupils are exempt from military service, and graduates have the privilege of joining the army as one-year volunteers. They also receive favorable treatment at the state examinations for middle school teachers.

IMPERIAL UNIVERSITIES.

Although universities, broadly speaking, are not new institutions in Japan, yet the Imperial universities as they exist at present owe their origin to the Bansho-Torishirabe-Dokoro of the Bakufu, instituted toward the end of the Tokugawa period. After the Restoration the institution was reëstablished by the government under the name of the Kaiseijo, or the Place of Enlightenment. The Tokyo Medical School, which afterwards formed the Seiyo-Igakujo of the Bakufu, together with the institution above cited, formed the nucleus of the Tokyo University, which came into existence in 1877 and comprised the faculties of Law, Science, Literature, and Medicine. In 1885 the school of law, which hitherto had been carried on by the Department of Justice to meet its own requirement, was also incorporated into the faculty of law. In the same year, the College of Engineering, similarly under the control of the Department of Public Works, was also taken over by the Department of Education, as the former was abolished. In 1886, the ordinance relating to the Imperial University was issued, and the former Tokyo University and the College of Engineering carried on their work under the new name of the Imperial University. In 1890, The Tokyo School of Agriculture and Forestry, which had been under the auspices of the Department of Agriculture and Commerce, was transformed into a college of agriculture and added to the Imperial University of Tokyo. Thus the Imperial University of Tokyo now includes the six faculties, viz., those of law, medicine, engineering, literature, science, and agriculture. In 1897, another university was created in Kyoto, and is now complete with four faculties of law, medicine, science, and engineering and literature. Unlike the universities of the west they have no theological department. The Japanese government in the budget of 1907, authorized the creation of two new independent universities, one in the north and one in the south of Japan. The ordinance relating to Imperial Universities regards them as institutions established for the purpose of instruction in the sciences and arts indispensable to the State, and of conducting independent research in the various branches of learning. The President of the university presides over the whole institution. The head of each faculty takes charge of the affairs relating to his college. The university council is formed from the heads of faculties and one professor out of each faculty. The President calls its meetings at any time and acts as the chairman. The council discusses matters concerning the course of study, establishment of chairs, and the internal regulations of all the faculties, conferring of degrees, and also other matters submitted to them either by the Minister or the President. It can also lay its views to the Minister of Education, regarding matters of higher education. Sometimes the title of an honorary professor is bestowed, by command of the Emperor or by the proposal of the Minister of Education, upon those who have rendered meritorious service to the university or have made some achievements in science deserving of special honor. In every faculty there is an Assembly of Professors consisting of all professors of the faculty. It discusses the curriculum, examinations, conferring of degrees, and other subjects submitted to them either by the Minister or by the President. The business officials of the university are the secretary, the superintendent of the students, clerks, etc. The faculty courses of the two universities are as follows:

The Faculty of Law: In Tokyo the courses are law and politics. Kyoto has but one course, that of law.

The Faculty of Medicine: In Tokyo the courses are medicine and pharmacy. Kyoto has no course of pharmacy.

The Faculty of Engineering: In Tokyo the courses are (1) civil engineering, (2) mechanical engineering, (3) naval architecture, (4) technology of arms, (5) electric engineering, (6) architecture, (7) applied chemistry, (8) technology of explosives, (9) mining and metallurgy. In Kyoto the courses are (1) chemistry, (2) applied chemistry, (3) civil engineering, (4) mechanics, (5) electric engineering, (6) mining and metallurgy.

The Faculty of Science: In Tokyo the courses are (1) mathematics, (2) astronomy, (3) pure physics, (4) experimental physics, (5) chemistry, (6) zoölogy, (7) botany, (8) geology.

The Faculty of Literature: In Tokyo the courses are (1) philosophy, (2) history, (3) literature. Kyoto has also the same courses.

In the Faculty of Agriculture in the Tokyo University, the courses are (1) agriculture, (2) agricultural chemistry, (3) forestry, and (4) veterinary science.

The time of study required in each faculty varies from three to four years. In matters of discipline much freedom is allowed to the students of the university, it being taken for granted that they have already the firm basis of moral culture. The results of investigations of the professors and students are published in the journals of the faculties. The equipment of the universities, although much remains yet to be done, compares favorably with similar institutions abroad. An astronomical observatory is attached to the College of Science, and a special bureau for Compilation of Historical Materials is attached to the College of Literature. There are also botanical gardens, marine laboratories, hospitals, experimental farms, forestry stations, etc. The universities have contributed much towards the welfare of the nation.

SPECIAL SCHOOLS.

In 1903 the ordinance relating to the special schools was issued, and those schools which give instructions in some particular branch or branches of science and art, were all called Special Schools and come under this ordinance. Most of the special schools are established by the State and are government institutions. The public corporations such as Fu, Ken, and city, or private individuals may found special schools. Persons who have completed the prescribed course of instruction in the middle schools, or in the high school for girls, with course extending over four years or more, or who possess equal or higher attainments are qualified to enter. Special schools have a course extending over three years or more. Since the special schools give instruction of high grade to young men who have finished secondary education, the State gives the graduate special privileges, as for instance, the graduates from the special school of medicine can practice without any examination and those who have passed through the special school of literature can at once obtain a license of a middle school teacher. Some of the special schools in Japan may be considered as corresponding to the university of lower type found in the United States and elsewhere; they discharge the functions generally belonging to the latter institutions.

There are but a few special schools in which girls may be admitted. Among the Government schools the Tokyo Academy of Music and among the private schools the Women's College at Waseda are the only places where women can attend.

TECHNICAL EDUCATION.

Confucianism taught a sublime doctrine which made the people esteem transcendent philosophy and little attention, if at all, was paid to what corresponds to modern utilitarianism. Besides, under the old régime it was considered that farming, trade and industry needed nothing but experience and that business men would not gain much by study. But with the change of the times, and the participation of Japan in the commerce and industry of the world, the establishment of technical education became essential, and the Department began to encourage it by founding the system of supplementary technical schools, apprentices' schools, by teaching subjects which have reference to industry in the elementary schools, and also by establishing other higher technical schools. In 1894, the Law of Granting State Aid to Technical Schools was enacted, and 150,000 yen was annually paid out of the state treasury for this purpose. It was subsequently increased to 365,000 yen. Measures have been taken to train teachers for these schools. In 1899, the Ordinance for Technical Schools was issued. Its purport is to provide education essential for those who pursue agriculture, commerce and industry. In all Fu, Ken, as well as in Hokkaido (all administrative districts) technical schools may be established, and the Minister of Education can order any of them to found a technical school or schools according as the condition of the locality requires them. Any Gun, city, town or village may also establish technical schools if the locality requires them, and if at the same time they do not impede the progress of elementary school education. A chamber of commerce or private individual may also found technical schools. A technical school whether public or maintained by a business corporation, whose equipment and course of instruction is considered by the minister to be efficient, is entitled to receive a subsidy out of the National Treasury for the period of five years to the amount not exceeding the sum which the original founder appropriates towards its maintenance. This term of subsidy may be renewed.

Supplementary Technical Schools.—According to the provisions of Supplementary Technical School Act of 1902, these schools provide such knowledge as is most useful for those who wish to engage in any branch of trades and industries, and at the same time general education is also continued to supplement what they already have learned previously. The entrance qualifications consist in having some rudiments of general education which are equal or above the ordinary elementary school standard, and in being not younger than 10 years of age. The length of the courses is also fixed so as to suit the local convenience.

Apprentices' Schools.—The apprentices' schools admit pupils who are not younger than 12, and who also have general education equaling the ordinary elementary school standard. The course of study extends from six months to four years and a good deal of freedom is allowed in fixing the term and the school hours. The present regulation was issued in 1904.

Industrial Schools.—These schools are the principal organs of industrial education as fixed by the Provisions for Industrial Schools issued in 1899. Children 14 or older, who have received the four years' course of the higher elementary schools or upwards, may be admitted. The course of study extends over three years and it may be lengthened by one year. Preparatory courses may also be added, and boys of 12 years of age or upwards who have passed the second year of the higher ordinary school are taken. Special courses are also organized for the benefit of pupils who cannot follow regular courses and who wish to learn special subjects.

Agricultural Schools. — The agricultural schools are established in accordance with the Provisions for Agricultural Schools issued in 1899. They are of two kinds, those of A and B grades. A grade schools admit only those who have passed a higher elementary school of four years' course or who have equal or higher attainments. The courses of study run for three years, and they may be lengthened by one year. In the B grade, boys of 12 years or older, and who have graduated from the ordinary elementary schools or have similar or higher attainments, can apply for admittance. The course of study extends over three years. In the former grade school, preparatory courses may also be added. Special courses may be established in both.

Commercial Schools.—These schools are founded in accordance with the Provisions for Commercial Schools issued in 1899. They are also of two grades commonly termed A and B, respectively. As to the rules of admittance, the length of courses, etc., these two kinds of commercial schools are exactly the same as those of the two corresponding grades of agricultural schools. The only difference consists in the length of the courses. In the commercial schools of A category, they may be continued for five years.

Nautical Schools.—Schools of Marine Products, etc.—In 1899, the Ordinance for Nautical Schools was issued. They are of two kinds, and the regulations are about the same as the technical schools above explained. The higher navigation school is under the control of the Department of Communications. With regard to the schools of marine products, the ordinance regulating to their establishment and working was issued in 1901. All these schools thus far enumerated belong to the grades of primary and secondary education, and other technical schools which are of a higher standard are called Special Technical Schools, and come under the Ordinance for the Special Schools, of which some explanation has already been given. They are mostly government institutions. The High Industrial Schools which give a higher grade of industrial education are found one each in Tokyo, Kyoto, Osaka, Nagoya, Kumamoto, Sendai, and Yonezawa. As regards High Agricultural and Forestry schools, there are one each in Morioka and Kagoshima. Of the High Commercial Schools there are one each in Tokyo, Kobe, Nagasaki, Osaka, Yamaguchi and Otaru. Boys who have finished the middle schools or have similar qualification can apply for admission. The applicants to these schools are so numerous that only one-third to one-tenth of the total number of applicants, the proportion varying with the different schools, can be admitted. The government and private benefactors are making common cause to establish more of these schools to meet this deficiency of accommodation.

TRAINING OF TEACHERS AND THE LICENSES.

There are special organizations for training teachers of all kinds of schools. For the teachers of the elementary schools there are both boys' and girls' normal schools, and similarly the teachers and professors of the normal schools, the middle schools and the high schools for girls, are prepared at the higher normal schools, of which two each of both sexes exist, *i. e.* in Tokyo, Hiroshima and Nara. The Nara Higher Normal School for girls is not yet opened. Besides these, there are Special Courses for the Training of Teachers, which are attached to several government schools of high grade. Persons who have not graduated from any of the above institutes, must pass examination to obtain licenses. The government is devoting much attention to providing capable teachers, but the demand is far in advance of the actual supply and many non-qualified teachers are still being employed.

NORMAL SCHOOLS.

According to the ordinance relating to the Normal Schools issued in 1897, one or more normal schools, where elementary school teachers are trained, must be established in the Hokkaido and in each Fu and Ken. The courses of study extend over four years. The qualifications required for admittance consist of a strong constitution, sound morals, and exemplary character. The applicant must have the license for an elementary school assistant teacher, or show proof of similar attainments, and if boys, must be above 16 and under 20, and if girls, above 15 and under 20. In some exceptional cases they may be between 20 and 25. The aim of the normal school education is not simply to give the pupils knowledge essential for teachers, but also to build them up in a strong, virtuous, affectionate, and dignified character. Shorter courses of two years and four months are provided for boys only under special circumstances. Preparatory courses, training courses for elementary school and kindergarten teachers may be opened. Boarding and the school expenses are defrayed by the localities, and the boys after graduation have the obligation to serve as teachers in elementary schools for 10 years; during the half of this term they must work in the school which the governor designates. For the girls, the time of service is shorter, being five years, during two of which they are under the same obligations as boys in respect of working in a particular school to which the authority appoints.

A new regulation has been issued recently which will go into force April 1908. The main course will henceforward consist of two sections, *i. e.* the First and the Second. The First Section corresponds to the main course hitherto in force, while the Second Section is new. The latter provides one or two years' courses for the graduates of middle schools or high schools for girls, teaching them chiefly pedagogy and such subjects necessary for the elementary school teacher. The time of obligatory service is somewhat shortened, etc.

HIGHER NORMAL SCHOOLS.

The higher normal school is an institution designed to train teachers for the normal schools and the middle schools, including high schools for girls. The regular courses of study in the higher normal schools consist of Japanese language and Chinese literature, of English, of geography and history, of mathematics, of physics and chemistry, and of natural history courses. Besides the above courses preparatory and post-graduate courses may be established. The courses run for one year in the preparatory, three years in the regular and from one to two years and a half in the post-graduate. In some particular cases, special courses may be provided, to which elective pupils may be admitted. The applicants for admission for these schools must be graduates from the regular courses of either a normal school or a middle school. The governor of the locality recommends several candidates and the director of the higher normal school chooses out of them. The graduates who receive the whole school expenses and board must serve for seven years, three years of which they must attend the schools to which the Minister of Education appoints them; those who receive part of their expenses, for five years, two of which are in the schools designated by the Minister; and those who have borne their own expenses, for three years. The term extends over four years. Post-graduate course of one or two years as well as special courses may be provided here.

Besides these there are temporary establishments for the training of teachers where such subjects as are specially needed in secondary schools are taught, for instance, English, Japanese language, natural history, physics and chemistry, etc. These institutes are annexed for the sake of economy and convenience to the universities or other government schools. The graduates from the middle schools or from the high school for girls of four years' term may be admitted. The courses of study generally run for two years. No tuition is charged and school expenses and board are sometimes allowed to them. If they receive them for certain length of time they have obligation to serve after graduation during a certain period.

Special institutes for the training of industrial, commercial and agricultural school teachers are also established. These institutions are attached to the College of Agriculture of the Imperial University of Tokyo, the Tokyo Higher Commercial School and the Tokyo Higher Technical School. School expenses and board are allowed to them. Besides these arrangements, aid is sometimes given to the students and pupils in the College of Agriculture or of other government schools on the condition that they serve after graduation in the technical schools.

THE LICENSES FOR TEACHERS.

All teachers who engage in elementary or secondary education require teachers' licenses. Those in the government schools need none. There are two kinds of licenses for elementary school teachers, viz., general and local license. The former is conferred by the Minister of Education and is valid throughout the whole country, and the latter by the local governors whose validity is confined to the particular Fu or Ken. To receive the local license one must pass an examination, unless he is a graduate of a normal school. The examination of elementary school teachers is carried out by a special board which exists in every Fu and Ken. The general license is granted by the Minister to those who have taught in a public elementary school for 10 years with success. The Minister of Education also issues general license for teachers of secondary schools. The graduates of certain government schools are entitled to receive this license without any formality. A Permanent Board of Examination is attached to the Department of Education whose work is to examine, generally once a year, applicants desiring to become teachers in the secondary schools. The standard of this examination is being gradually raised in view of the increased supply of properly qualified teachers during the last few years. A complete system of pension for all grades of teachers and professors has been established and has no doubt contributed largely towards making the teaching profession an honorable and a permanent one.

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10. **Japan—The Religions of.** *Preliminary Remarks.*—The religious history of Japan is characterized by incessant influxes of foreign religions. The minds of the people have not remained wholly passive towards these influences, but a free and spontaneous development of religious thought and sentiment was almost impossible. The interest of the history, therefore, lies in the manifold aspects of the outward influences, in their adaptations to the national genius and in the several amalgamations which have resulted from these interferences.

In considering the entire history, five periods may be distinguished: (1) The prehistoric religion of the Japanese was an unorganized worship of spirits, both of nature and of the dead. It was, towards the dawn of history, developing a form of ancestor-worship, being closely connected with the clan system. (2) The introduction of Buddhism in the 6th century A.D. gave a new turn to the religious development. During the seven centuries following, various forms and teachings of Buddhism which were prevalent in China were successively imported. But these importations prepared for more original experiences of the people. (3) The 13th century is marked by the appearance of new forms of Buddhism which were more or less distinctly Japanese. It was followed by 300 years of conflict, both religious and political. (4) The political peace and national unity which were restored at the beginning of the 17th century brought peace to religion. But the peace was kept by artificial means—by political oppression. This period, on the other hand, gave rise to Confucianism and the revival of the national Shinto religion, while Buddhism slumbered for a long time. (5) The revolution of 1868 shook off all the artificial restraints that made for peace. The religious sentiment is now growing, and is in a state of ferment, the new element of Christianity having been added and Buddhism reawakened.

Through all these vicissitudes, no Japanese religion ever organized a firm, exclusive national church. Nevertheless, protection by and interferences on the part of the government and the ruling clans always affected the relative positions of the various religions. Every prominent religious body enjoyed, more or less, a kind of state patronage. Thus the ambition to secure the privilege of being sanctioned and protected by the rulers as orthodox was responsible for the chief effort of many a religious leader. But the toleration of various religions and the many attempts at compromise have been characteristic of the whole history.

I. Prehistoric Religion (before circa 550 A.D.).—The prehistoric religion of the Japanese consisted in the worship of the *kami*, or spirits and deities. It is usually known by the name *Shinto,* or The Way of the Kami, but it was not an organized observance or teaching. Both the appellation and the attempts to systematize it are post-Buddhistic. The belief in these kami, whose respective functions and relations to one another were not quite definite, and the simple rituals intended to invoke or to propitiate them, made up the whole of the religion. Anything which seemed to the uncultured people unusual or mysterious was believed to possess a spirit, either benignant or malevolent, or both. Some of the kami were thought to be residing in heaven, and others sojourning among aërial phenomena, natural objects or living beings. Men are, or may become, kami by the manifestation of extraordinary powers.

Though there existed no definite theogony and no clear cosmology, a certain system of mythology may be traced. In the primeval chaos, we are told, some pairs of deities were generated spontaneously one after another. All these seem to have represented productive powers, and the first of them, the High-Producing (*Taka-mi-musubi*) and the Divine-Producing (*Kami-mi-musubi*), are invoked constantly. The last of these pairs, the Male-who-Invites (*Izana-gi*) and the Female-who-Invites (*Izana-mi*), who seem to have been the counterparts of the above-mentioned deities, generated the islands and the several objects of nature, which are all called kami. But of the male alone were born the two most important deities. One is the Heaven-Shining Deity (*Ama-terasu*), the goddess of light and culture, and the other the Swift-Impetuous (*Susa-no-wo*), the god of darkness and outrage. The heavenly kami clustered around the former and they drove the latter into exile. The malicious spirits, on the other hand, did not make up a unified force. The contrast of these two deities, as we might expect, did not develop into a dualism, as in the religion of the ancient Persians. On the contrary, a compromise was made of these two. They were considered to be the conjoint generators of the ruling family. This may be due to the introduction of certain tribal compromises into the mythology, and here the influence of the clan-system is visible.

Each tribe or clan had its own tutelary or ancestral deity, a hero, a personified quality of nature or a fetish. The special favor of these deities was expected by the various clans, but that did not exclude the worship of other kami in case of need. The Heaven-Shining, the progenitrix of the ruling family, is accompanied often by her noumenon, the High-Producing Deity, who follows behind her. On the other hand, the Great-Land-Master and the Small-August-One, the offsprings of the Impetous, appear as formidable spirits and were worshiped without regard to clan distinctions. But the general tendency of the religion, near the dawn of history, was towards the supremacy of the Heaven-Shining Deity, built upon the basis of an indiscriminate worship of various deities and spirits. The preponderance of the Heaven-Shining Deity and the growing power of the ruling family must have coöperated with each other.

Curiously enough, in spite of the belief in the spirits and in the ancestral deities, the ideas about a human soul and its future conditions were rather vague. There was a kind of Hades, the Land of Gloom (*Yomotsu-kuni*), and also the Heavenly World. Not every one, however, was expected to go to either the one or the other after his death. The soul was believed to be composed of two parts, the one mild, refined and happy, and the other wild, raw and raging. The latter manifested itself separately from the person to whom it belonged, even to his own astonishment. Whether every deity or human being was believed to possess these two, or powerful persons only, is not clear.

The ritual of a religion like this was naturally quite simple. The deities were worshiped in their abodes, in simple buildings or as inhabiting natural objects. There were no images but only representations in mirrors, and in other objects. The offerings consisted of raw foods, drinks, flax, etc. Prayers were recited or rituals performed before them. The Harvest and the Feast of the Purification, the latter of which was celebrated twice a year, were the greatest festivals. Spells and divinations were known but were not elaborate. The divine efficacies of the objects connected with the rituals were believed in and made use of mostly against evil spirits. Priestly families existed but the priestly traditions and practices were not limited to them.

II. The First Period of Buddhism in Japan (circa 550-1200).—Constant communication with the continent brought various arts to the islands, one after another. The introduction of the Chinese writings gave the people some acquaintance with reading and writing, and possibly the aspiration for a higher civilization, but scarcely any religious influence. In 538 (usually but erroneously ascribed to 552) Buddha's religion, represented by his image and some scriptures, was presented to the imperial court by King of Paikchoi (a state in Korea) as the sign of homage and friendship. The existence of a kami called Buddha, who was said to be infinite in his power and wisdom and who was represented by a fine image, unknown before, was an amazing revelation to the court people. Some of them, who had probably been worshiping the deity before, were in favor of receiving the presents, but many others, who adhered to the worship of the national kami, were against it. The conflict was involved with political and clan strifes. It lasted 50 years, during which time the new worship was supported by frequent importations of its missionaries, by works of art and also by some signs favorable to it. The fall of the conservative party and the ascending of Prince Shotoku, the Constantine of Japanese Buddhism, to the regency decided the final issue of the struggle. The Three Jewels (Buddha, his Law and his Church) were proclaimed as the ultimate foundation of the national faith. Temples and monasteries, side by side with asylums and hospitals, were built in, and near, the capital. Priests and artisans immigrated in throngs. The Prince himself gave lectures on the Buddhist scriptures. We owe the oldest writings and inscriptions to the Prince and the works of art to Buddhism under his reign.

Buddhism brought a new ideal, that of the communion with the saints and of the birth in Buddha's Land. The relics of art and literature testify to this. But the most influential factors of the Buddhist propaganda were the activities of artists and missionaries. Through the channels of industry they begun to refine the sentiment of the people. At any rate, it was an overwhelming power, incomparably more powerful and appealing in every respect than the pristine faith. The civilization of Japan made a leap by embracing the Buddhist religion, but at the same time the spontaneous development of Japan's own religion was arrested.

During the 200 years following this decisive step, the missionary zeal and the activities of Buddhist priests were indeed admirable. Their influence soon made itself felt in the provinces. Roads were built, rivers bridged, mountainous regions made passable. The influence of Buddhism progressed steadily. The greatest patron of the newly introduced religion was always the one who occupied the Imperial throne. The idea was that the tranquillity of the country and the security of the throne depended upon the favor of Buddha and his celestial attendants. Thus temples built were dedicated to these supernatural guardians, and the manuscripts of the sacred texts were distributed in the provinces in order to secure the benefits of the celestial guardianship. But this was not a merely superstitious idea. Constant distribution of medical materials and the sending of physicians accompanied by preachers into the provinces must have been received by the people with great gratitude, both towards the religion and the government. We can imagine also how the provincial cathedrals impressed the people's mind with the powers of the Imperial court and of the Buddhist hierarchy.

The progress of Buddhism culminated in the foundation of a central cathedral near Nara, the capital. It was dedicated to Lochana, one of the spiritual bodies of Buddha, and on the occasion of the thanksgiving for the first discovery of a gold mine in Japan (749), the sovereign (Shemu) himself bowed before the gigantic statue of the Buddha, declaring himself to be the Servant of the Three Jewels. The Empress was no less eager in showing her piety. Works of charity were instituted by her. Buddha, in the disguise of a sick man, is said to have been cured by her in her hospital. These examples were imitated by nobles and much wealth was lavished on the pious cause.

Even under this marvellous progress of Buddhist influence, the old faith in the kami kept its hold firmly on the people. The construction of the central cathedral was completed primarily on account of an oracular sanction given by the Heaven-Shining Deity. The alleged sanction was based on a conciliatory explanation that the Deity herself was a manifestation of Buddha. This compromise gave a stimulus significant in the further development of Buddhism, both to its gain and loss. The step became once for all a typical model of the further amalgamation of Buddha's religion with the old worship. The compromise was a natural outcome of the Buddhist propagandism which was largely carried on by the means of outward splendor and the idea of immediate helpfulness. Of course, these were aided by the teaching of Buddhist philosophy and by moral disciplines, both of the monks and of the laymen. But this wisdom and morality, on the one side, and the ideal of salvation, on the other, were rather loosely connected. The rebirth in a heavenly world, rather than the ultimate enlightenment, and in addition, the worldly benefits which the religion afforded, were the chief attractions.

This circumstance furnished the reason for the religious arts of this period—chiefly mural paintings and sculpture. The Buddhism adopted by the Japanese was, first of all, a religion referring constantly to beauty. The classical period of Japanese sculpture, which has never been excelled by the later ages, was the result. It is perhaps needless to state how Buddhism refined the æsthetic sentiment of the people by its arts, gave a stimulus to the building of more lasting abodes by its architecture, and made firmer the social organization by the help of its hierarchic institutions.

The removal of the Imperial residence from Nara to Kyoto in 794 marked a parallel change, not only of the chief seat of Buddhism but in its doctrine also. One monastery on a hill near the new capital, known thence as the Hiei, and a temple in the town were founded under Imperial patronage. The two most conspicuous personages in the history of Japanese Buddhism, Saicho (whose posthumous name is Dengyo, 767-822) and Kukai (posthumous Kobo, 774-835), afterwards the abbot of the above-mentioned temple, were despatched to China in 804. This opened a new path for Buddhism. The religion of these two was characterized by its elaborate system of mysticism, most probably a form of Buddhism mixed with Hinduism and Persian Magism. Here doctrine and ideal, philosophy and religion were more closely connected than in the Buddhism of the Nara period.

Dengyo's teaching was founded upon the Buddhodology of the Lotus of the Law, the Johannine Gospel of Buddhism, so to speak. In it the personal Buddha was revealed in his real, though quasi-historical, and spiritual aspects. The historical Buddha, the revealer of the Way to the Truth, is at the same time the Truth itself. These two aspects of Buddha's personality, together with his manifestations to believing spirits of all possible varieties, make up the Buddhist Trinity. All the practices of virtue, meditation, mysteries and the wisdom of philosophy are, with Dengyo, to be concentrated in the belief in the trinitarian Buddha. Though the mystic side was the chief source of the influence which Dengyo and his successors exercised upon the court, other sides of his religion were cultivated in his monastery on Mount Hiei. In this way the hill monastery became a centre of Buddhist religion and learning and several branches of the later Buddhism flowed out of this fountain.

On the other side, Kobo's Buddhism loses sight of a personal Buddha in the mist of a mystic pantheism. It was a curious combination of phantastic idealism and extreme materialism. The mystic practices founded upon this doctrine became the chief attractions both to the court and the people. Kobo's ingenuity and zeal gradually overpowered Dengyo's faith and many of the latter's followers found it more useful to accentuate the mystic side of their master's teaching. Thus the Japanese Buddhism of the four centuries from the ninth onward was chiefly a eudemonistic mysticism.

During this period the growing centralization of the government and the splendor of the court life, on the one side, and the hierarchic system of the two centres of mystic Buddhism, on the other, helped one another in their development. Buddhist ceremonies became the order of the day in the court. Sermons and sacraments in numerous temples were attended by throngs, both of the high and low in rank. Bishops and abbots became dignified nobles, exercising their influence upon affairs political and military. Thus there were two state churches at this time.

Still care must have been taken of the kami of old. The amalgamation of the kami-worship with Buddhism went on. While Dengyo's attempt on this line was not quite successful, Kobo's mystic pantheism was just fitted for the Buddhistication of the old deities. The Ryobu, or syncretic, Shinto now came into vogue. Every Shinto sanctuary was attended by Buddhist priests and their rituals were a mixture. But as the Shinto belief was affected by Buddhism, so Buddhism was to a great degree influenced by the Shinto religion. We can speak of a systematized Shinto as existing after this time, and the syncretism continued till the Restoration of 1868.

Though the mystic Buddhism became, in this way, the ruling force of the age, the nation was no longer merely passive. The reaction of the national, or rather human, sentiment upon the religion began to be felt. It was manifested in a eudemonistic sentimentalism. In the midst of solemn ceremonies and the luxurious splendor of life, the evanescence of worldly things was felt and the aspiration for an eternal bliss became conspicuous. The people, who had long since ceased to be naïve children of nature, were led to the conscious consideration of the problems of human life and to self-introspection. Side by side with painting and sculpture, literature imbued with Buddhistic pessimism became a great influence. Romantic sentimentalism, combined with an uneasy spirit, marks many romances of the latter part of the period. Thus a current of disquieted and aspiring emotion was flowing under the outward brilliancies, both religious and social.

III. Religious Struggles (1200-1600)—The above-mentioned current finally manifested itself in a powerful way, when the Fujiwara clan, which furnished the sole directors of the flourishing court life and the ruling political forces, was overpowered by some military clans. Political and family strifes in the middle of the 12th century brought the weakness of the court to the light of day. To the place of the Fujiwara nobles the military clan of Taira succeeded. But this latter enjoyed only 30 years of luxurious life and was crushed by the Minamoto clan (in 1185). Instead of the refinement and luxury of the preceding clans the Minamoto rule was a high-handed militarism, and they ruled the whole country with their headquarters in an eastern province. This momentous change, though long since prepared for, impressed deeply the people in the capital and the western provinces. Cherry blossoms in full bloom were dispersed suddenly by a frosty storm. Not only the poets felt so, but all the people saw the change actually take place before their eyes. It was not a mere political revolution. The Buddhist hierarchy lost its power together with its political supporters. The people's longing for an ultimate faith was no longer satisfied by elaborate mystifications and gorgeous rituals. The result was the rise of pietism.

The germ of the pietistic faith had been, for a hundred years, fostered in the monasteries belonging to the Hiei. Faith in Amita the redeemer in the Western Pure Land (Jodo, or Sukhavati) had its propagators in several writers, painters and itinerant preachers. The time was ripe for its rise; sentiment and aspiration demanded it. Its coming into power was signalized by the exile of Honen (1133-1212), the promulgator of the faith, together with his disciples in 1207. The government was obliged to take this step by the instigation of the priests of the Hiei, the centre of the orthodox learning. Honen opened the only gate of salvation that all might enter by a simple and devout faith in Amita's redeeming power. Amita's grace, into which we can be taken by invoking his name, was the gospel he brought forward on the authority of the sacred text of the Sukhavati-Vyuha. Conversions in masses took place; conversions of the nobles and courtiers amazed by the sudden decline of the court splendor, of the military men disgusted with their barbarous pursuits, of the common people long since dissatisfied with the mere outward forms of religion. His saintly personality with his simple gospel of salvation was indeed a revelation of the serene light issuing from the Western Land of Bliss.

Honen was succeeded by many able disciples. One of them, Shinran (1173-1262), popularized the faith by still more appealing doctrines. He disregarded the signs of Amita's grace, the abundant repetitions of the Buddha's name; he also abolished the prohibition of the marriage of priests: all in contrast to his master. Not «virtues» but «faith» was his sole watchword. This was quite a new phase in the history of Buddhism; Shinran's religion (now called the Shinshu, or True Sect) continues to this day to be the most influential in Japan.

The pietists were followed by a prophet. Towards the end of the 13th century Kublai, the Mongol Emperor, subdued nearly the whole of the Asiatic continent, and his army and navy began to threaten the Island Empire. Great were the fear and the commotion throughout the country. Nichiren (1222-1282), the prophet, took this opportunity to warn the nation that it would be vanquished by the invaders, unless conversion to the true faith should take place. His faith was the orthodox teaching of the personal Buddha, as taught in the Lotus of the Law, and his tenet consisted in the adoration of the truth by uttering the title of the scripture, which he considered to embody the Trinity. With this cry of «Return to Buddha» and his prophetic utterance in the tone of a Jeremiah, he opposed every prevailing authority, both political and ecclesiastical. Insults followed by trials and prosecutions, only helped to strengthen his enthusiasm. At last, during his exile in a remote island, he attained the conviction that he was the Suffering Sage whom Buddha had destined for the propagation of the Law in the latter days of the world. After this, in a retirement of eight years, his thought was occupied with the spread of his Buddhism from Japan to the whole world. This Japan-centric idea tinted his religion with some Shintoistic ideas. Though his dream of universal religious unity remained unrealized, his prophetic zeal and his patience in suffering were emulated by his disciples.

To the awakening of faith in various ways another new feature was added by the introduction of the Zen Buddhism. Eisai (1141-1215) and Dogen (1200-1253) were its agents. They differed in the transmissions of the method and in the characteristics of its practice, the former's being more poetic and the latter's popular. But both taught a simple and direct method of emancipation from worldly troubles by practising Zen (Dhyana) or meditation. The method is characterized by the absence of dogmas and consists in simply striving to realize one's own inner self. There the practitioners are taught to arrive at Buddha's wisdom which is coeval with reality. But reality does not exclude phenomenality. When once the innermost self is realized, everything, though seemingly ephemeral and offensive, becomes resplendent with bright rays of eternal light. It was quite natural that this simple method converted most warriors. The Buddhism of temples was substituted by that of the fields and camps.

In the pietism of Honen, the revivalism of Nichiren and the intuitionalism of the Zen practice, Japanese Buddhism attained its own standpoints. These new departures, which were concomitant with the growth of national self-consciousness, influenced the life of the nation in every respect. Visions of the blissful superhuman existence, resulting from pious faith, or nature and landscape in their appeal to serene meditation, became the theme of paintings. Rhapsodists recited the rise and fall of contending clans with many episodes in which figured the men and women who were saved from sorrow and agony by faith. Religious teachers wrote their epistles and hymns in simple yet powerfully appealing Japanese, in contrast to the dogmatic treatises of the preceding period, written in Chinese. Monasteries and mansions, hermitages and cottages came to have closer communication. Popular education instead of profound philosophizing; counsels and services relating to daily affairs instead of mysteries and rituals; these were the instruments of the propagandism. Tea, fans, kakemono, caligraphic drawing, Japanese smile, the sternness of expression, everything now known as peculiarly Japanese is the product of these influences, directly or indirectly.

The firm and peaceful government under the military regentship, which lasted over 100 years, was followed by political disintegration. The Age of Wars lasted from about 1330 to 1600. It was also the age of religious conflict. The followers of Shinran increased rapidly throughout the country. They organized an almost extra-territorial church, with the abbot of Hongwanji (their central temple) as their head. The old centres of Buddhism on the Hiei and other mountain temples were occupied by armed bonzes. The missionary zeal and fervent attitude of the followers of Nichiren everywhere encountered bloody resistance. Religious bodies and orders became militant and fought not only each other, but feudal lords also. In the midst of this confusion minor sects arose. Every possible idea and practice found its promulgator and its followers. It was the Zen monasteries that cared for the preservation of literature and the cultivation of useful arts during this time.

Some attempts were made at organizing the Shinto religion which had almost been absorbed into Buddhism. Chikafusa (died in 1354), the loyal noble of the Southern Dynasty, tried to combine Japanese mythology with Buddhist cosmology and in that way to explain and confirm the divinity of the sovereigns. He became, in this latter respect, a forerunner of the nationalistic Shintoists of the 19th century. A family of diviners, Urabe by name, and its chief representatives in the 16th century founded a school of Shinto, called the Unitarian Sect (Yui-itsu), in antithesis to the syncretic or double Shinto. But in reality it was a combination of Dengyo's monistic Buddhism with several alien ingredients. In their writings, profound philosophical sayings are found side by side with curious explanations of mystic practices. Another branch of Shinto was founded in the 16th century, though its completion dates from the next century. It is named the Geku-Shinto, having been organized by the priests of the temple Geku, a counterpart of the shrine dedicated to the Heaven-Shining Deity. The system was much imbued with Confucianistic elements, not of moral teachings but of cosmology and divination. All of these priests who formulated doctrines were voluminous writers but their influence was not remarkable.

The fermentation was increased by the unexpected arrival of the Jesuit fathers in the middle of the 16th century and by their amazing success, which was partly due to the rifles which their countrymen imported. Some feudal lords got the new fighting instruments together with their new faith. They fought their neighbors with the help of the rifles; temples and shrines were devastated. The rise of the Jesuit party culminated in the establishment of a central cathedral in the capital (in 1568) under the patronage of Nobunaga, a feudal lord who then ruled in the capital. Nobunaga was a mortal foe of the Buddhist soldier bonzes and fought them incessantly. It was his religious policy to welcome the new propaganda. The converts numbered at that time nearly three hundred thousand, among whom there were many feudal lords. But the turn of their fate began with the death of their patron in 1582. His successors endeavored to expel the missionaries and the obstinate converts from the country. The last blood of the martyrs was shed in 1638, when the stronghold of the Christian insurgents was crushed. Unexpected as was their arrival and amazing as was their success, the Jesuit fathers disappeared from the country like a comet. Their name corrupted into Japanese «Kirishitan Bateren» (Christian Padres) alone remained, inspiring something aweful in the minds of the people even in recent times. Nevertheless, a group of humble fishermen near Nagasaki have remained attached to their Christian faith in secret, through over two hundred years of strict inquisition. Their faith has been revealed since the revisiting of the Catholic Fathers in the 19th century.

The period which had a glorious start of religious awakening ended thus in a miserable absorption of religion into politics and battles. Nevertheless the beliefs sown in the heart of the nation still remain and must grow up again.

IV. Peace and Slumber (1600-1868).—The complete extinction of Christianity was synchronous with the firm establishment of the Tokugawa Shogunate. The new régime put an end to the age of warfares, both feudal and ecclesiastical. The policy of the new government in regard to religion was to keep, strictly, the *status quo* of the various branches of Buddhism and to guard against any rise of Christianity by means of the religious census conducted by Buddhist priests. Each Buddhist body was allowed self-management but no change of area of jurisdiction was allowed. The state churches, so to speak, were richly patronized by the authorities. Slumber began in ease.

Another remarkable feature of the state management was the establishment of an orthodox Confucianism as a system of moral instruction apart from ecclesiastical institution. The orthodoxy was founded upon the writings of Chu-hi, a Chinese philosopher of the 12th century. Obedience was the first and last of his teaching, and this was the most suited to the intention not only of the central government but of the feudal states, all of them now eagerly seeking to keep peace and to establish order. The samurai (comprising the warrior and ruling class) were trained in the orthodox moral teaching. The morality of faithfulness, stern justice and rigorous self-discipline combined with the code of honor, which had been fostered among the samurai during the long Age of Wars. These made up the Bushido, the way of the samurai. See JAPAN—THE SAMURAI.

The establishment of the orthodox teaching had two kinds of consequences. One was the general indifference of the samurai class towards religion, and a feeling of antipathy towards Buddhism. Though Confucianism was not destitute of cosmological and philosophical speculations, its centre of gravity was practical morality. Self-discipline, domestic management and state government were the cardinal interests of its teachings that were now adapted to the orthodox teaching current among the samurai. A positivism and a Stoicism like this is everywhere an opponent of religious faith. Thus Confucianism, which had been transmitted chiefly by Buddhists, now became their opponent. Buddhism incurred an antagonistic criticism, for the first time in the history of its existence in Japan, from an orthodox Confucianist in the middle of the 17th century. His example was followed by nearly every Confucianist of subsequent years. This anti-Buddhistic tendency among the samurai class was most felt at the time of the Restoration and is felt even to-day.

The other consequence was neglect of the moral training of the common people and contempt for the merchant class. Not only was the moral code of the ruling class incapable of refining the people, but it was more convenient for the rulers to keep them as blindly obedient servants. Husbandry was regarded as the only source of wealth, but husbandmen were mere producers. Trade was thought a treacherous occupation and merchants were treated as base, contemptible people. It was quite natural, in this condition of society, that general education was left in the hands of poor schoolmasters who taught reading and counting only, or at the mercy of Buddhist priests, who became more and more corrupted in conditions of ease and security. To meet the need there arose, in the middle of the 18th century, an ethical movement which was humanitarian in its spirit and popular in its practice. The movement is known as the Shin-gaku, or Mental Learning, which means the culture of the mind. The teachers of this popular education were men of admirable character, their teachings were quite inclusive and plain, and their lectures and writings were persuasive in tone, attractive and intelligible to all. The movement flourished, and continued to have great success up to the end of the Shogunate régime, when its quiet and meek character no longer fulfilled the need of the time.

Buddhism enjoyed, as the patronized religion, a peaceful slumber during this period. But its activity never died out. It was during the peaceful times that most of its writings were printed, and that, a thing more important, the dogmatic system of each of its sections was organized, so that in form it reached the utmost refinement. Strifes of orthodox teachers of dogma with heretics were characteristic of Buddhism at this period. Appeals for decisions were often taken to the government and many tragi-comedies were played by the meddling of the officials with subtle dogmatic discussions. Curiously the Shinshu men, the followers of the pietist reformers of the 13th century were foremost in these struggles.

Among the Confucianists appeared many men of more or less original genius, more of them outside the orthodox circle than within. Their struggles with the orthodox teachers and also among themselves were so severe, that the government at last found it necessary to prohibit the heretical branches. Still they made common cause with the orthodox men in their attitude against religion.

To these opponents of Buddhism was added a new factor, *i. e.* the revival of Shinto. The first section of the revivalists was composed of learned Confucianists and samurai. Their creeds amounted to obedience to the heavenly reason and to its practice in loyalty and filial piety. Loyalty, not only to the feudal lords but to the Imperial throne, and filial piety, chiefly expressed in ancestor-worship, made them advocates of the Shinto belief. Thus the orthodox Confucianism adopted by the Shogunate government became one of the factors which threw down the existing régime and restored the Imperial authority. The second section of the new Shintoists were Japanese philologists. Studies of the ancient mythological and historical writings, the first impetus to which was given by a Buddhist monk, were now used for the revival of the ancestral religion in its ancient and pure form, at least such as these philologists thought it had been. Indeed, their Shinto was free from Buddhistic and Confucianistic elements, but the most prominent of them, Hirata (+ 1843) was already influenced by European learning. These men and their followers contributed to the restoration of the Imperial régime and influenced the religious policy of the new era. But their religious influence was not deep.

Another remarkable feature of the Shinto revival was the appearance of some monotheistic Shintoists, during the last century of this period. They considered themselves Shintoists and they are called so. But in reality their beliefs were loosely connected with ancient traditions. They were men of original religious experiences, almost visionaries. Kurozumi (+ 1849) the most prominent among them, can be called a propounder of almost pure monotheism in a very simple and devout form.

V. The New Era, Reawakening and Fermentation (1868—).—The new era opened with the restoration of the Imperial authority in 1868. Chauvinistic Shintoists and Confucian samurai, both prominent agents in the political transformation, tried at first to establish a national religion. The National Cult Department stood at the head of the new government and every means was taken to exclude Buddhist influence. All the privileges granted to Buddhist priests and temples were abolished at once. Buddhists were driven out of the kami-temples that they were attending; idols, decorations, scriptures, etc., were taken out and burned. Even cremation which had been introduced by the Buddhists, was prohibited. The purification of the national religion was carried out, after 1,200 years of its mingling with Buddhism. The establishment of the Shinto faith as the state religion was fatal to Buddhism in its material aspect, but this loss was to be compensated by its spiritual reawakening. The zeal of the Buddhists, combined with the unstable political conditions after revolution, influenced the government to the extent of instituting an Ecclesiastical Board, under the supervision of which both Shintoists and Buddhists could preach the «patriotic and humanitarian principles» as the authoritative teaching of the state (1872). The two religions now stood on an equal footing. After three years the Board was dissolved. Buddhist temples were allowed their respective independent management, and Shintoists were ordered to organize their own bodies apart from the court ritual. The fervent Shinto revival subsided, after a few years' sway, and the freedom of belief was pronounced *de facto.*

The same year (1875) witnessed an event decisive for the progress of Christianity. This was the return of Neeshima from America and his founding the Doshisha Theological School. Prior to this, the prohibition of the Kirisitan Bateren had been withdrawn (in 1872). Young men converted to the Christian faith gathered themselves together in several towns, with a high aspiration—to enlighten themselves and their countrymen. Firm in their belief, they had withstood the effects of the suspicion and hatred of their neighbors and the threatening of their samurai fathers. Now these enthusiasts found their leader in Neeshima. The opening of the campaign for the Gospel at the beginning of the new era was a bright one and its rapid progress up to the end of the eighties was astonishing. The amount of the educational works produced by Christian mission schools during these years can never be overestimated. The moral ideas which Christianity has sown are now bearing fruit, especially in the matrimonial relations. Side by side with the Protestants, the works of the Catholic and the Orthodox missionaries progressed steadily among the lower classes. The Christianization of the whole nation seemed not to be a mere dream. But this was a surface current. A parallel current of agnosticism and a hidden one of reaction once more manifested themselves.

The conservatives, who had once been against the opening of the country to the «foreign barbarians,» ran to the other extremity after the Restoration. Everything European or American seemed to them to be the best. Together with railroads and telegraphs, Rousseau, Mill and Bentham were welcomed indiscriminately. The rapid progress of Christianity, especially Protestant, was partly assisted by the Europeanizing tendency of the time. But the nationalistic ideas never died out. When, towards the end of the eighties, problems of the treaty revision gave rise to anti-foreign feelings, reaction made itself felt in the religious sphere. Buddhists were foremost in the anti-Christian movements. All conservatives, many of whom were Shintoists or Confucianists, gathered under the banner of a «Buddhistic Patriotic Union» or of an «Association for the Establishment of the National Religion»—which they called «The Great Way uniting the Three Religions.» They forgot their former antagonisms and joined hands, simply to oppose the foreign religion. They were also aided by young Buddhists who had studied Western philosophy and who fought Christianity with Draper, Renan, Spencer in their hands. Thus we see here a curious alliance of conservative reaction with agnosticism, the sciences and Indian philosophy. But the Christianity which prevailed at that time deserved these attacks. By many of the converts it was accepted because it was the religion of the Westerners, who were inventors of the locomotive, or who spoke the enlightened English language.

The combined reaction was followed by more clearly nationalistic ideas. In 1890 an Imperial edict on the national code of morality was issued. It was founded upon «the teaching of the Imperial Forefathers» and aimed at the unification of national morality. These features of the edict were made use of by some thinkers as the weapons to be used against Christianity and later against religious faith in general. The war with China in 1894-95 gave a momentous impulse to the rise of the nationalistic consciousness and to the reawakening of the samurai spirit. The educational circle that never allowed religious elements to come into it, and which was composed mostly of samurai's sons, advanced from the attack on Christianity and Buddhism to the attempt to dictate to the nation's conscience an authoritative principle. Shintoists now separated from Buddhism. Though the attempt to organize an influential body failed, the ideas represented the creed of the majority of the educationists. The propagandism may be renewed hereafter.

The religious problem of New Japan was now translated from the differences between the old and the new, or between Christ and Buddha, to the antithesis between religion and irreligion. Whether there is to be a religious faith or a mere moral teaching; this has been the point of the dispute since that time. Soon after the outbreak of the dispute, a meeting of leading Buddhists and Christians in friendly terms was held (in 1896). Some of the addresses given at the meeting pronounced the hope that the followers of Buddha and of Christ might join hands against their common foes, the advocates of irreligion. The meeting marked a turning point in the solution of religious problems and became the predecessor of the present Religious Union of Japan.

While a group of educationists was trying to invent a substitute for religion and religious leaders were looking for a new opening, the people were left to themselves. Most of the Buddhist sects were engaged in internal struggles. Buddhist teachers themselves were destitute of faith; neither their old traditions nor the newly allied philosophy was able to give them vitality. Some Shinto sects were founded or revived. Most of them had little to do with the nationalistic Shinto, but they represented various shadings of popular theistic religion. The most influential of them, the Tenri, or the Heavenly Reason, teaches that there is a sole Supreme Divinity and preaches absolute faith in Him. But these beliefs are mingled with superstitious practices and obscure cults. These dark sides became manifest when economic panics after the war were manifested by a general emotional depression. At the same time religious needs among the younger generation began to express themselves in the two extremities, scepticism and sentimental pietism. There arose many unions of young Buddhists with various affiliations ranging from rationalism to revivalism. Christian churches began anew to be thronged by young seekers after faith. The increased publication of religious essays and books of devotion, both Buddhist and Christian; new editions of the writings of ancient Buddhist teachers; the organization of religious and philosophical lectureships; these signs showed an urgent demand for faith and truth. The seeking was naturally accompanied by uneasiness and disquietude of head and heart. The general dissatisfaction with the prevailing forms of religion, philosophy and ethics gave opportunities for the rise of several extreme propositions and theories. Tolstoi, Nietzsche, Leopardi were often referred to. These disharmonies marked the turning of the century and in the midst of the struggles and conflicting influences, the war with Russia (1904-1905) broke out.

The religious and moral struggles which seemed to have subsided during the war became again prominent soon after its close. Adoration of the way of the samurai and pleading for the ancient patriarchal system, ancestor worship, etc., followed the celebrations of the victories. Though strict monogamy and the idea of chastity have been growing, marriage is thought by the advocates of the patriarchal system a union not only of individuals but of the families to which the individuals belong. Militarism is getting more hold in education. Side by side with the advocates of these reactionary ideas there appeared some who alleged that they had seen in vision God or Buddha, and some prophets who pretended to be revealers of new truths. Standing between these two extremes, the Buddhists of the younger generation are eagerly striving to reëstablish their faith in Buddha, and the Christians are seeking for the methods and means of adapting their religion to the characteristic feelings and ideals of the nation. The problems are perplexing, the struggles severe; but there is light in the midst of conflict. The approach of a new era in the religious history of Japan can be welcomed with bright hope.

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11. Japan—Japanese Literature. *General History.*—Although the antiquity of Japanese civilization cannot be compared with that of China or Greece, it dates from a remote age. The history of Japanese literature extends over a period of 13 or 14 centuries, and it is therefore possible to give here only a brief account of its progress.

The 7th and 8th centuries A.D., which embrace the Nara period and some time preceding, may be called the Grecian age of Japan, for those who have studied the relics of sculpture, pictorial art, and the architecture of each period are impressed by the strong resemblance. In the sphere of letters, however, the remains are comparatively few. This can be explained as follows. Although Japanese civilization was of a high order in consequence of the influences of Chinese civilization and of Buddhism acting upon a nation eager for advancement, no vernacular letters had as yet been invented, and therefore books were written in Chinese or a very complicated method which made use of Chinese characters to represent the Japanese language. Hence the number of books written was comparatively small, and many of those which were written seem to have been altogether or partly lost. Of those still remaining we have the 'Kojiki' and 'Nihongi' in history, and the 'Manyoshu' in poetry. We also have examples of the ancient Shinto prayers and some Hoodoki—a series of books written in each province by the Imperial command describing the geography, history and traditions of the provinces. In the field of pure literature the 'Manyoshu' may be considered to be a national treasure, while both the 'Kojiki' and 'Nihongi' are most valuable histories of primitive Japan.

The 400 years beginning with the 9th century are generally called the Heian era, and in some respects this may be called the Roman period. It was during this age that Japanese civilization, benefiting by the influences of the Nara period, made signal progress in every direction especially in literature. The intellectual activity of the period may be said to have divided itself into two currents: one for the study of Chinese letters and the other for the growth of the native literature. But the study of Chinese literature became so prevalent that men ambitious to distinguish themselves devoted all their energy to it and the writing of Chinese essays and poems was common, especially among the Court nobles. At the same time the progress made by the native literature was highly commendable. It is significant, however, that the study of the native literature was pursued chiefly by females, and most of the standard works were the production of women. Though there were no native letters during the Nara period, towards its close we have the Kana, or Japanese phonetic alphabet. But it was not until the Heian era that the system of letters was definitely settled, thus making it possible for the first time to write books by phonetically transcribing the native language. The books written according to the new system during these four centuries were numerous, and what may be called the Japanese classics were mostly the production of this period.

The literature of the period may be roughly divided into three classes. The first and most numerous are the books known as Monogatari; the second kind are the dairies; and the last, but not the least important, the miscellaneous works. Monogatari literally means a narrative, but some of this literature are pure works of fiction, and some, such as the Yeika Monogatari, are historical works, though written in a somewhat novel style. There are also several books which are called Monogatari, but more properly belong to the third class. Works of fiction occupy the greater part of the Monogatari class. Here again, many books written during this period have been lost altogether; some are remembered by name only and others remain in a mutilated and confused form. The principal of those still remaining is the 'Taketori Monogatari' (Bamboo Cutter)—a short novel, considered to be the most ancient of its kind. A divine maiden is the centre character of the narrative, which tells of many incidents of courtship by several admirers, ending in the ascent of the maiden to Heaven (vide Victor Dicken's English translation). Next comes the 'Ise Monogatari.' Although this book is called Monogatari its style belongs more to the third kind—miscellaneous. Its chief interest lies in the poems it contains, and therefore it cannot have so much charm for foreigners as for Japanese. After these two works come the 'Yamato Monogatari,' 'Utsubo Monogatari,' 'Ochikubo Monogatari,' etc., containing such stories as of a Japanese student who, on his return from China, was shipwrecked and in the course of time reached Persia, where he learned the secret of flute playing from a divine personage, or as of a young lady who was badly treated by her stepmother. The stories are always concerned with love affairs. Of all the Monogatari, however, the most famous is the 'Genji.' This is a voluminous work written by Murasakishi kibu, a woman. It narrates stories of love affairs between a young prince, Hikaru Genji, and numerous ladies. From a moral point of view, there are several points which deserve criticism in this work. In fact, as far as its form is concerned, it has some resemblance to the 'Don Juan' of Byron. With regard to the phraseology, however, it has no such naked and disagreeable references as appear in Byron's work (consult the English translation by Baron Suyematsu). Another work which is regarded as equally valuable with the 'Genji Monogatari;' is the 'Makuranososhi' (Pillow Sketches). This is a book belonging to the third class and is written by Seishonagon, another lady writer. It is a collection of short sketches on various subjects, each showing the brilliancy of her pen. (For specimens of these sketches consult Aston's 'Japanese Literature.') Of later productions we may mention the 'Sagoromo Monogatari,' 'Hamamatsu Chiunagon' and 'Konjaku Monogatari.' One noteworthy feature is that Japanese works of fiction of this era far excelled in several respects those of China of the same epoch. Of the 'Nikki' (diary), may be mentioned besides the 'Nikki' written by the author of the 'Genji,' the 'Tosa Nikki,' and 'Kagero Nikki,' which were written before the 'Genji,' and the 'Izumishikibu Nikki,' 'Sarashina Nikki,' etc.

For several hundred years following the 13th century, literature in Japan showed a significant decline. This was due in the first place to the fact that the authority of the Imperial Court suffered a decline concurrent with the rise of militarism, accompanied periodically by civil wars. Intellectual studies were totally neglected among the common people and scholarship in a large measure became a monopoly of the monks. This decay, in the second place, is attributable to the fact that the pure native literature which flourished in the Heian era disappeared, and a new style of writing arose, —a mixture of the Chinese character and the Kana. While resulting in no improvement in the system of writing this produced much confusion, and the mode of writing was thrown back almost to its condition in the Nara era. But the number of literary works produced during this period was not small, and they may be said to possess a significant peculiarity of their own. Enlightenment during the Heian period was confined chiefly to the nobles in the capital (Kyoto), but unfortunately it became debased into mere empty luxury, resulting in the corruption and effeminacy of manners and customs. As a result, the literature of the period lacked vigor and force. The chief endeavor of writers was for refinement and grace. They became weak and diffuse. Moreover, the writers of the period were mostly women, and even men generally imitated the female style. Since the 13th century, however, the chief literary productions, as the result of the prevalence of the military spirit, dealt with warlike themes, though they were mostly written by priests, and were commonly known as 'Gunkimono' (War Narratives). They were written somewhat in the style of romance, and therefore, from a strictly historical point of view, may be open to criticism; but nevertheless they form interesting reading. Of such books we may cite the 'Hogen Monogatari,' 'Heike Monogatari' and 'Genpei Seisuiki.' Such were the general conditions from the 13th century to the middle of the 14th, which embrace the Kamakura and Hojo periods, and in fact, the same conditions continued down to the end of the 15th century, namely the Ashikaga era. The famous 'Taiheiki' was an early production of this age. Mention should also be made of the 'Jingo Shotoki,' which was a historical work of a serious nature, with critical observations, a rare production in Oriental history. Another well known book is the 'Tsuredzuregusa,' which was written in pure Japanese style after the one which appeared during the Heian period, being a collection of short sketches in much the same style as the 'Makuranososhi' (Pillow Sketches). (For specimens consult Aston's Japanese Literature.) In conciseness and pointedness of expression it excels the standard works of the latter period and is classed among Japanese classics. The 'Hojoki' is also of similar nature.

The period which can be compared with that in modern Europe dates from the beginning of the Tokugawa era down to our own day, namely, the last three centuries. For nearly 300 years, *i. e.* since the establishment of the Tokugawa Shogunate in the beginning of the 17th century, Japan enjoyed practically continuous peace, the country during this time being almost entirely secluded from the outside world. In this period intellectual study made great strides under the encouragement and patronage of the Shogunate itself and the feudal lords. Owing to the rapid growth of the new cities of Yedo (Tokyo) and Osaka, the centre of literary activity, hitherto concentrated in Kyoto alone, was now divided between Yedo in the East and Osaka and Kyoto in the West. This literary activity was divided into three great phases; first, the revival of Chinese study; second, research into Japanese classics; and third, activity in the production of all descriptions of fiction and dramatic pieces. As for the revival of the study of Chinese, it not only surpassed that of the Nara and Heian eras, but in the subjects of philosophy, history, Chinese poems and essays, the work was even an object of admiration of the Chinese themselves. The study of Japanese classics resulted in a better knowledge of the ancient books of the Nara and Heian eras, as well as in a clearer conception of the Shinto doctrines. In the sphere of pure literature, however, the revival failed to regain the standard represented by the 'Manyoshu' of the Nara era and other classical works produced in the Heian era. Thus we can see that the revival of both the Chinese study and the research into classical works, although both greatly helped the advancement of general culture, were unable to produce any brilliant native literature, owing to the fact that the first was altogether foreign to the native tongue and the second mainly limited to research into the works of antiquity. It is in the third phase—the growth of fiction and drama—that we must seek the real merit of the native literature. In scholastic attainments, the writers belonging to this class were not equal to those belonging to the other classes, but their imaginative power and adaptability far excelled the others. While the full scope and variety of the literary productions of the period cannot be given here, it can be said that these works of fiction may be roughly divided into three classes, namely, heroic stories, such as those of Bakin; love stories, such as those of Tamenaga; and the humorous miscellaneous works of such writers as Ikku.

Since the introduction of modern European civilization Japanese literature has shown new vigor, and books of all kinds have been written and published in such an innumerable number as is unparalleled in any past period. The great drawback of the modern system of writing is that it differs from the spoken language. Besides, the use of pure, phonetic letters, without mixing the Chinese characters, has long fallen into decay. Many a writer is now engaged in endeavoring to identify the written and spoken language and devising all sorts of forms of composition. In other words Japanese literature is still in a transitory stage, and therefore there are no standard works to show as specimens of the new literature. It may, however, be said that many valuable works have already been written by representatives of the new generation, with great promise of further progress.

JAPANESE POETRY.

The oldest Japanese verses in existence are those contained in the 'Kojiki,' (*vide* Chamberlain's translation) and the 'Nihongi.' This work was written in the beginning of the 8th century and contains the history of Japan from the so-called «God Period» nearly down to the time of writing. Therefore the dates of some of the verses therein contained are very remote, and it is almost impossible to fix the exact date. Since the 7th and 8th centuries the study of Chinese has become so common and prevalent that from those periods poems in Chinese have been composed by Japanese throughout all succeeding ages. Thus poetry has been of two altogether different kinds; namely, in Chinese and Japanese. The development of the Chinese poetry, too, has been so great as to be almost incomprehensible. To go into more details, at the end of the 8th century there was already a collection of Chinese poems entitled the 'Kaifuso.' During the Heian era the composition of Chinese poems became much more prevalent and collections which were then made were numerous. The writers were generally men, but women were not wanting. From the Kamakura era down to the Ashikaga era, Chinese poetry declined in the general decay of all literary pursuits but was not altogether lost. During the last three centuries, together with the general advancement of literary study, Chinese poetry has made such a striking development as to eclipse that of the Heian era. As, however, the Chinese school of poetry is after all foreign to our real purpose, we must dispense with a detailed account of it here.

The oldest Japanese verses next to those in the 'Kojiki' and 'Nihongi' are those of the 'Manyoshu.' The greater part of these belong to the Nara era, namely, the 8th century, and a portion belongs to the latter part of the 7th century. The most celebrated poet of the period was Hitomaru, who flourished towards the latter part of the 7th century, and the next in degree is Akahito. These two are considered by common consent as the greatest Japanese poets. Next to these we may mention the names of Okura, Yakamochi, and a woman, Odomo Iratsume. (For specimens consult translations by Chamberlain, Aston and Dickens.) During the Heian era poetry flourished between the Chinese study on the one hand and the Japanese literary pursuits on the other. There are seven or eight collections of poems made to the order of the successive Emperors, headed by the famous work 'Kokinshu,' besides many private collections. (For examples of some of those in the 'Kokinshu' consult the English translations above mentioned.) Even after the Heian era the influence of the Japanese poems was still felt and collections by Imperial orders were made from time to time, the total number of such collections made by the Imperial order being altogether 21.

Among the most celebrated poets, men and women, of the Heian era, we may mention Narihira, Komachi (a woman), Sojo Henjo, Tsurayuki, Mitsune and Shunzei; and among those who flourished in the latter part of the period and the Kamakura era, namely, the latter half of the 12th century and the early part of the 13th century, the names of Teika, Karyu, Saigyo and Sanetomo (the third Shogun of Kamakura). From that time down to our own day poetical composition has been maintained unbroken, so that it is impossible to give minute description of it. But from the fact that the presentation of poems to the Emperor and the holding of the so-called «poetry-meeting,» forms one of the Court ceremonies at New Year, it may be seen how deeply this poetic desire is connected with Japanese national life. When we look over the whole history of Japanese poetry, its golden age must be assigned to the Manyoshu period. This contains all sorts of poetic work, from those by the Emperors down to those by the common people of remote regions, those by the Court nobles naturally being the chief. All these seem to show how highly the poetic spirit developed among the Japanese people at large. Besides, the 'Manyoshu' contains the so-called «long» poems as well as «short,» but since the Heian era «long» poems practically ceased to exist. Moreover, while the poetry of the Manyoshu age had force and energy, with concise and sharp expression, that of the Heian era developed on the side of gracefulness and elegance, losing the strong points of the Manyoshu poetry. Thus comparing both the strong and the weak features of the Heian era with those of the Manyoshu age, we can decidedly say that Japanese poetry already showed a marked decay, and this decay has continued through all ages down to our own time.

Beginning about 300 years ago, a new poetic style, called the Haikai or Hokku was developed. This form of verse is even shorter than the «short» poems and has come to prevail side by side with the ordinary poetry. While this latter chiefly prevails among the higher classes of people the Haikai finds favor generally among the lower classes, and therefore is sometimes called the «people's literature.» The Haikai possess peculiar merit and forms a distinct branch of Japanese literature. This style also has a remote origin but we must refrain at present from giving a more detailed account.

Following the Ashikaga era, that is, the 14th and 15th centuries, the so-called Renka («joined poems») prevailed chiefly among the military class. How this style is composed is perhaps worth relating. Several persons form a party, when one composes the first short line of 17 syllables, the next the second line of 14 syllables, the third another of 17 syllables and the fourth 14 syllables, and so on. Hence the name of this peculiar class—perhaps a better term in English would be «coalition» poetry. Each line must be connected in meaning with the preceding one in such a manner that the connection should not appear to be direct. This explanation, perhaps, will be incomprehensible to those not versed in the subject, but it is the most important and interesting character of this poetry. The Haikai is derived from the Renka. In it the lines are composed in a similar manner and the act of so doing termed Tsukeai, that is, «joining together;» the result is known as Kasen. The most important line of the Kasen is the first (Tateku) and it forms a complete poem in itself. This first line, being the opening one of the whole series, is the Hokku, that is the commencing verse. In common practice, however, as a rule the first line alone was only to be composed. Hence the Japanese poem in its shortest form became known as the Hokku. The best known poet of this style is Basho, who flourished about 200 years ago. Prior to Basho, the Hokku had shown a comic tendency, but he changed it, and created the Shofutai, or legitimate style. He is probably the foremost among those who really inherited the spirit of the Manyoshu age and the Heian era.

As to the form of Japanese poetry, there is no rhyme nor strict metrical cadency. About the only element in which poetry differs from prose is that in the former five or seven syllables form one line—strictly speaking, a sentence, for it is not always written in the form of a separate line as in the Western poems. This peculiarity is entirely due to the nature of the language, for poetic euphony and sentiment can be acquired without the use of rhyme or metre. The common method of placing together these five or seven syllable lines is to place each alternatively commencing with a five syllable line. But it is not necessarily a fixed method because some of the long poems commence with seven. In some cases, especially in popular songs, two or three lines of the same syllables are placed together. It differs according to the different periods and the nature of poems and there are lines which are either shorter than five syllables or longer than seven, intermingled with other lines for the sake of variety.

In Japanese composition even poems which are termed «long» are not so lengthy as many Western poems. The ordinary short poems consist of only 31 syllables, 5, 7, 5, 7 and 7, and the Hokku of only 17 syllables, 5, 7 and 5. «Japanese poetry is, in short, confined to lyrics, and what, for want of a better word, may be called epigrams.» This is what Mr. Aston says of Japanese poetry and it is not very far from the fact. Under the circumstances, Japanese poetry when translated into another language will invariably fail to convey any poetical thought to the European mind in general. However, poetry of any tongue has its peculiar charming power to those who have grown up with the language—a power unknown to outsiders. This is most certainly the truth with regard to Japanese poetry. Let us give a few examples:

Tsuki ya aranu
Haru ya mukashi no
Haru naranu
Wagami hitotsu wa
Moto no mi nishite.

The plain literary translation of these lines would be:

Is there no moon?
Is the spring not the old spring?
My person alone remaining the original person?

This poem for Japanese possesses an indescribable charm,—food for sentiment and imagination. The meaning is that while the moon and spring are the same, I alone am not the same old person—told with a pathos which strongly appeals to the Japanese mind not only by its literary meaning, but also by the mode of expression. The piece is the most celebrated work of Narihira, the first writer of the Heian era. Again:

Furu ike ya
Kawazu tobikomu
Mizu no oto.

This is the best known Hokku by Basho and is considered to be a masterly example of his so-called legitimate style of Hokku. Its literary translation cannot be other than as Mr. Aston has it:

An ancient pond!
With a sound from the water
Of the frog as it plunges in.

What can a foreigner make out of it? Yet it strongly appeals to the sentiment and imagination of the Japanese. It carries with it a philosophical idea which is only comprehensible to them. Another example:

Asagao ni
Tsurube torarete
Morai-mizu.

This poem is often quoted by many Western writers. Mr. Aston translates thus: «Having had my well-bucket taken away by the convolvuli,—gift-water!» What foreigner could find any poetical meaning in this without a lengthy explanation? Thus we can see that it is almost impossible to translate Japanese poems into any foreign language and convey their real sentiment and force of imagination.

Hitherto this short review has been chiefly confined to those poems which are chiefly designed for reading. There has, however, always been another kind, though less important in the strict literary sense, namely, verses used for singing or chanting. There are still extant some scores of examples of this class of work from the Nara era and the early part of the Heian era. Since those early days, however, this form of poetry has undergone many changes and grown into many varieties. Generally speaking, these productions are much longer than the ordinary poems. Even the 'Yokyoku' and 'Joruri' are nothing more than a modified form of poetry, but these are dramatic pieces in a sense and we must defer our discussion on this class to the section of the drama.

THE DRAMA.

Theatrical performances in Japan began to assume their present style about 300 years ago. But the origin of the drama is very remote. In the Nara era there were the so-called Kagura and Saibara—dances accompanied by singing and music performed chiefly in Shinto shrines. The difference between the two is slight, the Saibara having a more humorous tendency. Next arose the so-called Sarugaku and Dengaku, much in the same manner as the Kagura and Saibara. The difference between these two is also slight, with the exception that the Sarugaku is derived more from old dances, while the Dengaku has its origin in the pastime of the peasants. Many of the poems used in these various performances still remain. In the Kamakura era the Heike Monogatari, which was written in a high poetic style, was adapted for chanting in accompaniment of the Biwa, a string instrument. In the same era the Dengaku, probably influenced by the singing of the Heike Monogatari, underwent some alterations, and, historical narratives having been introduced into the play, it began to assume the style of theatrical performances. This change was quickly followed by the Sarugaku. Hence arose the No of Dengaku and the No of Sarugaku, the term No being taken to mean performance. The Dengaku, however, soon declined and the Sarugaku alone made continuous progress. In the Ashikaga era, it became the chief source of pleasure for the upper classes, being patronized by the Shogun himself. Then arose a class of professional actors, and the gentry themselves began to learn to sing and even to play and had no compunction in doing so in the presence of their friends. While the acting is called No, the words, the written narratives which are to be sung, are called Yokyoku. In the time when the Sarugaku became popular to the disadvantage of the Dengaku, the term No came generally to mean the No of Sarugaku.

The so-called Yokyoku has much merit as literature. There are nearly 300 specimens of these Yokyoku and nearly all of them are the production of the Ashikaga era. They are not so long as those of the Greek or Roman comedies, but their construction has some similarity, for the words uttered by the actors are not limited to dialogues but contain descriptive parts as well. Thus when an actor representing a certain character appears on the stage, he generally announces who he is, why he has come there, where he is going to and such like. The method of playing has a certain similarity to the modern European opera, for the words uttered by the characters are sung and not spoken all through. The general features of the play show that these works were greatly influenced by Buddhism. This is due in the first place to the fact that the religion exercised much influence over the mind of the people at large, and in the second place to the fact that the playwrights were mostly priests. From the scholastic point of view, the sentences in these plays are not free from defects, but they are strong in the poetical element and some parts of these works cannot be too highly praised. The Yokyoku and No may be called the classical drama of Japan. They enjoy the favor of the upper classes even to this day in the same manner as the opera flourishes in Europe side by side with the ordinary theatre.

After the No there is another class of performance called Kyogen, or short comedies. In ancient times the Dengaku and Sarugaku contained much of the comical element, but during the Ashikaga era, when the Yokyoku and No reached the height of prosperity and was at the same time greatly influenced by Buddhism, they became transformed into tragedy, or at least became very serious in their nature. They lacked comic effects. The Kyogen arose to supply this want, and it became a general practice after a No performance for a Kyogen to follow, for the sake of change. No and Kyogen actors played on the same stage, but as a profession the Kyogen actors were and are considered to-day to be inferior. In the Kyogen, unlike the No, the words are spoken, though pronounced and uttered in the style of the Ashikaga era. As the chief object of the Kyogen is comedy, they have little of the poetical element. But as comedy they are excellent. The Yokyoku and Kyogen plays have always been printed, so that they may be read by the people who are not professional or amateur actors. There was still another kind of dance, or rather play, called the Kowaka. which prevailed side by side with the No. In this the words (text) were called Mainohon, many of which still remain. The Mainohon, like the Yokyoku, exercised much influence on the development of the theatre of later days, but these texts are very similar to those of the Yokyoku, and therefore we may spare any detailed account of them here.

The modern theatrical performance originated towards the end of the Ashikaga era, and soon acquired the name of Kabuki. Since then the name Kabuki has come to signify theatrical performance acted by human actors in contrast to the Ayatsuri Shibai, that is, the marionette theatre. The Kabuki is said to have originated in the dancing and singing performed among other shows on a rude stage at the river side of Shijo in Kyoto by a woman named Kuni, a native of Izumo. Into this singing and dancing, ideas of older performances, namely, the No or Kyogen, were introduced, and before long they assumed the style of the modern stage performance. On account of the origin of the Kabuki, the social position of this class has always been held in very low esteem, by no means comparable with that of the No actors. Kabuki actors have been generally known by the name of Kawaramono (Riverside people), but contrary to the No, which has made no change or improvement since the Ashikaga era, the Kabuki has undergone many changes and improvements from time to time until it has attained its present prosperity.

As to the Kabuki performances, in the early stage of development women were the chief actors, resulting in the term Onna Kabuki. But boys were also employed and a little later on, even grown-up men. A peculiarity in those days was that women played male characters and men the female. Women Kabuki became extremely popular. Many stages, rude as they were, were established everywhere, but the acting produced much evil effect on the morals of the people and it was finally forbidden by law. Next flourished for a time the so-called Wakashu (boy) Kabuki. This again produced social evil and was forbidden by law. Thenceforth the performers were mainly grown-up men, as we see them on the modern stage, who acted the female characters. As time went on, however, women performers came into existence again, but they formed companies of their own sex only, and the male characters were played among themselves. The number of actresses is now very small comparatively.

In the early days of the Kabuki, the performances were short and simple, plays consisting of several acts having come into existence only by gradual development.

In the beginning there were no professional playwrights. Plays were chiefly written by actors or some one who took an interest in the matter, and further, plays were even devised by the actors impromptu and not written at all. Later on the stage began to have professional playwrights attached to each theatre. Unlike the drama in Europe, these plays were never printed for public circulation, but used only for acting at the time, and were often written more to suit the performers than for literary excellence. And again when an old play was acted it was often subjected to alteration for similar purposes; in other words, the dramatic personæ are often reduced or added to to suit the number or ability of the actors. And therefore the texts of the Kabuki have not much literary merit. Though it may look somewhat strange, it is in the plays of the marionette theatres that we must seek the equivalent of the European drama. The marionette performance originated about the same time as the Kabuki. Previously, there had been a particular kind of chanted narrative, the Joruri, which name is said to have come into use in a long chanting song consisting of 12 sections, and telling of a love story between Yoshitsune and a maiden named Joruribime. This was written by a lady and was entitled 'Joruribime.' Subsequently many works of a similar nature were written and the introduction of the Samisen (a three-stringed musical instrument) gave much impulse to their development. To the chanting of these songs the marionette performances were added. Various styles of chanting were also gradually introduced. Towards the end of the 17th century there arose two great geniuses, Gidayu Takemoto and Monzaemon Chikamatsu. Takemoto had a great natural gift for chanting Joruri, and devised a new style of chanting which became known by his name as Gidayu. Chikamatsu was a playwright of the Kabuki. He hit the idea of writing Joruri texts based on the principle of the Kabuki plays. Gidayu Takemoto chanted them to the acting of the marionettes, for which the new theatre known by the name of Takemotoza was established in Osaka. There were then skilful marionette players, and many mechanical improvements were added to the marionettes themselves. By the combined efforts of these two authors and these skilful players the marionettes soon acquired a very wide popularity. The success of this theatre was followed by the establishment of the Toyotakeza, and many writers of great ability, rivals and followers, appeared in succession, such as Kaion Ki, Izumo Takeda, Ippo Nishizawa and Sosuke Namiki. Chikamatsu himself wrote nearly 100 pieces, and his rivals and followers wrote a large number. It is almost a matter of wonder that so many writers of ability made their appearance one after another nearly at the same time. It is also a fact that nearly all the ablest writers were drawn to the side of the marionette theatre, leaving the Kabuki writers far in the background. This state of things now came to exercise great influence upon the Kabuki theatres, and perforce they soon began to adapt the marionette plays for their own stage. The text of the Gidayu is written in a manner somewhat similar to the ordinary works of fiction, containing much descriptive matter as well as dialogues. The point in which the Gidayu differs from the ordinary novels or romances lies in the fact that the general construction of the Gidayu is made to fit the stage and consequently a lengthy description or dialogue is avoided, the whole story being divided into a certain number of acts of nearly the same length. Besides, as the whole is to be chanted, the phrases are suitably written, for which purpose certain metrical devises are applied. These plays are divided into two great classes; one, Jidaimono (historical) and the other, Sewamono (social). The chanting of the Gidayu text is also widely practiced independently of marionette performances and is very popular among the people at large. From this fact these texts are printed and widely circulated. Their great popularity encouraged writers to exert their utmost ability. Scrupulous attention was paid to minor things. At the marionette performance the chanters sit in one corner of the stage while the marionettes are worked by the players in harmony with the chanting.

Like the ordinary plays, action and dialogue in the Gidayu exaggerate, being too direct and strong. We must, however, make allowance for this from the very nature of the play, because the marionettes are mere puppets and the realistic effect on the stage must come from the chanting. If action and dialogue were as common as those of the ordinary actors they would be insufficient to produce the desired effect on the spectators. For specimens of the Gidayu text we may refer to the English translation of the Chushingura («Magazine of Loyal Retainers») and the Asagao-Nikki («Morning Glory Diary»), both by Victor Dickens. We may also take notice of one other thing. In these plays the proverbial saying encouraging what is good and chastising what is bad, is always aimed at, and they are not so full of love stories as Western plays. In them mere representation of realism is not the main object. The best plays were written in the 18th century during the Tokugawa era.

Although in all fields of literature much progress has been made since the Restoration of the Imperial authority 40 years ago, the production during this time of the Gidayu may be said to be almost *nil*. On the other hand several Kabuki plays were written by eminent scholars and some of them are of much value, as for example, the Kasuganotsubone, written by Mr. G. Fukuchi. Generally speaking, however, playwriting is still in a transitory stage and it cannot be said as yet to have made a brilliant addition to Japanese literature.

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12. Japan—History of Japanese Art. In giving an outline of the history of Japanese fine art it is to be noted first that there are two factors: one which has proceeded from the character and ability of the nation, and the other from the influence of foreign civilization. These two factors, harmoniously blended, have resulted in the distinguishing traits of Japanese art, and brought forth its peculiar charm, so that its characteristics can never be fully comprehended unless we keep these in mind.

The occurences which took place before the Yamato race, the ancestors of the present Japanese, settled on this island in the Far East are concealed in obscurity, although according to the descriptions given in the record there is no question that a certain stage of civilization had already been reached at the beginning of the foundation of the country. Seen from the material point of view, the Japanese ancestors had emerged from trogrodyte habit and dwelt in thatched houses; for dress they wore trousers and hat or crown; used strung jewels for ornament; and farming and sericulture were their occupation. They knew the art of making pottery and manufactured earthenwares, such as vases, shallow dishes, etc. Metallurgy was also known, for they made spears or halberts, swords, bells, mirrors, etc. From the spiritual point of view, they were early characterized by profound reverence for the deity, and the custom of regarding their ancestors with veneration prevailed among them. We learn that they expressed their passion in poetic compositions, and enjoyed dancing and singing accompanied with music. These and various other traditions help us to form an idea of the character and manners of the early Japanese. They respected superiors and elders, being united in clans and families; and if order among themselves was rigorously maintained, there was a beautiful custom of gentle manner. Although they were distinguished by marital spirit, yet they were compassionate and never indulged in savage cruelties; cleanliness was universal; unreasonable obstinacy was looked upon with aversion, and they were frank and sincere. From their lively nature they took pleasure in singing and dancing. Although no particular dexterity in art was to be seen, we have sufficient evidence to show that there already appeared the bud of art. Such was the state of the primitive Japanese tribes. And when we examine the power which contributed to the development of their character and habit, we find that the most potent influence was that of the physical features of the country.

The island of Japan lies in the Pacific Ocean on the east of the Asiatic continent, and extending from north to south it includes many degrees of latitude. As one extremity touches the frigid zone and the other the torrid zone, the natural scenery continuously undergoes kaleidoscopic changes in the four seasons, hence there is no monotony of surroundings. In addition to this, the cold and the warm ocean current rapidly flows around, and the trade and the seasonal winds blow over the land, thus regulating its climate or causing it to change. Above all, the two mountain systems of China and Karafuto (Saghalien) and their branches penetrating the length of the island, and their lofty ridges, covered with thick forest, are everywhere seen piled one upon another. The air, full of moisture that comes from the ocean, strikes these walls and turns to cloud, mist, rain or snow, thus constantly playing wonderful tricks of transforming nature, and the more «lends enchantment to the view» of mountains and waters. There is a lavish variety of fauna and flora. Fine trees and rare grasses, some with lovely flower and leaves, others producing delicious fruits and berries; birds and insects singing and chirping and displaying beautiful plumes—these entrance men's hearts and enrich their imagination. That the Japanese race, being environed with such splendid natural views and influenced by them, and storing up the poetic as well as the artistic thought, should have produced many celebrated masterpieces of art is to be expected as a matter of course. Yet the land is bounded within narrow limits, with no huge mountains, no gigantic streams, no extensive plains and marshes; the climate is not extremely intense; no animals of monstrous forms with peculiarly deep hue or with ferocious and horrible nature are met with; and no plants and flowers of deep color or pungent smell are found; so that the influence which they exercise upon the inhabitants is not very sharp and acute in its character. As a consequence Japanese art is destitute of that profound and imposing trait which defies man's calculation, but consists in pieces of fine plans executed with dexterity and tinged with grace and refinement. Moreover, the mild temperature, and the fertile soil that yields abundant products, have given the people means for easy subsistence without a violent struggle for life, —thus causing them to acquire a calm and gentle nature.

Besides, the country being isolated from the Asiatic mainland by sea, the nation has been free from foreign aggression and from the evil influences of the Continent. Down to the last days of Tokugawa Shogunate she had little external trouble apart from the wars with Korea, and the invasion she suffered from the Mongols. Even on these occasions victory always lay on her side, and consequently the people have been preserved from prejudice and exclusivism—faults so apt to be found in nations that have frequently experienced hard treatment from victorious invaders. The Japanese have ever shown hospitality to foreigners and have assimilated and profited by foreign civilizations. Nor have the numerous civil wars left the people destitute of feeling or given them a cruel character. The land standing, so to speak, on a group of volcanoes, terrible devastations have often afflicted the nation; yet it has not impaired their optimistic disposition, fostered by the rich bounties of Nature. They even take delight in viewing the strange and majestic forms of the volcanic rocks and use them as materials of poetry and painting.

In short, such noble traits as piety, benevolence, alertness, cheerfulness, artistic inclination, simplicity, purity, bravery, sobriety and straightforwardness, may be found in abundance among this nation. Moreover, they are wonderfully clever in the use of their fingers, shown in a variety of artistic employments. They are not a people of profound speculation, but are highly gifted with intuitive insight, and assimilative and ameliorative capacities. These national characteristics are manifest through the entire history of Japanese art, and constitute its main features.

As has been stated, the Japanese love sobriety and simplicity and are by nature disinclined to ostentation. Hence their productions are marked by grace as well as skill. We can readily see that the young shoots of Japanese art sprang up in the earliest period of their national existence, though owing to the want of necessary encouragement their growth was not rapid.

The oldest forms of artistic design seem to have been ornaments used in decorating dress, weapons, tombs, coffins, and articles employed in religious ceremonies. This may be proved by various archæological relics, discovered in many districts. They have, however, little artistic merit, and are only valuable as throwing some light upon ancient art—for showing us specimens of original and purely Japanese art.

From the very outset of authentic history the Japanese commenced intercourse with the Koreans, and the latter's civilization, primitive as it was, at once began to influence the former, but not so much as to accelerate the development of their art. The subjugation of Korea by the heroic Empress Jingo (201 A. D.) bound Korea to send annual tributes to Japan, and through this channel the art and industry of the Continent flowed into the island Empire. Later, in the reign of Ojin, Pep-che (Kudara), one of the three Korean states, introduced to Japan the literature of China. This event marks a great epoch in the history of Japanese civilization; after that every institution was copied from China, artisans were invited, and during the reign of Yuryaku, In-sa-ra-a (In-shiraga), a painter of Pep-che, was employed. In the 13th year of the Emperor Kimmei (A. D. 552) the King of Pep-che presented a statue of Buddha, a copy of the sacred canon, and several articles of ornament such as banners and canopies. The statue had been made in China after the «Six Dynasties' style,» and it was the first Buddhist image to come to Japan. With these presents Buddhism found its way into the Empire, and became an important factor in the progress of Japanese art.

The civilization of the Asiatic Continent has so strongly influenced Japanese art that, since its first introduction, its every wave and billow have left some trace on the art of Japan. Thus the ancient art of China and Korea opened the way for the artistic progress of Suiko's reign, and the flowery times of the T'ang dynasty had their counterparts in the age of the Emperors Tenchi, Shomu and Kwammu. And if we take into consideration the fact that during the «Six Dynasties,» and the dynasties of Sui and T'ang, China already had close intercourse with India, which, in its turn, was in contact with Greece and Rome, we may justly say that the early civilization of Japan was indirectly connected with those of Europe and India. During the age of the Fujiwara's regency Japanese art began to assume a definite form and even developed certain distinct features, but subsequently in the age of the Kamakura and Ashikaga Shoguns, Chinese influence (Sung and Yuan dynasties) became once more remarkable. However, it was not of long duration; for in the Toyotomi and Tokugawa régimes national art again took its own course, though we must not neglect the fresh effect produced on it by the new civilization of Ming and Ching dynasties.

Thus we see the great and constant influence of foreign civilizations on the artistic history of Japan, yet it would be a gross error to regard Japanese art as nothing but an imitation of the arts of India, China and Korea, and that .without these prototypes Japanese art would never have existed or would never have emerged from its prehistoric stage. There would be nothing wrong in calling Japanese art a branch of Oriental art, but it has a nobler mission than being a mere branch—it aims at extracting the essence of Oriental art and constructing it on a purified and ennobled basis. Though it has been guided and encouraged by exotic arts, it has never been a blind follower: it has digested them and, at the same time, has well preserved its own individuality.

India, China and Korea have all failed to stem the tides of foreign aggression; their national existence has been destroyed or threatened, and their old civilizations have been wiped out. The result is that it is impossible to admire their ancient glory or to recover their old treasures among the crumbling ruins. Japan, on the contrary, having remained immune from any of these disasters, her oldest productions are still extant, and even foreign objects of artistic and historic interest may be found within her boundaries. And since every step of the development of her art may be distinctly traced, its study will afford an insight into the artistic history of the foreign nations with whom she has been in contact. Indeed it is no exaggeration to say that the cream and essence of Oriental art has been preserved nowhere but in Japan, and by its people it will be worked to perfection.

Would it be possible to name the characteristics of Japanese art—the features underlying all its branches: painting, sculpture, architecture, industry, etc? We may mention the following three. The first is mildness and pure simplicity. Coloring is for the most part sober and plain, and very seldom gorgeous. Japanese art prefers moderation and genial ease to excessive grandeur; sobriety and chastity to profundity, intensity, and vulgarity. Even such horror-inspiring subjects as the pictures of hell are not thrilling in effect. The statue of Buddha at Nara is grand, but it is only the high-water mark of Continental influence, and does not represent the pure Japanese disposition.

The second characteristic of Japanese art is its exquisite lightness or delicacy. This is due to the joyful frame of the people's mind, and to the wonderful dexterity of their hands. There is no artistic product but is marked by charming workmanship.

The third feature is its idealism in representation. Japanese art is not realistic, it does not aim at photographic accuracy, but by the free and bold exercise of imagination it tries to abstract the essential aspect of objects, and to give expression to the artist's sentiments by its portrayal. It is for this reason that form is comparatively little regarded, while idea is considered all important; that it is weak in realistic delineation and strong in decorative design. These three points underlie all Japanese art and distinguish it from the art of other Oriental nations.

With regard to the division of the history of Japanese art the opinions of scholars vary a great deal, so much so that it is an utter impossibility to settle the question definitely once for all, marking the beginning and the end of each period with absolute certainty and precision. Yet, in following out its development, it will be both convenient, and in some measure be justifiable, to divide the whole period into 12 portions, each signalized by a wave of progress and characterized by some special feature. It is to be remembered, however, that the treatment of the subject is necessarily short and summary owing to the limitations of space. And again, the title of each epoch is given for practical convenience and is not always identical with its namesake in the classification of political history.

1. The Age of the Empress Suiko (540-644 A. D.). 2. The Age of the Emperor Tenchi (645-723 A. D.). 3. The Age of the Emperor Shomu (724-781 A. D.). 4. The Age of the Emperor Kwammu (782-888 A. D.). 5. The Age of the Fujiwara's regency (889-1086 A. D.). 6. The Age of the Ex-Emperor's regency (1087-1183 A. D.). 7. The Age of the Kamakura Shogunate (1186-1392 A. D.). 8. The Age of the Ashikaga Shogunate (1393-1573 A. D.). 9. The Age of the Toyotomi's Supremacy (1574-1614 A. D.). 10. The First Age of the Tokugawa Shogunate (1615-1744 A. D.). 11. The Second Age of the Tokugawa Shogunate (1745-1867 A. D.). 12. The Meiji era (1868— A. D.).

FIRST PERIOD.

The Era of the Empress Suiko.—(540-644 A. D.—The æsthetic sense inherent in the Japanese race long remained latent and undeveloped. Not until the middle of the 6th century did the artistic endowment, or rather art-loving potentialities, of the people begin to reveal themselves in the land of the Rising Sun. The beginnings of the study of pictorial and glyptic art—the first page, as it were, of the history of Japanese art, must be dated from the time of the Emperor Kimmei when the civilization of the «Six Dynasties» of China (265 to 617 A. D.) was introduced through Korea and with it Buddhist images and sacred books were brought over to the country. Later, in the reign of the Empress Suiko, the Empress herself became a devout believer in Buddhism, Prince Shotoku being no less enthusiastic a votary. With the object of propagating the religion through the land they invited famous priests and Buddhist sculptors from Korea, and by their order many images were made, and temples and pagodas built in large numbers. Thus, under the Imperial patronage Buddhist art made rapid and signal progress.

In architecture the first work that calls for special notice was the construction of a monastery consisting of seven buildings (Shichido-garan), part of which grand work is still to be seen in the Kondo (Golden Hall) of the Monastery of Horyuji, Nara.

The native artist who crowned the first great progress of Japanese sculpture was Kuratsukuri-no Tori. One of his greatest works, the bronze statues of Sakyamuni and two attendant disciples (Shaka-Sanzon; 'Shimbi Taikwan,' Vol. I.), are still preserved in the Kondo of the Horyuji. The wooden image representing a Goddess of Mercy (Kwannon, *i. e.* Avalokites'vara; consult 'Shimbi Taikwan,' Vol. X.) in the Yumedono («Dream hall») of the same monastery, attributed to the chisel of Prince Shotoku, is of the same style of homeliness and simplicity. Pictorial art had not yet been fully developed. Many families of painters had sprung up, however, and were engaged in the work of decorating Buddhist images and shrines. The so-called «mitsuda» picture (a picture painted with several pigments mixed with the juice of a plant called «mitsuda,» which grows in India and other tropical countries) of the Tamamushi shrine in the Horyuji (consult 'Shimbi Taikwan,' Vol. II.) and reputed to be the oldest surviving specimens of the kind in the east, is fantastical in design, being a sort of pattern, and is, besides, plain in delineation and simple in coloring.

Of applied art the most advanced were bronze casting, sculpture on metal, and metal tempering; while textile fabric and embroidery had not attained a high degree of excellence; decorative arts on the other hand, achieved a great development. In fine, the art of this period is traceable to the Buddhist art of India introduced through China and Korea; and there is evidence that not a few of the works belonging to this era were produced by Chinese and Korean immigrants.

SECOND PERIOD.

The Era of the Emperor Tenchi.—(645-723 A. D.)—During this period, busy intercourse having been established between Japan and China, the latter's civilization found its way direct into the former without passing through Korea as had hitherto been the case; most of Japan's institutions, laws, literature and religion were accordingly remodelled on those of China; and this, in no small degree, helped the development of various branches of art. Besides, as native artists had in the course of time acquired great dexterity in their workmanship the works produced during this period are characterized by grandeur and magnificence, and are deeply instinct with a serene and noble spirit. The famous sculptors, Yamakuchi-no-atai Oguchi and Yakushi Tokuho, flourished in the reign of the Emperor Kotoku. One of his greatest works, the images of the Shitenno (the guardian gods of the four regions; consult 'Shimbi Taikwan,' Vol. IV.), is now in the Kondo of the Horyuji, and though the work does not emerge from the stage of plainness and simplicity, yet the features are mild and graceful. The images of Amitabha and two dependent Bodhisattvas (Amida-sanzon; consult 'Shimbi Taikwan,' Vol. III.), a relic of the era of the Emperor Tenchi, and said to have been worshiped by Lady Tachibana, are distinguished by the fine workmanship of their halo and backscreen as well as by the gracefulness of their form and features, bearing testimony to the refinement and elaborateness attained by the fine arts of the epoch.

During this era the style of the T'ang dynasty rapidly gained ground, and influenced things in general, and art objects in particular, with the result that great works stamped with solemnity and elegance were produced, the images of Sho-kwannan (Arya Avalokites'vara; consult 'Shimbi Taikwan,' Vol. III.) and the «Yakushi-sanzon» (Bheshajya-guru and two dependents: consult 'Shimbi Taikwan,' Vol. V.) in the Kondo of the Yakushiji being among the best.

Toward the end of this period the art of modelling in clay increased with rapid strides, the «Nehan-zo» (image of Buddha entering Nirvana; consult 'Shimbi Taikwan,' Vol. IV.) in the pagoda of the Horyuji, being a specimen of the work. Keimonye and Keishukun, both sculptors of great note flourished in this period. Among the specimens of pictorial art is the mural picture in the Kondo of the Horyuji, representing the «Shibutsu-jodo» (the Paradises of Four Buddhas; consult 'Shimbi Taikwan,' Vols. II. and XV.) and famous for bearing resemblance to the old picture found in the temple of the Ajanta Cave, in India. In its pattern is visible, in no small degree, a mixture of the Indian and the Greek style. Showing, as it does, traces of great power of line, color, and composition, the picture is, indeed, a rare treasure of Oriental art.

Moreover, as the demand of the Imperial Court for furniture, ornamental dresses and decorative pictures increased, departments relating to various branches of art were instituted with the object of encouraging the people to cultivate the fine as well as the useful arts.

Architecture made a great development and attained a high degree of refinement. Unfortunately few, if any, examples of this art have been preserved, the east Pagoda of the Yakushiji, in fact, being the sole existing specimen of the work.

THIRD PERIOD.

The Era of the Emperor Shomu.—(724-781 A. D.)—The civilization of the T'ang dynasty, introduced and copied in the preceding era, reached its highest point in this; the erection of Buddhist images, and the construction of temples and pagodas were carried out extensively; and fine arts and various technical industries made noticeable progress, furniture, utensils and even playthings being made as showy and gorgeous as possible. The most celebrated monument representative of this glorious and flourishing epoch is the bronze representing Vairochana Buddha in the Todaiji. The statue is in a sitting posture and matchless for its colossal size, the height of the body being 53 feet 5 inches, the length of the face 15 feet, and all the other parts being proportionately gigantic. It is to be regretted, however, that having undergone several repairs in later ages, it has lost a great deal of its original form. The founder was Kuninaka-no-muraji Kimimaro.

The art of making clay and dry-lacquered images made striking progress during this period, and attained a high degree of elaborateness and refinement. Among the specimens of the former are the images of «Shitenno» (Four guardian gods; consult 'Shimbi Taikwan,' Vol. I.) in the Kaidan-in of the Todaiji, and the image of «Vajrapani» in Hokkedo of the same temple (consult 'Shimbi Taikwan,' Vol. VIII.); while the «Bonten» (God Brahma; consult 'Shimbi Taikwan,' Vol. III) and the «Taishakuten» (Indra; consult 'Shimbi Taikwan,' Vol. X.) in the Sangatsu-do of the Todaiji, and the «Kwannon» (Goddess of Mercy) in the Denbodo belonging to the Horyuji (consult 'Shimbi Taikwan,' Vol. XV.) are the most celebrated surviving examples of the dry-lacquered images.

Of the wooden images the Juichimen-kwannon (Ekadasamukha Avalokites'vara) in the Hokkeji (consult 'Shimbi Taikwan,' Vol. II.) is the most perfect, being graceful and elaborate.

The works of this period are signalized by a harmonious combination of reality and imagination and by the well shaped forms of the bodies of the postures and of the foldings of the garments; while expression was by no means neglected.

Pictorial art also made a remarkable advancement in this era. The screen picture representing a beauty under a tree, in the possession of the Shoso-in of the Todaiji (consult 'Shimbi Taikwan,' Vol. XV.) and the Kichijotennyo (Goddess of Fortune, Sri) of the Yakushiji (consult 'Shimbi Taikwan,' Vol. II.) show that they were executed with a masterly caligraphic touch, both their faces and bodies being full of elegance and gracefulness, and especially the latter picture displays a gay and gorgeous coloring. The works of architecture were for the most part on a grand scale. The interior of the Hokkedo of the Todaiji, the Kondo of the Toshodaiji and the Shin-yakushiji all bear the marks indicative of the special features of this branch of art as prevalent in the period.

As for the progress of applied art it was simply wonderful. In this connection special mentions must be made of the treasure-house belonging to the Shoso-in of the Todaiji. There are kept in this store nearly three thousand articles, all being specimens of fine and applied arts of this era; bronzes, textile fabrics, embroidery, sculptures, inlaid work of gold or silver, lacquer works, glass, enamel ware, mother-of-pearl lacquer works, gold-dust-sprinkled lacquer work, paintings of «mitsuda» (a kind of oil pigment) and Koketsu (a kind of dyeing) being well represented here. It will be seen that during this period many branches of applied art attained the highest degree of elegance and refinement, while their decorative patterns and figures were freely drawn from Chinese or Indian stories and events.

The gong called «Kwagenkei» with its stand is to be counted among the masterpieces of this epoch by virtue both of its fine shape and its elegant casting (consult 'Shimbi Taikwan,' Vol. V.).

FOURTH PERIOD.

The Era of the Emperor Kwammu.—(782-888 A. D.)—Soon after the accession of the Emperor Kwammu to the throne the capital was removed to Yamashiro (now Kyoto); the Imperial palace built after the fashion of the T'ang dynasty; government was remodelled on Chinese plan, and various institutions reformed. Things took a new turn and the prosperity of the country greatly increased. What was more, this period produced such great priests as Saicho and Kukai. The former was the founder of the Tendai sect; the latter of the Shingon sect. They endeavored to spread the teachings of Buddha with great assiduity, enlightened the people and helped them into great activity. Such being the case, the fine arts of this period were signalized with a lofty and majestic idea. Kukai, or Kobo-daishi as he was called, was an accomplished priest of profound learning, and produced not a few excellent works of painting and sculpture. Among the specimens of his work is the image representing the deity Fudo (Achara) in the Toji, Kyoto (consult 'Shimbi Taikwan,' Vol. I.). The picture representing the priest Gonso, in the Fumonin, Koyasan (consult 'Shimbi Taikwan,' Vol. VI.), and the portraits of Nagarjuna and Nagabodhi in the Toji, attributed to him, are executed in noble and refined taste, and marked with elegance and grandeur (consult 'Shimbi Taikwan,' Vol. XII.). Saicho (Dengyo-daishi) was also a very learned and highly accomplished priest, credited with a great genius for painting and sculpture. The priest Enchin painted the Achara mostly; the Red Achara in the Myohoin, Koyasan, being his greatest work (consult 'Shimbi Taikwan,' Vol. VIII.). Beside Buddhistic paintings, artists of the time began to take up human figures, landscape, birds and flowers for subjects of pictures. Kudara Kawanari was a great master of painting of this kind.

Of the specimens of the sculpture of this epoch the image representing the Goddess of Art (Gigei-tennyo) and that of Bodhisattva Kudatsu in the Akishinodera, Yamato, are the finest relics we now have, being the most graceful and the least conventional, while delicately expressive and inspiring loftiness and grandeur (consult 'Shimbi Taikwan,' Vols. II., VI.). Besides these there are not a few masterpieces in this line.

Architecture made a great progress with the laying out of the new capital at Kyoto, the Imperial palace and various offices built after the T'ang fashion being extremely fine and elegant. The construction of the Imperial palace was for the first time brought to perfection, and what was called the «Dai-dairi» (Court) style came into existence. The Tendai and the Shingon sects introduced a new feature into the construction of the temples, and the establishment of the incarnation theory («Shinbutsu-dotai-setsu,» *i. e.* theory that identifies Japanese gods with Buddhas) gave a certain Buddhist architectural style to the building of Shin-to shrines. The «Shimmei-tsukuri,» *i. e.* the ancient style of shrine-building, gave place to the new ones, the «Kasuga-tsukuri» and the «Nagare-tsukuri.» And, though the progress made by applied art during the period was not very conspicuous, the lacquer work industry attained a great development.

FIFTH PERIOD.

The Era of the Fujiwara Regency. (889-1086 A. D.)—The epoch of the Fujiwara Regency was indeed a glorious period, stamped with great national development and prosperity: the nation at large flourished, and not a few customs and manners were formed and reached maturity. In the reign of the emperor Uda the practice of despatching envoys to China was discontinued, and in consequence the impetus from without ceased to come. The civilization which had found its way into Japan in the preceding age was fully assimilated in this, and Japan developed a new native style of her own. Moreover, the luxurious life led by the Fujiwara family and the great prevalence of Buddhism at that time conspired to help the advances of both fine and industrial arts, cultivating such special qualities as beauty, elegance, severity and refinement. In the early part of this period flourished Kose-no Kanaoka, the greatest pictorial artist the country had yet produced. He was famous for his pictures of Buddhist divinities, human figures, landscape, birds and flowers, all of which were said to be delicately fine and elaborate. Unfortunately, however, almost no specimens of his work have come down to the present age. But collating all the traditions circulating about him we gather that he was a great master of pictorial art, especially skilful at painting pictures of animal life, his representations being true to nature; he seems to have struck a new style of his own, apart from those of the T'ang fashion. His descendants succeeeded him and founded the Kose school, Kimmochi and Hirotaka being among the most celebrated members of the line. The picture representing the Prince Shotoku and his two attendants, in the collection of Viscount Saisho (consult 'Shimbi Taikwan,' Vol. XVII.), attributed to Kanaoka, is an excellent specimen indicative of the characteristic gracefulness and elegance belonging to the early part of this period.

The priest Eri and Asukabe Tsunenori are believed to have been great masters of painting of this epoch. The priest Eshin, one of the promoters of the «Pure Land» doctrine,* mostly painted pictures of Amitabha Buddha, welcoming the devotees who come to his Paradise (Amida-raiko), his style being purely Japanese. The picture of Amitabha and the 25 Bodhisattvas, still preserved in Koyasan, is a great piece of work attributed to his brush (consult 'Shimbi Taikwan,' Vol. IV.). Takuma Tamenari is celebrated for his pictures on the walls and on the panels of the doors of the Howodo, Uji (consult 'Shimbi Taikwan,' Vol. IV.). Takumino-kami Fujiwara Motomitsu, a great master of painting, is looked on as the founder of the Kasuga school. Sculpture came to develop a native style in due time, culminating in the work of the celebrated Jocho, who improved the characteristic features belonging to the sculpture of this period and introduced elegance, gracefulness and refinement into this branch of art.

The image of Amitabha, in the temple of Hokaiji, Yamashiro, is believed to have been a production of the later part of his life (consult 'Shimbi Taikwan,' Vol. XVI.). His son Kakujo and pupil Chosei succeeded him, each founding an atelier for religious sculpture.

Architecture also developed a new native style; temples were built in such a way as to present an elegant and graceful appearance on the outside, while the inside was superbly decorated with mother-of-pearl lacquer work and gold-lacquered work. Of the specimens of the architecture of this period the monastery Hosshoji constructed by the order of Fujiwara Michinaga is the most magnificent and the finest, built on a grand scale. Howodo in Uji and the Konjikido (Golden Hall), in the Chusonji, Hiraizumi, Rikuchu province, both of which are still preserved, though built on a very small scale, yet reflect something of the general style of architecture prevalent in this era. The mansions of noblemen were built after what was termed the «Shinden-tsukuri» (Sleeping-chamber-style), a grand and imposing style of architecture, and in the construction of the Imperial palace arose the «Satodairi» (Village-court), an informal and much simpler style than the «Dai-dairi» (Court). A native style began to stamp itself in dresses and furniture of all descriptions, affecting their shape and decoration not a little.

Lacquer works, textile fabrics, and metal works abounded in elegance and tastefulness, and were free from conventionality, breathing loftiness; design became richer and more ingenious; workmanship and technique were carried to a high degree of elaboration and refinement; and not a few specimens of the work stamped with these noble qualities have come down to the present age.

SIXTH PERIOD.

The Era of the Regency of Ex-Emperors.—(1087-1183 A. D.).—The customs and manners which had been formed and had reached maturity in the preceding era attained a still greater development in this. Things were, on one hand, getting effeminate and conventional; while, on the other, reaction having already set in with the changes of the times, a lively and vigorous style began to assert itself. The power of the Fujiwara family had, indeed, been on the wane; but the Taira family, who had taken their place, having succeeded to their luxury and extravagance as well as to the political ascendancy, and having devoted their energies to the cultivation of belles-lettres, fine arts and technical industries did not show any sign of decline, and demand for arts-objects did not decrease in the least. In pictorial art Fujiwara Takayoshi originated a new style characterized by elegance and delicacy. The Genji-Monogatari-Emaki* is the existing specimen of his work. He was followed by his son Takachika, and it was in the time of Tosa-no Gonnokami Tsunetaka that the school bore the family named Tosa. Kakuyu or the «Bishop of Toba,» as he was popularly called, had already started a new style, and painted a number of caricatures with a masterly caligraphic touch. His work Choju-giga-no maki (a collection of burlesque sketches of birds and beasts) is very well known (consult 'Shimbi Taikwan,' Vols. I.-IV.). Mitsunaga is famous for his marvelously powerful brushwork, and has left us the Bandainagon-Emaki (a pictorial scroll representing the life of the courtier Ban (consult 'Shimbi Taikwan,' Vol. XIV.). Takanobu was a master of portrait painting. The foundation of the old Tosa school, representative of pure Japanese painting, is to be ascribed to these great artists.

During this period the practice of loving pictures for their own sake obtained, and demand for beautiful pictures besides those painted for religious or decorative purposes grew larger and larger, pictorial scrolls were made much of. Taste for arts-objects was much cultivated among the upper classes, and there arose, in consequence, peculiar styles, such as the «Tsukuri-ye» («making-up pictures») and the «Ashide-ye» (pictures painted with *Kana* characters), while the game called «Ye-awase» (picture-setting) was in great vogue.

The sacred book dedicated by the Taira family to the Itsukushima shrine bears witness to the artistic taste of those days, being ingenious in design and beautiful in decoration (consult 'Shimbi Taikwan,' Vol. VII.). As for sculpture, though the descendants of Jocho kept up the traditional style of the family, yet it became more elaborate and showy, losing much of the loftiness and grandeur as shown in the works of previous ages. Architecture and other branches of applied art grew more and more delicate, and came to lack in strength and vigor.

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*"Pure Land" (Jodo) sanskrit "Sukhavati," the Paradise of the worshippers of Amitabha.

*The picture scroll representing the novel of Lady Mursaki Shikibu.

SEVENTH PERIOD.

The Era of the Kamakura Shogunate.—(1186-1392 A. D.)—By the time Yoritomo originated the Shogunate at Kamakura, the spirit of simplicity and strength, characteristic of the military class of the time, naturally also found its vent in the works of art; their pervading features are force and manliness. The Zen (Dhyana), *i. e.* «meditation,» sect of Buddhism which was introduced into Japan in this period, along with the then established Nichiren sect, with their astute doctrine, were not without their influences on the artistic productions of the age. The carved figure, so full of robustness, by the Buddhistic sculptor Unkei and his son Tankei, are most representative of its spirit. Even a great advance in faithfulness to nature and skill of expression is noticed in their works, among which the statues of the two guardian kings (Niwo) at the gate of the temple Todaiji, are looked upon as the now existent chef-d'œuvre (consult 'Shimbi Taikwan,' Vol. II.).

Among the followers of the Unkei school of sculptors Jokei and Koben are to be mentioned. Kwaikei, also known as Annami, adhered to the older style of sculpture, and carved many statues of Amitabha.

As for the pictorial art, the characteristically Japanese modes of design and execution made a further development and manifested a great amount of activity. The Tosa school could boast of such great names as Sumiyoshi-Keion, the author of the 'Illustrated Scroll of the Heiji-Monogatari' (according to a certain tradition, this is attributed to Hamuro Tokinaga, but it is not credible; consult 'Shimbi Taikwan,' Vols. V. and X.); Nobuzané to whom the authorship of the illustrations in the 'Kitano-Engi' (consult 'Shimbi Taikwan,' Vol. IX.), and of the 'Illustrated Scroll of the Eigwa-Monogatari' is attributed; (consult 'Shimbi Taikwan,' Vol. IV.); Yoshimitsu, the author of the 'Illustrated Life of Honen-Shonin' (consult 'Shimbi Taikwan,' Vol. VIII.); En-i, the author of the 'Illustrated Life of Ippen-Shonin' (consult 'Shimbi Taikwan,' Vols. II., XII.); Nagataka, the author of the 'Sumiyoshi-monogatari' (consult 'Shimbi Taikwan,' Vol. VIII.), and the 'Illustrated Scroll of the Mongolian Invasion;' and Takashina Takakané, the author of the 'Illustrated Scroll of Kasuga-Gongen-Kenki' (miracles of the deity of Kasuga); consult 'Shimbi Taikwan,' Vols. V. and VIII.).

The Kose School continued to supply us chiefly pictures concerning Buddhism, Arihisa being the most famous of its supporters. Korehisa, although originally an artist belonging to this school, made a departure from it. The well-known 'Illustrated Scroll of the Later Three-Year-Campaign' is from his brush.

Shoga, a master belonging to the Takuma School, chiefly produced the Buddhistic pictures. Later on, Yeiga of the same school, made a study of the Chinese masters, such as Li Lung-Min of the Sung Dynasty, and Wan-Hui of the Yuan dynasty. The picture of the Arahats (saints) was his favorite subject.

Near the close of the period now under consideration, a kind of ink-drawing introduced by the Zen (Dhyana) priests who had been to China under the Sung Sovereigns, came gradually to find in Kawo, Mokuan, Myotaku and others its able propagators.

From the architectural point of view, we must observe that side by side with a new style of building as shown in the Dhyana temples there arose in Kamakura a plain form of private dwelling, known as the «Buke-tsukuri» («Military style»).

The troubled state of the times necessitated the manufacture of warlike implements, and great progress is noticed in the making of armors and swords. Lacquer work also made a considerable advance. And it is during the Kamakura period that Kato Shirozaemon originated the Seto pottery on his return from China where he went to learn the ceramic art.

EIGHTH PERIOD.

The Era of the Ashikaga Shogunate.—(1393-1573 A. D.)—The period that followed the reunion of the Southern and the Northern branches of the Imperial line of descent was one of exorbitant luxury, in which the Shoguns of the Ashikaga family were sybarites enough to live. The astounding indulgence which marked out Yoshimitsu and Yoshimasa from among other extravagant Shoguns of the time did much to enhance the great developments both in arts and industry.

It is, however, not to be forgotten that the austere simplicity and directness of the Dhyana doctrine also fostered a taste for serene beauty among the people and that the tea ceremonial was very much in vogue as a form of its expression in the daily life. Hence the studied avoidance of wild luxuriance in the works of art of the period. The pictorial art of the Ashikaga times was totally under the influence of the Sung and Yuan masters. Priest Myo-Cho drew his Buddhas and Chinese Sages, closely following the modes of delineating things as seen in the pictures of the Takuma school and those of the Sung and the Yuan dynasties. When the ink-drawing had begun to make its way among Japanese artists, among its votaries were Priest Josetus and his disciple Shubun in the Oei period. These two gradually formed their own school by an eclectic of the Chinese masterpieces. Among their illustrious followers are Shinno, Jasoku, Sesshu, Sotan, Shingei, Shinso, Shokei, and Masanobu.

Of all these well-known names that of Sesshu is most conspicuous, his works giving tests to his exquisite way of brushing as well as his fullness of manly strength. Indeed, he may be said to be the greatest artist Japan had yet produced, his works being marked by great sublimity. Masanobu is the originator of the Kano school. His son Motonobu made a deep investigation of the Sung and the Yuan masters, which he deepened by a study of the technics peculiar to the Tosa school. That is how he came to complete what his father had begun. The Tosa school had dwindled into common place during this period, and Mitsunobu was the only artist of the line who breathed a new life through his assimilation of the Sung mode of delineation. Sculpture showed a sign of decay in this period. No great names honored once so flourishing a branch of art. Nobleness of features which characterized the Buddhistic images was not to be seen in the new productions, whose very fineness of outward form only suggest effeminacy and formality. It is to be specially mentioned, however, that a new activity arose in the carving of the masks for the No-dancers—a phenomenon that appeared as an outcome of the rise of the lyric drama.

In the field of architecture, the Dhyana style of Buddhistic edifices had reached its perfection, and the so-called «Shoin-dzukuri» («Study-room-style») was called into existence. The manner of building the room where the tea ceremonial was to be exercised was something wholly unknown in the former periods and as a consequence greatly affected the style of gardening.

All forms of industry had made great progress through the increased demand and encouragement on the part of patrons. The making of armors and swords as well as the peaceful art of decoration was successfully carried on by their respective masters. Plain, gold or silver lacquering too came to be practised with wonderful skill and art. The great zeal with which the fashionable arts of the tea-drinking and the incense tournaments were pursued proved a most favorable stimulus for the production of the much-famed examples of the ceramic art. Many exquisite works of this period came from the furnace of Shozui, who visited China to learn how to make the céladon porcelain from the Ming artists.

NINTH PERIOD.

The Era of the Toyotomi.—(1574-1614 A. D.)—Toward the close of the Ashikaga period the Empire was thrown into a state of utter confusion, but when Oda Nobunaga gained the controlling power over Japan and was subsequently succeeded by the great Taiko Hideyoshi, the dashing disposition and the extravagant taste of the people strongly tinged the different lines of art. But this *zeitgeist* and its consequent effect on fashion was, in some measure, counteracted by the prevalence of *chanoyu* («ceremonious tea-making»)—an art which, under the strenuous encouragement of Hideyoshi and the devoted enthusiasm of those who took interest in it, attained to a high degree of artistic excellence. It even affected the style of architecture and industry.

In this period the paintings of Kano Yeitoku were characterized by strong force and free use of his brush, and brilliancy of color. His works were immensely admired by the warrior class and used in decorating magnificent edifices. He had three disciples: Sanraku, Koyetsu, and Yusho. He first modified the style of the old Tosa school and made a style of his own. Furthermore, he improved upon *makiyé* (gold and silver lacquer) by his noble and unique designs, and his representations of popular scenes prompted the oncoming of the *ukiyoyé* school.

In architecture, Hideyoshi's two castles, Momoyama and Juraku, were the most magnificent. The daimyos, too, took pride in the splendor of their castles. The construction of Shinto shrines also was gradually improved, until what was called the *yatsumuné-dzukuri* (buildings consisting of eight edifices, large and small) edifices was invented. It has been charged that the Buddhist temples of the Shin sect are wanting in solemnity, but in magnitude they are seldom equalled. In the construction of tea-rooms the greatest elegance of taste was displayed, and gardening, too, underwent a favorable change. In sculpture there were few great productions, except those that were employed in ornamenting buildings. The latter part of this age, however, brought forth the famous sculptor Hidari Jingoro. It may be worth mentioning that remarkable skill was exhibited in the carving of No masks. As to manufacturing art, apart from the encouragement afforded by the extravagance of the daimyos and the general prevalence of tea-making, the great influx of foreign articles through the merchants of China, the Malay Archipelago and Western countries stimulated the progress of all branches of Japanese art.

TENTH PERIOD.

The First Period of the Tokugawa Shogunate.—(1615-1744 A. D.)—With the firm establishment of the Tokugawa's supremacy, the literature and art of Japan took a long stride; and as the Empire had enjoyed tranquillity for many years people in general became effeminate and weak-spirited through excessive devotion to literary pursuits, while the plebeians raised the condition of their living owing to the growth of their wealth. The result was that the fashion and the taste of those days were, to a great extent, modelled by the fancy of the lower but comparatively rich plebeians. Accordingly, art and industry gradually departed from their old fashion of grandeur and magnificence, and assumed milder and more plain aspects.

At the beginning of this period, however, the trace of the foregoing age was still perceptible; for even in the vivid *ukiyoyé* painting of Matabei and the superb style of Sotatsu's decorative pictures there was a touch of vigor and grandeur. But as the age gradually ripened and fancy deepened the so-called Genroku fashion unfolded all its glory.

Among the artists Tannyu held a very prominent position. He studied both Chinese and Japanese art and formed a novel style distinguished for the broadness of subjects and plainness of treatment, while Naonobu, Yasunobu, and Tsunenobu contributed to extending the influence of his school. Sansetsu, remaining in Kyoto, faithfully preserved his ancestors' style; Mitsuoki improved upon the old Tosa style by blending in it the brush of the Chinese masters; Jyokei and his son Gukei revived the Sumiyoshi school; Hanabusa Itcho, choosing his themes in the scenes of daily life, depicted light and charming pictures; Motonobu with his peculiar beauty and grace of treatment secured the foundation of the *ukiyoyé* school. Choshun, Kwaigetsudo, Masanobu, and Kiyonobu formed a group by themselves, while Sukenobu worked independently. Korin, the great genius and unequalled decorative painter, applied his art to lacquer work, while his younger brother Kenzan achieved the highest fame for his graceful paintings on porcelain wares.

In this age sculptors chiefly put their efforts into microscopic details; hence diminutive works of rare merit—such as *Netsuké*—were produced, but larger works like Buddhist statues continued to decline. Of the sculptors who made a specialty of carving Buddhist statues Tankai Risshi and Shimidzu Riukei alone were celebrated. Carving came to be widely used in the decoration of buildings, but the style grew too complex.

In architecture, a new mode of construction called the «gongen-tzukuri» found its rise. This mode had more tendency to monastery style than the *Yatsumune-tsukuri*, the former being an advance upon the latter. However, though it surpassed the older styles in sectional detail, it lost in general sublimity. The temples at Nikko and Uyeno best reflect the type of that age. Side by side with the growth of luxurious taste among the people and of scientific and technical progress, all other lines of art and industry attained to higher excellence.

ELEVENTH PERIOD.

The Second Period of the Tokugawa Shogunate.—(1745-1867 A. D.)—When Iyeshigé, the Ninth Shogun of the Tokugawa House, entered upon his office, the general fancy in Yedo had tended towards greater pomp and vulgar splendor; but in Kyoto quiet and chaste literature and art rose into ascendency, and the two capitals presented a strange contrast. The Kano school, adhering to its old rules with overstrictness, was, as it were, fossilized, and produced no fresh masters; but *ukiyoyé* gained greater popularity, and its masters Shunsho, Harunobu, Utamaro, Toyokuni, Keisai and many others competed with one another in painting bright and attractive pictures. Indeed the demand for their works was such that it called forth the invention of color-printing from woodblocks. Hokusai enlarged the range of painting, and covered with his skill all objects of natural and social existence. Hiroshigé was renowned for his landscape painting, and the pictures he depicted for woodcut reproduction had a peculiar charm. Shiba Kokan imitated European painting and also made some attempts at copper-plate pictures.

The influx of Ming and Ching institutions affected the Kyoto artists. Ginankai, Chitaiga, Shabuson, were renowned adherents of the Southern school, and it was by their stimulation that the celebrated Maruyama Okyo founded his realistic school, thus making quite a new phase in the art of Japan. Goshun, originally a pupil of the Southern school, opened the Shijo school. Besides them, Shiseki, Shoko, Jakuchu, Sosen, Ganku, Zaichu. Chikuden more or less copied the style of Ming and Ching painting. By and by their art influenced the artists of Eastern Japan as may be observed in Buncho and Kwazan. Towards the end of the Shogunate, Totsugen and Ikkei and some others revived the old Tosa school, and from it Yosai's brush supervened. In industry, the simple articles fashioned after the taste of literary men came into popularity, whereupon many artisans took their models in Ming and Ching manufactures.

TWELFTH PERIOD.

The Meiji Era.—(1868—.)—The advent of the Meiji Restoration completely destroyed the feudal system and swept away the old atmosphere. The country was thrown into the midst of the world's great tide, and the general commotion arising therefrom was so violent that both art and literature fell into a temporary lapse. Soon, however, as the Imperial rule manifested its beauty, they once more commenced activity and progress, and are now ready to make a bold flight. Only 40 years have elapsed since the grand national metamorphosis, but in that short space of time the nation has digested every department of Western civilization with such admirable skill as to surprise the whole world. Yet, whatever the material progress of Japan may have been, her art and literature are still in a state of transition, and it is impossible to foretell their future. We have no doubt, however, that the nation will blend all the best points of the East and the West with the signal success which has marked its past efforts, and bring out a new product of indescribable value, though we are aware the completion of such a task must necessarily require the labor of many a long year.

The first artist to come into the new atmosphere was Kano Hogai; and Hashimoto Gaho followed in his wake. The latter studied old masters and developed a new style. From the Shijo school Kono Bairei and Kawabata Gyokusho rose, of whom the latter is trying to devise some novelties. Shibata Zeshin was an artist of rich originality, while Kishi Chikudo's *forte* was painting from nature. Noguchi Yukoku and Taki Kwatei were eminent artists of Southern school; Takemura Koun and Takuchi Kyuichi are noted for their original style in wood-carving, and Ishikawa Komei for his ivory work. European painting and plaster casting have made some progress. The architects have successfully introduced the European mode of house-building with bricks and stone, while they continue the proper Japanese style of building with wood.

BARON RYUICHI KUKI,
Privy Councillor and Custodian of the Imperial Art Treasures.

13. Japan—Finance and Coinage System.

Introduction.—During the last 40 years since the Restoration, Japan has passed through many sudden and sweeping changes in her political and social affairs. Feudalism was abolished in favor of the centralization of government, to be succeeded by a representative form of government; the nation was engaged in civil wars and also passed through two foreign wars. In financial matters, too, the changes that occurred were both important and memorable. The adjustment of the land system and the reform of land taxation, the adjustment of hereditary salaries of Daimios (feudal lords) and Samurais by means of public loans, the unification of the business of the State Treasury, the reform of various taxes, the adjustment of paper currency and the adoption of the gold standard were among the most important of the changes. Of these this article will treat chiefly the adjustment of the paper currency, as it was the most important and difficult task of all.

How the Paper Money Came to be Issued.—The coinage system in vogue at the time of the Restoration (1868) was based on the system that was first established in the 6th year of Keicho (1600 A.D.), and continued to prevail for upward of 260 years until the end of the Tokugawa régime. The Shogunate Government, however, frequently resorted to recoinage in order to relieve its growing financial difficulties, invariably making the coins lighter in quantity and poorer in quality. Some of the Daimios, too, took the liberty of secretly coining money, while, with the permission of the Government, some of them also issued paper money. The consequence of all these irregularities was that the currency system of Japan at the end of the Shogunate Government was in a most disorderly condition.

Soon after the Restoration, the Imperial Government resolved to reorganize the existing system of coinage on a sound basis, and in 1871 set itself to the task of reminting all the old coins. A gold standard was adopted, making one yen gold the standard unit. It consisted, after the American system, of 90 per cent. of pure gold, its weight being 25.72 grains. A one yen silver coin weighing 416 grains, 90 per cent. of which were silver, was also issued to be exclusively used at the treaty ports. In this way, although a gold standard was adopted, yet as a matter of fact it could not be operated in a satisfactory manner, owing to the over-issue of paper money and other circumstances then prevailing. Besides, as Mexican silver dollars were generally used as the medium of exchange in the trade of the Far East, it was found impossible to maintain the gold standard in Japan. Under the circumstances, in 1878 the Government allowed the use of the one yen silver piece as legal tender throughout the country, the circulation of which had formerly been confined to the limits of the treaty ports. The result was that the monetary system of Japan became bimetallic, and after the adjustment of inconvertible paper money it became a *de facto* silver standard.

Government Paper Money in the Early Years of Meiji.—In 1869 and the year following the Government was financially in a very difficult position. This was mainly due to the heavy expenses it had to meet in connection with the revolutionary wars, when there was scarcely any fixed source of revenue to rely upon. In order to relieve this financial distress, in 1868 the Government issued paper money called Kinsatsu (literally, gold notes). Then again, when in 1871 feudalism was abolished, the Government had to take over all the paper money, which had been issued by different Daimios. In order to adjust this class of paper money and owing to several other circumstances, the Government was obliged to issue further large amounts of paper money from time to time, until about the end of 1876 it totalled 93,000,000 yen.

The credit of these paper notes was at first exceedingly bad. In Tokyo and Osaka, the price of the new paper money was at one time more than 60 per cent. below the specie, while in other localities it could not be circulated. This was mainly due to the fact that the various kinds of paper money issued by different Daimios had already much depreciated in value, there having been even cases where they were disowned by the governments which had issued them. Moreover, the new Government was not as yet established on a firm footing, while the paper money was issued with neither the security for conversion nor within reasonable limit. It is not at all strange that the general public placed little confidence in the new paper currency.

In view of such a state of things, the Government endeavored to facilitate the circulation of the paper currency by every available means. Expostulations and threatenings were resorted to and then an order to pay taxes in the paper money was issued. It was even proclaimed that a person who would take premium in the exchange of paper with specie should be fined or imprisoned. Despite all these measures, the Government could not keep up the price of paper on par with specie. So in December 1868, the Government was obliged to make public recognition of the difference in price of paper and specie. This, however, only had the effect of still lowering the price of paper, and the Government withdrew the measure in April of the following year. In May of the same year, the Government shortened the period of circulation of the paper notes to five from the original 13 years, and pledged to regard them, if they remained in circulation after the expiration of that period, as Government bonds bearing 6 per cent. interest, besides announcing to the public the means of redemption and the amount of issue. These measures, however, were not satisfactorily carried out. But as the prestige of the new Government gradually came to be fully established, the credit of the paper money increased, and about 1872 the people even came to prefer it because of the convenience of handling. In fact its price became even higher than specie.

The Over-Issue of Paper Money Owing to the Rebellion of 1877.—Matters were progressing favorably, when in 1877 a rebellion broke out in the southwestern provinces of the Empire. In order to defray the expenses of this civil war, the Government was obliged to issue 27,000,000 yen of paper notes. Thus the amount of the paper money in circulation suddenly increased, until in January 1879 it reached the maximum amount of some 120,830,000 yen.

The Issue of Reserve Paper Money.—Although these paper notes were issued by the Government with the intention of withdrawing them after a fixed period, yet practically they became a sort of permanent debt; and besides them the Government provided itself with reserve paper notes, which were issued whenever it found itself in want of money, withdrawing them as soon as revenues were obtained. This extraordinary issue of reserve paper money gradually increased in amount, so that after 1878 the average yearly issue reached 20,000,000 yen.

The National Bank Notes.—Besides the kinds of inconvertible notes mentioned above, there was another kind of inconvertible paper, namely, the national bank notes. When in 1872 the Government pledged to redeem paper currency in five instead of 13 years as originally fixed, it adopted a scheme of establishing national banks with power to issue convertible notes, these notes to be issued on the strength of the Government bonds deposited in the Treasury Department. With this object in view the National Bank Regulations, modelled largely after the system then in vogue in the United States, were proclaimed. According to these regulations, a national bank was to have a capital of at least 50,000 yen, and was first to bring to the Government paper money equal in amount to six-tenths of its capital, for which the Government was to deliver in exchange the same amount of the Kinsatsu-Exchange Bonds bearing 6 per cent. interest, and these the bank was again to take to the Government to be deposited as security for the same amount of the convertible bank notes to be delivered; four-tenths of the capital was to be in specie and kept as reserve for the conversion of these notes. The Government intended to retire all the Government paper money hitherto issued in exchange for these notes, but unfortunately that intention could not be carried out. For the specie was getting daily more scarce so that as soon as the convertible bank notes were issued, so much demand was made on the banks for exchange, that these notes never obtained any extensive circulation. Thus only four national banks were established, which issued some 2,000,000 yen of convertible notes between them. In 1876 the Government issued some 174,000,000 yen of the Hereditary Pension Bonds to take the place of the annual pensions of the Daimio and Samurai classes, hitherto paid in rice. Count Okuma, the then Minister of Finance, intended that these bonds should be made the capital of national banks and that those banks should be authorized to issue notes. In this way, it was believed that the Samurai would obtain a means of livelihood, while the economic market would be supplied with the much needed capital in the form of bank notes. With these ends in view, in August 1876, the Government made certain amendments in the National Bank Regulations, so that it now became possible to establish a national bank with power to issue notes without specie reserve at all. To be particular, the total amount of notes which the national banks might issue was limited to 34,000,000 yen; a bank might place as deposits in the Government Treasury any kind of Government bonds bearing interest at 4 per cent. and upward, to the amount equalling eight-tenths of its capital, in order to be able to issue bank notes equal to the amount of that deposit; at the same time the required conversion reserve for the notes issued was reduced to but two-tenths of the capital, and moreover this might be in any kind of currency. Thus the national bank notes were changed from being convertible in specie, into being convertible in currency; and since the currency of the time was inconvertible Government paper money, these bank notes, too, became another kind of inconvertible paper money.

The establishment of national banks having thus become quite easy, many were soon established, and in April 1880 the notes issued by them reached the maximum amount of 34,420,000 yen.

In these ways, the amount of inconvertible paper money in circulation rose step by step, until it reached its highest point in January 1880, as may be seen from the figures given below:

	Yen
Government paper money	113,831,709
Reserve paper money temporarily issued	22,188,116
National bank notes	34,137,652
	170,157,477

The Policy of the Government Towards Inconvertible Paper Money About 1879.—One result of such over-issue of inconvertible paper money was the difference in price of silver and paper, which began to manifest itself at the beginning of 1877. At the close of that year the ratio between silver and paper became as much as more than 1 yen and 21 sen of paper to 1 yen of silver. The general public began to pay attention to the disposal of the paper money. The Government, too, recognized the necessity of taking measures to redeem the Government bonds and paper money, and in August 1877 drew up a plan aimed at the redemption of the paper money within seven years, publishing it in July of the following year.

An opinion, however, prevailed both among the authorities and the general public that the differences in the value of paper and silver were due not to the depreciation of paper, but to the appreciation of silver, and the Government made efforts to prevent the rise of the price of silver rather than to redeem the paper money. Thus, when in March 1879, the difference between silver and paper became 1 yen and 26 sen of paper to 1 yen of silver, the Government induced the First, Second, Mitsui and Specie banks to sell out silver coin. The measure was unsuccessful in so far as it temporarily checked the rise of the price of silver, but no sooner was the sale of silver coin suspended than the paper money further depreciated. As it was, the Government abandoned the measure in September 1880.

The Government also opened a place for transacting the exchange of Mexican dollars at Yokohama with the purpose of facilitating the sale and purchase of silver and of preventing thereby the rise of the price of silver. Further in February 1880, the Government established the Yokohama Specie Bank, contributing one-third of its capital, with the object of inviting people to invest hoarded coins, so that these coins might be supplied to the financial market. The Specie Bank was, moreover, to engage in foreign exchange in order to facilitate monetary circulation between Japan and foreign countries.

All these measures, taken with the object of checking the rise of the price of silver, having failed, the Government ultimately resolved to set itself to the task of redeeming paper money in earnest. In September 1880, the Government doubled the rate of tax on Saké, so that the increased revenue to the amount of 5,000,000 yen a year might be set apart as a redemption fund. Again, the Government extended the spheres of local taxation, correspondingly lightening the burden of the Central Government, and at the same time the Government expenditures were much curtailed, the surplus obtained in all these ways being also added to the redemption fund. Besides all these, the Government decided gradually to transfer by sale to private hands the Government factories, which had been established for the encouragement of industry; stopped making loans to companies and individuals out of the reserve fund in the Treasury; and every yen thus gained went to further increase the amount of the redemption fund.

Yet the depreciation of paper did not stop. In April 1881, 1 yen silver brought on an average 1 yen 80 sen of paper, this being the lowest point ever reached in the depreciation of paper money.

The Effects of the Over-Issue of Inconvertible Paper Money on the Finance of Japan.—The following tables show some of the effects produced on the finance of Japan by the over-issue of inconvertible paper money between 1868 and 1881.

TABLE I.—SHOWING AVERAGE YEARLY EXCHANGE RATE OF PAPER MONEY FOR SILVER YEN FROM 1871 TO 1881.

Years.	For one silver yen, yen
1871	.978
1872	1.018
1873	1.036
1874	1.038
1875	1.029
1876	.989
1877	1.033
1878	1.099
1879	1.212
1880	1.477
1881	1,696

TABLE II.—SHOWING THE EXPORTS AND IMPORTS OF COMMODITIES FROM 1868 TO 1881.

Years	Exports, yen	Imports, yen	Excess of exports, yen	Excess of imports, yen
1868	15,553,472	10,693,071	4,860,401	....
1869	12,908,977	20,783,633	....	7,874,656
1870	14,543,012	33,741,637	....	19,198,625
1871	17,968,608	21,916,727	....	3,948,119
1872	17,026,647	26,174,814	....	9,148,167
1873	21,635,440	28,107,390	....	6,471,950
1874	19,317,306	23,461,814	....	4,144,508
1875	18,611,110	29,975,627	....	11,364,517
1876	27,711,527	23,964,678	3,746,849	....
1877	23,348,521	27,420,920	....	4,072,381
1878	25,988,140	32,874,834	....	6,886,694
1879	28,175,770	32,953,002	....	4,777,232
1880	28,395,386	36,626,601	....	8,231,215
1881	31,058,887	31,191,246	....	132,359

N.B.—That there was an excess of the exports over the imports in 1876 was due to the greatly increased export of raw silk, owing to the failure of silk culture in Italy and the consequent rise in price of silk exported.

TABLE III.—SHOWING THE IMPORTS AND EXPORTS OF SPECIE FROM 1868 TO 1881.

Years	Export, yen	Import, yen	Excess of export, yen	Excess of import, yen
1868	....	....	....	....
1869	....	....	....	....
1870	....	....	....	....
1871	....	....	....	....
1872	4,480,895	3,691,510	789,385	....
1873	5,122,927	3,080,541	2,042,386	....
1874	13,995,202	1,071,731	12,923,471	....
1875	14,663,971	298,321	14,365,650	....
1876	10,675,700	8,267,240	2,408,460	....
1877	9,441,270	2,173,498	7,267,772	....
1878	8,328,652	2,189,101	6,139,551	....
1879	12,778,863	3,134,803	9,644,060	....
1880	13,222,993	3,638,230	9,584,763	....
1881	7,490,547	1,856,146	5,634,401	....

TABLE IV.—SHOWING PRICES FROM 1873 TO 1881.

Years	Unhusked rice (middle grade) @ 1 koku, yen	Salt (Akao) 10 hiyo, yen	Tea (green) (middle grade) @ 1 kwan, yen	Copper (refined) @ 100 catty, yen	Iron (Japanese produce) @ a bundle, yen	Cotton fibres (Japanese produce, 1st grade) @ 1 kwan, yen
1873	4.800	3.043	2.510	24.500	6.375	1.633
1874	7.300	3.205	2.530	24.875	6.875	1.471
1875	7.132	3.413	2.500	26.250	6.150	1.373
1876	5.126	2.445	2.520	26.000	4.800	1.321
1877	5.336	2.309	2.500	23.700	4.550	1.323
1878	6.385	4.386	2.160	23.778	4.850	1.252
1879	7.955	5.848	2.280	26.000	5.540	1.325
1880	10.571	5.618	2.680	31.880	6.380	1.486
1881	10.593	5.208	2.720	35.593	7.480	2.105

TABLE V.—SHOWING PRICES OF GOVERNMENT 7 PER CENT INTEREST-BEARING BONDS FROM 1878 TO 1881.

Years	Yen
1878	83.495
1879	81.307
1880	71.851
1881	69.500

TABLE VI.—SHOWING THE RATE OF INTEREST FROM 1874 TO 1881.

Years	Highest per cent.	Lowest per cent.	Average per cent.
1874	18.00	6.00	12.96
1875	18.00	7.00	11.80
1876	18.00	6.00	12.01
1877	12.00	9.00	10.00
1878	15.00	9.00	10.43
1879	15.00	8.00	12.16
1880	18.00	9.00	13.11
1881	18.00	7.20	14.03

As may be seen from the above tables, before 1877, the over-issue of inconvertible notes resulted only in the excess of imports over exports and the efflux of specie from the country, but after that year, as the amount of inconvertible notes issued suddenly increased, not only a great depreciation of paper and a faster and greater efflux of specie followed, but prices rose with abnormal rapidity. This was especially the case with the price of rice, which rose by 98 per cent. in 1880 and 1881 compared with that in 1877. The rate of interest also rose by more than 4 per cent. on an average in those days, it being possible to buy Government bonds bearing 7 per cent. interest at a price more than 30 yen lower than their face value. The bad effect of such a state of things was felt in various directions. The revenue of the Government was practically reduced to one-half in value of what it had been, and the people who lived on fixed incomes suffered greatly owing to the sudden and considerable depreciation of their incomes. The rise of the price of rice swelled the incomes of farmers, who constituted a great majority of the inhabitants of the Empire, with the result that they contracted habits of luxury. The imports exceeded the exports more and more and gold and silver left the country in ever increasing quantity. As for the industrial and mercantile classes, they were simply bewildered at the sudden and frequent fluctuations of prices and instead of engaging in honest business, hoped and struggled to reap profit by speculation. In fact the financial market of those days was apparently in a very prosperous condition, but it was actually on the brink of ruin. This may be judged from the fact that whereas the export trade of the country increased by 62 per cent. in the five years between 1872 and 1876, it increased by only 28 per cent. in the same length of time between 1877 and 1881.

The Adjustment of the Inconvertible Paper Currency.—In the autumn of 1881, a great split took place in the government, and as a result the present writer was transferred from the chair of the Minister of Home Affairs to that of the Minister of Finance. It was just the time when the depreciation of the paper money reached its lowest point and both the Government and people were in a most uneasy mood. It was found that the amount of the Government paper and of the bank notes in circulation at that time stood as follows:

	Yen
Government paper money	105,905,211
Government paper money temporarily issued out of the Paper Money Reserve	14,500,000
Notes issued by National Banks	34,398,030
Total	154,803,242

All these were inconvertible paper money. The Government decided that unless some drastic measures be taken to dispose of them, the state finance would soon come to ruin. It became clear in the eyes of the financial authorities that to accomplish the adjustment of the inconvertible paper money, there was no other way than that side by side with the redemption of a portion of the paper money in circulation steps be taken to increase the specie reserve of the Government preparatory to the resumption of specie payment. It was at first intended to adjust and redeem all the inconvertible notes issued by the Government and national banks once for all, and establish a central bank having the sole privilege of issuing convertible notes. With that intention, investigations were made into the actual financial condition of the Government. It was found that 7,000,000 yen could be annually appropriated from the ordinary revenue of the Government towards the redemption of paper money, and that there was a reserve fund amounting to about 55,000,000 yen. Of this sum about 19,000,000 yen had been loaned out, so that the amount at hand was but 36,000,000 yen. But as about 25,000,000 yen out of this consisted of bonds, and 2,000,000 yen of bank shares and paper money, the amount of specie was no more than 8,000,000 yen. Further, even this amount existed in the account book only, for out of this, 3,000,000 yen were loaned out to certain foreigners, so that the amount of specie actually available for conversion was only about 5,000,000 yen. Nevertheless it was firmly believed that by utilizing the balance of revenue above referred to, and also by employing this specie reserve to advantage, the Government should be able to carry out its scheme of redeeming paper money in about five years.

In some quarters it was opined that it was unwise to accumulate and store specie, because specie would of itself naturally flow in if the paper money should be withdrawn and the currency decreased. Anticipating, however, the great difficulty that would attend the realization of the scheme of convertible notes, the Government adhered to the policy of accumulating and storing as much specie as possible.

The task of doing this, however, was not an easy one. The amount of the specie that remained in the country on those days was extremely small, while the yearly output of gold and silver mines in the country was less than 400,000 yen. Moreover, bound up by the treaty, the Government could not revise tariff to its advantage. On the other hand in view of the financial condition of the time, the country would suffer great disadvantage if foreign loans were resorted to. Under these circumstances the Government came to the conclusion that the only way open was to try to bring in gold and silver from abroad by means of discounting foreign bills of exchange accompanied by securities, and accordingly this scheme was adopted though there was no little opposition within the Government itself.

It indeed required a great determination on the part of the Government to accomplish the adjustment of the paper currency; for it was apparent with the rise in the value of paper money the prices would fall, leading to the disappearance of the seeming prosperity of the country which then prevailed. Loud voices would naturally be raised against this policy from all quarters. To make it sure that no opposition would ever stop the carrying out of the Government's scheme, the Emperor's special sanction for this scheme was obtained.

Previous to this, about 1880, a plan to raise a foreign loan of 50,000,000 yen for the purpose of redeeming paper money was advocated by some in the Government, but the plan was never adopted. Subsequently a certain influential foreigner suggested the establishment of a bank under foreign management, with a joint domestic and foreign capital, and with a privilege to issue debentures with premium coupons, both at home and abroad, the idea being to devote the profit obtainable in that way to the redemption of the paper money. This suggestion found favor at first with the Government but was finally rejected.

The Adjustment of the Reserve Paper Money.—The first task was the adjustment of the reserve paper money. As before stated, the reserve paper money was issued for temporarily meeting the deficit of revenue. It was thus not of a permanent nature, but all the same it had the evil result of increasing the amount of circulation of inconvertible notes.

In order to withdraw from circulation the amount thus utilized from the paper money reserve, certain changes were made in the method of making receipts and disbursements of the public revenue, as well as in the method of disbursing the expenditures of the Government Departments, so that thenceforth these disbursements were all made at the exchequer, instead of having the amounts of the estimated expenditures turned over in lump sums to the departmental authorities in the early part of the fiscal year, as had been done before. These changes were effectual in giving the Treasury available funds. Yet further steps were taken toward the increase of the Government reserve by withdrawing the loans made out of the Government reserve (in aid of industrial enterprises) and by selling the government bonds which were held by the Reserve Fund. The increased specie in the Reserve obtained in this way was temporarily utilized as well as all the available funds in the Treasury for the withdrawal from circulation of the Reserve paper money, the task being accomplished in January 1883. After this, whenever the Government was temporarily in need of funds, they issued short-term public loans in the form of the Treasury bills. The Treasury Bills Regulations were issued in September 1884.

Economy in the State Expenditure and the Redemption of Paper Money.—The adjustment of the troubles connected with the temporary issue from the Paper Money Reserve was comparatively easy. But with regard to the adjustment of the troubles which existed in connection with the paper currency proper, the task was very much greater.

At was stated above, in October 1881, when the writer was appointed Minister of Finance, it was found that about 7,000,000 yen could be appropriated annually out of the ordinary revenue for the redemption of paper money. In order that this surplus should not be spent for any other object, the Government decided that the state expenditures should not be further increased for the three years after the year 1882.

During the period just mentioned, however, the Government had to defray considerable extraordinary expenditures owing to the outbreak of cholera throughout the country, the occurrence of troubles with Korea and the consequent expansion of armament, and some other affairs. Besides, after 1882 on account of the general dullness of trade, the Government revenue markedly decreased. For instance, in 1883 the revenue decreased by as much as 2,000,000 yen in saké tax alone. Thus having found it impossible to carry out the prearranged plan, the Government took measures to increase its revenue by means of new taxes. Thus in 1882 the Government first levied stamp duties on patent medicines, and license tax on the brokers of the rice-exchange and the stock-exchange, and revised saké and tobacco taxes; and in 1885, taxes on soy and confectionary were levied for the first time. Part of the surplus of the revenue which was secured through these means was devoted to the redemption of the paper money, while the remainder was added to the reserve fund with the object of employing it for securing the importation of specie from abroad. The amount employed in these ways for the adjustment of the paper money during the five years from 1881 to 1885 was as follows:

	Yen
The amount directly employed in the redemption of the paper money.........	13,640,000
The amount added to the reserve fund....	26,466,828
Total............................	40,106,828

The direct redemption of the paper money with part of the surplus of the revenue was made only till 1883. It was abandoned after 1884, as the difference of paper and silver in price disappeared, and all the surplus of the revenue was added to the reserve fund.

The Discounting Operations of Foreign Bills of Exchange and the Accumulation of Reserve Specie.—The reserve fund so frequently referred to above originated in the Government's learning, through the trying financial experience of the first years following the Restoration, the importance of creating a fund during normal times, and also because there was the need of such a fund to enable the Government to resume specie payment. The fund was commenced and efforts were made to augment it by investment. In 1878, 20,000,000 yen were set aside as the Sinking Fund, out of the Reserve Fund, with the purpose of investing the amount in Government bonds in order to apply the interest accruing therefrom to paying off the principal and interest of the public debt. In 1881 the total amount of the Reserve Fund possessed by the Government was more than 55,000,000 yen, the Reserve Fund proper and the Sinking Fund being counted together. In August 1882, the Government decided to purchase specie with the Government bonds constituting the sinking fund, and since then the sinking fund existed in name only. As the amount of specie in the Reserve Fund which was possessed by the Government in 1882 was only about 5,000,000 yen, the attempt was now made to increase it with the specie obtained by discounting foreign bills of exchange.

It was in 1880 that the Government first engaged in transactions connected with foreign bills of exchange by establishing the Yokohama Specie Bank and entrusting to it the sum of 3,000,000 yen in order that it might discount foreign bills of exchange on the security of exported goods, at the request of mercantile companies engaged in the direct export trade. The main object of thus engaging in discounting foreign bills of exchange was to encourage, on the one hand, the direct export trade, and on the other to secure specie—it being the object of the Government to use the specie thus obtained in paying off its foreign expenses. In those early days, however, the business connected with the foreign bills of exchange being entirely new, and the whole thing being mismanaged, there arose various evils connected with it, so that the result was far from accomplishing the object sought. The Government thus not only failed to accomplish the absorption of specie, but had even to sustain losses, owing to the fact that the advances made often remained unpaid long after the expiration of the term of maturity. The causes of this failure on the part of the Government, in its first experience connected with foreign bills of exchange, appear to have been: 1. The laxity in the inspection of goods before discounting the bills of exchange, so that goods of inferior quality were sent abroad which did not command the expected price. 2. The business connected with the disposal of exported goods being mismanaged, led to uncertainties and irregularities in their sales, causing delay in the payment of the bills. 3. Since the money advanced in discounting the foreign bills of exchange was in paper money, it was arranged that the collection of those bills abroad should also take place in terms of paper money; so that the price realized abroad on the goods exported was, in paying for these bills, converted into the terms of paper money according to the rate of exchange prevailing at the time. And this process took place at a time when the paper currency was rapidly depreciating. As a result, the export merchants became engrossed in the subjects of fluctuations in the value of paper money—regarding their business as one of speculation rather than of sober legitimate transaction, in the hope of realizing certain chance profits from the fluctuation of paper money.

Accordingly the system of discounting foreign bills of exchange was revised so as to do away with the above-mentioned evils and the revised system was put into operation after March 1882. The following were the chief points of revision: 1. The Specie Bank to make a very strict examination of the goods on whose security the bills were discounted. 2. The Japanese Consulate at the place whither the goods were sent to be entrusted with their supervision, so that they were not to be delivered until after the payments were made for the bills of exchange. 3. The bills to be made payable in foreign currency at the rate previously determined in accordance with the rate of foreign exchange ruling on the day of discounting them.

Since these revisions were introduced into the system of discounting foreign bills of exchange export merchants gave up any idea of speculation and ceased to cause losses to the Government. Further, in June 1884, the privilege of having the bills discounted was extended to foreigners also. The result was very satisfactory, the amount of specie acquired in foreign countries having markedly increased after September of that year. The Government was thus enabled to increase the specie reserve, which was no more than 8,000,000 yen in 1881, to more than 42,000,000 yen at the end of 1885.

Establishment of the Bank of Japan.—Simultaneously with commencing the accumulation of reserve specie, the Government felt that in order to effect the adjustment of the paper money, it would be necessary to establish a great Central Bank. As before said, the national banks in Japan were patterned after the American system. As a matter of fact there were in 1883 over 260 banks, with their branches throughout the country, which issued paper money to the amount of 34,000,000 yen. But the capital they had at their disposal was generally of small amount. Besides they were established in circumscribed localities, each one within a narrow circle of influence. For this reason the communication between different banks was exceedingly bad, so much so that should there be surplus capital in one bank, and another bank be in dire need, yet the former could not help the latter. In order to remedy such a state of affairs, it was thought that there was no better way than establishing a great Central Bank, as in western countries. It was believed that such a bank would do much to regulate the monetary circulation of the country, simplify the business of the Exchequer, smooth the transactions of foreign bills of exchange and regulate the influx and efflux of specie and bullion. Besides, it was believed that to invest it with the sole privilege of issuing convertible notes was of utmost importance to the adjustment and unification of paper money.

After studying the systems regarding such Central Banks in vogue in different European countries, the Government came to the conclusion that the Belgic system would best serve as a model, and after its pattern a plan was drawn up for the establishment of a Central Bank, called the Bank of Japan, and the main features to be as follows: 1. That the Bank of Japan would be able to facilitate the circulation of currency throughout the country, as it would be in a position to look upon other banks somewhat as its branch offices and open correspondence with them. 2. That the Bank of Japan would be able to increase the strength of national banks as well as of trading or manufacturing companies by means of re-discounting their bills. 3. That the Bank of Japan would be able to lower the current rate of interest, as it would chiefly engage in the business of discounting short-period bills and thereby would facilitate the circulation of capital. 4. That when the business organization of the Bank of Japan was completed, it would be possible to simplify the business of the Government by entrusting to the bank a part of the business of the Finance Department, such as the receipt and disbursement of Government money and the liquidation of the public debt. 5. That the Bank of Japan might be made an organ of importing and preserving specie by making discounting foreign bills of exchange one of its functions.

The Regulations concerning the Bank of Japan were promulgated in June 1882, and in October of the same year the bank was founded. The main points in these regulations were as follows: 1. The term of business of the bank to be 30 years. 2. The capital to be 10,000,000 yen. 3. One-fifth part of the capital to be paid in before the bank opened business and the remainder payable in installments as the bank might require according to its business needs. 4. A limit to be placed on the kind of business the bank may engage in; the risky and dangerous kinds of business to be prohibited. 5. The bank to be entrusted with the receipt and disbursement of Government money, so far as it was convenient to the Government. 6. While the issuing of convertible bank notes should be considered its rightful privilege, that privilege to be withheld for some time to come. 7. The Governor and Vice-Governor of the bank to be appointed by the Government, the former to be of Chokunin rank and the latter of Sonin rank. 8. The Minister of Finance to appoint comptrollers to act as his representatives. 9. The directors and auditors to be elected by the 13 bank's shareholders. 10. The bank to make the monthly report of its business conditions to the Minister of Finance. 11. The Government to become the bank's shareholder to the amount of one-half the entire capital of the bank.

It goes without saying that such a Central Bank should possess the sole privilege of issuing convertible bank notes. But in those days Japan did not possess an adequate specie reserve and the difference of paper and silver in value was exceedingly great. For these reasons the Government withheld from the bank the privilege of issuing convertible notes for some time. In return, with the view of making the establishment of the bank easy, the Government undertook to take one-half of the entire capital of the bank and also permitted the bank to give 2 per cent. more dividends to private shareholders than the Government received. In spite of such favorable conditions, the task of inducing the people to invest their money in the bank's shares was not an easy one.

Disposal of the National Banks.—Having thus succeeded in gaining the first step in the direction of the adjustment of paper money—namely, the establishment of a Central Bank, the Government now faced the task of disposing of national bank notes.

Since the national banks had been chartered for 20 years, and that term had not expired, they could not be abolished at once. On the other hand, however, should they be left as they were and abolished at the expiration of the term there was a fear that not only these banks but the country would greatly suffer.

In view of these circumstances the plan adopted by the Government was as follows: 1. After the expiration of the term of 20 years each national bank be permitted to continue business, if it so desired, as a private institution. 2. Each bank to deposit with the Bank of Japan a reserve fund for the redemption of notes, money equal in amount to one-fourth the amount of notes issued by that bank and also make a deposit in the same way of a portion of its profit every half year, the amount to equal 2.5 per cent. per annum of the amount of the notes issued by it. The Bank of Japan to buy Government bonds with that fund in order to spend the interest accruing therefrom for the redemption of notes. If after the expiration of the term of the bank, there yet remain notes unredeemed, that fund be employed for the redemption of such remaining portion of the notes. 3. The Bank of Japan to transact the business of redeeming national bank notes according to the above method and to exchange national bank notes with currency any time the demand is made.

In May 1883, the National Bank Regulations were properly amended and the disposal of the national bank notes was immediately commenced. As described, the accumulation of specie was begun simultaneously with the redemption of the Government paper money and the Government set itself to the task of disposing of the national bank notes as soon as the establishment of a central bank was accomplished. Thus the time for carrying out the conversion of paper money now approached. Now, as after 1876, the national bank notes also became inconvertible, the total amount of the Government paper money and bank notes in circulation between that year and 1885 is shown in the following table in comparison with the specie reserve of the Treasury:

TABLE VII.—SHOWING AMOUNT OF GOVERNMENT PAPER MONEY AND BANK NOTES IN CIRCULATION AND OF THE SPECIE RESERVE FROM 1876 TO 1885.

On the last day of the year	Amount of government paper money and bank notes, yen	Amount of the reserve specie, yen	Percentage of the reserve specie to the amount of paper money in circulation
1876..	106,891,582.7625	15,171,224.366	14.2
1877..	119,149,843.3345	15,115,405.677	12.7
1878..	165,697,598.0570	17,837,729.269	10.8
1879..	164,354,935.3550	9,967,879.919	6.1
1880..	159,366,836.8550	7,166,819.462	4.5
1881..	153,302,012.9820	12,699,576.269	8.3
1882..	143,754,363.2320	16,730,267.809	11.6
1883..	132,275,012.9320	25,876,230.373	19.6
1884..	124,396,175.6320	33,569,188.107	27.0
1885..	118,500,485.2320	42,265,640.540	35.7

As is shown in the above table, the amount of the reserve specie at the end of 1885 was more than 42,000,000 yen. Of this amount more than 13,000,000 yen were in gold. When this amount was estimated at the current price of silver at that time, the total amount of the reserve specie increased from over 42,000,000 yen to 45,000,000 yen. In consequence, the percentage of the reserve specie was in reality 59 to the amount of the Government paper money in circulation, and 37.9 to the aggregate amount of the Government paper money and bank notes.

A great difficulty was experienced in accumulating specie on account of the disadvantageous position in which the country found itself with regard to the treaty with foreign countries. By that treaty Japan was entirely circumscribed in the exercise of the power to revise its tariff system, being unable to impose any customs duty on imported foreign articles other than the 5 per cent. duty fixed in the treaty. If Japan had been at liberty to increase its customs duty, the Government might have increased its revenue and obtained a source of accumulating specie. Besides, it would have made the trade relation with foreign countries advantageous to Japan and given facilities for attracting specie from foreign countries. As, however, Japan was unable to do all these things, a great difficulty was experienced in attracting specie from foreign countries, as in so doing Japan had only to rely upon the means of discounting foreign bills of exchange.

As the amount of paper money in circulation decreased and that of the reserve specie increased, the difference of paper and silver in price gradually became less, until at the end of 1885 it almost disappeared.

The following table shows the average exchange rate of paper money for gold and silver yen from 1882 to 1885:

TABLE VIII.—SHOWING AVERAGE YEARLY EXCHANGE RATE OF PAPER MONEY FOR GOLD AND SILVER FROM 1882 TO 1885.

Years	For one gold yen, yen	For one silver yen, yen
1882	1.690	1.571
1883	1.394	1.264
1884	1.198	1.089
1885	1.218	1.055

The gradual disappearance of the difference in price of paper money and silver brought about various effects upon the financial condition of Japan. The following tables give statistics concerning them:

TABLE IX.—SHOWING THE EXPORTS AND IMPORTS OF COMMODITIES FROM 1882 TO 1885.

YEARS	Exports, yen	Imports, yen	Excess of Exports, yen
1882	37,721,751	29,446,594	8,275,157
1883	36,268,120	28,444,842	7,823,178
1884	33,871,466	29,672,647	4,198,819
1885	37,146,691	29,356,968	7,789,723

TABLE X.—SHOWING THE IMPORTS AND EXPORTS OF SPECIE FROM 1882 TO 1885.

YEARS	Exports, yen	Imports, yen	Excess of exports	Excess of imports yen
1882	4,430,197	6,160,724	....	1,730,527
1883	3,156,565	5,451,501	....	2,294,936
1884	5,005,072	5,611,759	....	606,687
1885	4,256,445	7,546,841	....	3,290,396

TABLE XI.—SHOWING PRICES FROM 1882 TO 1885.

Years	Unhusked rice (middle grade) @ 1 koku, yen	Salt (akao) 10 hiyo, yen	Tea (green) middle grade @ 1 kwan, yen	Copper (refined) @ 100 catty, yen	Iron (Japanese produce) @ a bundle	Cotton fibres (Japanese produce) . 1st grade @ 1 kwan
1882	8.810	4.808	2.730	23.346	6.415	2.212
1883	6.309	3.802	1.810	29.541	4.848	1.299
1884	5.288	2.809	1.500	21.136	3.249	1.217
1885	6.609	3.424	1.600	18.672	3.172	1.418

TABLE XII.—SHOWING PRICES OF 7 PER CENT. INTEREST-BEARING GOVERNMENT BONDS FROM 1882 TO 1885.

YEARS	Yen
1882	73.382
1883	83.947
1884	93.393
1885	96.331

TABLE XIII.—SHOWING THE RATE OF INTEREST FROM 1882 TO 1885.

YEARS	Highest per cent	Lowest per cent	Average per cent
1882	13.00	7.20	10.10
1883	9.08	6.80	7.59
1884	15.00	9.30	10.91
1885	16.50	10.00	11.38

The effects of the gradual disappearance of the difference in price of paper money and silver on the financial condition of the country may be clearly seen by comparing the above tables with those relating to the financial condition before 1881, previously given. As may be seen, prices gradually fell to their normal standard. The fall of price of rice was especially noticeable. In 1884 it fell to nearly one-half of what it was in 1881. Interest also fell to its normal rate of about 10 per cent., which ruled before the over-issue of inconvertible notes, while Government bonds were quoted at a price approximate to their face value. But closely following on the heels of these results there came a severe depression of trade and industry which culminated in 1883 and 1884. The fall of the price of rice told most heavily upon farmers, who had contracted habits of luxury during the years of its high quotation, for practically their incomes now fell off by nearly one-half, while their burden in the shape of land-tax was doubled. Loud voices of complaint against the Government's financial policy resounded throughout the country, and the authorities had great difficulty in satisfying local officials, who sympathized with the farmers and came up to the metropolis one after another to lay their complaint before the Central Government. Convinced that the redemption of paper money was of utmost importance to the State finance, the Government was deaf against all complaints and resolutely pursued its policy.

Facts Connected with the Conversion of Paper Money.—By 1884 it was satisfactory to find that the amount of paper money in circulation was much reduced, while the Government's reserve fund in specie considerably increased. In view of these facts, the price of paper money gradually kept rising until it stood on a par with silver. Now came the opportunity to carry out the convertible note system, and the Government decided to permit the Bank of Japan to issue a certain amount of convertible bank notes as a sort of experiment, preparatory to the resumption of specie payments. The Convertible Bank Note Regulations were promulgated in May 1884, and the Bank of Japan issued convertible notes for the first time in May of the following year, the amount reaching 3,000,000 yen at the end of that year.

Every preparation for the resumption of specie paying having been made, the Government began in January 1888 to pay specie for the Government paper money, entrusting the business with the Bank of Japan.

Although the Government commenced specie payment for the Government paper money, the people rarely made the demand to have the exchange made. The reason was that the difference between paper and silver in value had already disappeared, and people generally preferred paper because of the convenience of handling.

As a result of the gradual redemption of both Government paper money and National Bank notes, it was found on the last day of June 1888, that the amount of the former had been reduced by more than 49,000,000 yen and that of the latter by 28,000,000 yen. The opportunity arrived to finally dispose of them all and place the currency system of the country on a sound basis. The Government therefore decided to permit the Bank of Japan to issue convertible notes to the amount of 70,000,000 yen on the security of a conversion reserve, of which sum 21,000,000 yen was to be issued by the Bank at its own will, 22,000,000 yen was to be supplied to the Government as a loan at interest of 2 per cent. for redemption of the Government paper money, and the remaining 27,000,000 yen was to be issued by the Bank after January 1889, gradually in proportion as the National Bank notes would be redeemed. In view of this plan, the Convertible Bank Notes Regulations were amended in August 1889. The Government, however, did not find it necessary to make the above-mentioned loan.

In March 1890, the Government adopted a plan of setting apart as a redemption reserve the sum of 10,000,000 yen, out of the reserve fund, in order to accomplish the entire withdrawal of the Government paper money. In May of the same year the legal amount of notes to be issued on the security of the Reserve by the Bank of Japan was enlarged to 85,000,000 yen, while at the same time it was provided that the Bank should loan the Government 22,000,000 yen without interest. The Regulations were duly amended to suit these changes, and in July of the same year the Government secured the above mentioned loan and added the amount to the Redemption Fund.

In these ways, both the Government paper money and the National Bank notes were finally all withdrawn and the unification of the paper currency, by means of the Bank of Japan convertible notes, was accomplished. The amount of the Government paper money which was redeemed from January 1886 to the end of March 1890 was more than 48,000,000 yen. Of this amount, 43,346,716 yen were exchanged with silver coins and 4,933,124 yen were redeemed by Government bonds and other means.*

The amount of the bank notes which were redeemed in the same period was more than 3,700,000 yen. The following table gives the particulars:

	Yen
Amount redeemed by the Bank of Japan by means of the joint redemption method....	3,730,451
Withdrawn from circulation on account of fraudulent alterations or winding up of business..............................	33,561
Total	3,764,012

The following table shows the amount of the paper money in circulation from January 1886 to March 1890:

TABLE XIV.—SHOWING THE TOTAL AMOUNT OF THE PAPER MONEY IN CIRCULATION FROM 1886 TO 1890.

YEARS	Government paper money, yen	National bank notes, yen	Convertible bank notes, yen	Total, yen
Jan. 1, 1886....................	88,345,096.232	30,155,389.000	3,653,272.000	122,153,757.000
Dec. 31, 1886....................	67,800,846.332	29,501,484.500	39,025,779.000	136,328,109.832
Dec. 31, 1887....................	55,815,044.832	28,604,133.500	53,235,102.000	137,654,280.332
Dec. 31, 1888....................	46,734,740.582	27,679,656.500	62,995,518.000	137,409,915.082
Dec. 31, 1889....................	40,913,034.582	26,739,205.500	74,297,005.000	141,949,245.082
March 31, 1890................	40,065,255.900	26,391,376.500	77,615,442.000	144,072,074.400

Of these 40,000,000 yen of the Government paper money, which were in circulation at the end of March 1890, 32,000,000 consisted of denominations above 1 yen. These were to be redeemed with the redemption fund as already narrated, while 8,000,000, which consisted of denominations below 50 sen, were to be redeemed gradually by funds which were to be set aside from the general revenue of the Government. These schemes of redemption were carried out without a hitch, and in 1898 the law was promulgated announcing that the Government paper money should cease to circulate after the 31 Dec. 1899.

With regard to the redemption of the national bank notes, it steadily progressed by means of the joint redemption method before mentioned, and in 1896 it was announced that they should also cease to circulate on 31 Dec. 1899.

To briefly sum up. In October 1881 there were in circulation more than 154,000,000 yen of inconvertible paper money. It was redeemed in the following ways: 1. The reserve paper money, 14,500,000 yen. This amount was entirely redeemed by the end of 1883 by means of the surplus funds obtained through effecting reform in the method of making receipts and disbursements of the public revenue and also by other means. 2. The Government paper money, 105,905,212 yen. Of this amount, 65,839,956 yen were redeemed by the end of March 1890, 13,640,000 yen by the surplus revenue, 43,346,716 yen with specie and 8,853,240 yen by Government bonds and other means. The remaining amount of 40,065,256 yen was gradually redeemed with 10,000,000 yen, the balance of the Reserve Fund, and 22,000,000 yen loaned from the Bank of Japan. The amount of 8,065,256 yen, which still remained unredeemed, was exchanged with silver coins of denominations below 50 sen out of the general revenue, as it consisted of paper money of smaller denominations. In these ways, the whole amount was adjusted within five years after 1899, at the end of which the circulation of the paper money ceased. 3. The national bank notes, 34,398,030 yen. Of this amount 3,764,013 yen were redeemed by the end of March 1890 by means of the joint redemption method and other means. The remaining amount of 32,634,017 yen was also redeemed by means of the joint redemption method within five years after 1899.

Thus all the inconvertible paper money in Japan was adjusted, and to-day only specie and the convertible notes issued by the Bank of Japan are in circulation.

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*Of more than 43.000,000 yen, which were exchanged with silver and coins, the amount exchanged by demands from private people and banks was only some 8.900,000 yen. The rest of the paper money exchanged was received and exchanged with silver coins either by the Bank of Japan or by the government.

The Effects of the Adjustment of Paper Money on the Finance of Japan.—What effect the adjustment of the inconvertible paper money had on the finance of Japan may be seen from the following figures relating to the finance of the country from 1886 to 1890, the tables being a continuation of those already given.

TABLE XV.—SHOWING THE EXPORTS AND IMPORTS OF COMMODITIES FROM 1886 TO 1890.

YEARS	Exports, yen	Imports, yen	Excess of exports, yen	Excess of imports, yen
1886.....	48,876,313	32,168,432	16,707,881	....
1887.....	52,407,681	44,304,252	8,103,429	....
1888.....	65,705,510	65,455,234	250,276	....
1889.....	70,060,706	66,103,767	2,956,939	....
1890.....	56,603,506	81,728,581	....	25,125,075

N.B.—The greatly increased import for the year 1890 is due to the increased import of rice, on account of the bad rice crop in that year.

TABLE XVI.—SHOWING THE IMPORTS AND EXPORTS OF SPECIE FROM 1880 TO 1890.

YEARS	Export, yen	Import, yen	Excess of export, yen,	Excess of import, yen
1886.....	9,626,447	9,171,873	454,574	....
1887.....	11,035,488	8,871,266	2,164,222	....
1888.....	7,833,444	8,732,491	....	899,047
1889.....	5,188,530	14,173,246	....	8,984,716
1890.....	13,778,532	1,200,607	12,577,925	....

TABLE XVIII.—SHOWING THE PRICES OF GOVERNMENT BONDS FROM 1886 TO 1890.

YEARS	7 per cent. interest bearing kinroku bonds, yen	5 per cent. interest bearing adjustment bonds, yen
1886..............	107.349	......
1887..............	105.088	101.578
1888..............	104.306	101.445
1889..............	103.922	101.017
1890..............	103.428	99.236

TABLE XIX.—SHOWING THE RATE OF INTEREST FROM 1886 TO 1890.

YEARS	Highest per cent.	Lowest per cent.	Average per cent.
1886................	10.50	7.20	9.16
1887	11.00	7.13	8.73
1888................	12.00	8.00	9.66
1889................	12.00	8.00	10.17
1890................	12.15	10.20	11.18

As will be seen from the above tables, prices fell to their normal standard and no fluctuations took place; the rate of interest became less than 10 per cent. on an average since 1886; the Government bonds were always quoted above their face-value; while the export trade of the country steadily increased, so much so that compared with that of 1886, 1889 showed an increase of 63 per cent. and compared with that of 1885 an increase of 88 per cent. As for the banking and different industries they also became very prosperous, as may be seen from table XX.

From the table below it will be seen that within five years the aggregate capital of banks and different industrial and mercantile companies increased two and a half times, and, if the banks be excluded, by four times. It may be mentioned that the railway and spinning business made the most advance in the course of those five years.

TABLE XX.—SHOWING THE AMOUNT OF CAPITAL INVESTED IN DIFFERENT BUSINESS COMPANIES FROM 1886 TO 1890.

YEARS	Banks, yen	Railway, yen	Transportation, yen	Trade and industry, yen	Agriculture, yen	Total, yen
1886.........................	70,375,125	12,119,500	12,653,670	24,660,639	1,052,923	120,861,857
1887.........................	79,234,912	13,069,500	12,612,284	39,249,582	2,924,102	147,090,380
1888.........................	78,139,248	41,020,000	10,246,499	60,441,546	5,961,936	195,809,229
1889.........................	79,653,549	50,040,000	19,819,309	105,637,176	8,118,592	263,268,626
1890.........................	82,121,278	55,070,000	24,689,846	113,616,312	8,229,982	283,727,418

TABLE XVII.—SHOWING PRICES FROM 1886 TO 1890.

YEARS	Unh'k'd rice (mid. grade), per 1 koku, yen	Salt (akao), per 10 hiyo, yen	Tea (green, middle grade), per 1 kwan, yen	Copper, per 100 catty, yen	Iron (Japanese prod'ce), p'r b'ndle, yen	Cotton (1st grade), per 1 kwan, yen
1886........	5.990	2.817	1.550	17.550	2.500	1.269
1887........	4.940	2.625	1.500	15.840	3.438	1.256
1888........	5.025	2.398	1.500	25.050	4.187	1.406
1889........	5.990	4.348	1.420	20.400	3.938	1.532
1890........	8.940	3.774	1.500	18.350	3.750	1.416

To conclude, the adjustment of inconvertible paper money in Japan was accomplished by adopting a *de facto* silver standard. This was unavoidable owing to the special economic conditions of the country as well as of the commercial relations with the neighboring nations. But it was no more than one great step in advance. When in 1897 the gold standard system was adopted, the country at last came under conditions corresponding to the general tendency prevailing in the world, and thus was finally established Japan's coinage system on a secure basis.*

COUNT MASAYOSHI MATSUKATA.

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*See Count Matsukata's published report on the Adoption of Gold Standard in Japan.

14. Japan—Agriculture. *1. History.*—The ancestors of the modern Japanese seem not to have been eaters of meat and milk, and butter and cheese were unknown to them. These facts, together with the mountainous character of the country, fully justify the supposition of the non-existence of any nomadic tribe. It is very probable that from the earliest time the Japanese understood how to till the soil, whose only crop, however, with the possible exception of hemp, was rice. European authors seem to think that the Japanese started agriculture after the Chinese pattern, but there is reason to believe that the cultivation of rice was introduced from India. Rice in those days was probably sown in marshy places, year after year in succession, without fallowing and without manure. But it was soon found that marshes were not sufficient. As the agricultural lands gradually extended, the first great effort of the government to foster agriculture was in making arrangements for irrigation. When we consider that low tracts of land only were devoted to rice culture, where rain water and irrigation were productive of large quantities of rich soil, we can understand why successive crops of rice have been exhausted the soil's fertility. Moreover, as nitrification does not occur in wet soils, nitrogenous compounds were little wasted.

Breaking up land for rice was much encouraged, which led to the proprietorship of land at a very early period. But lack of knowledge and capital only permitted the irrigation of low tracts of land, and the resources of paddy fields were soon exhausted. Then it became necessary to till the fields and the cultivation of barley was gradually introduced, but we cannot fix the exact time. Indian millets, soybean, and other crops were also introduced and their cultivation encouraged. Indeed we find in very early literature the name of «gokoku» (the five grains), which signified rice, barley, soybean, awa and hive, the latter two being kinds of Indian millets, or rice, barley, awa, soybean, and adzuki (Phaseolus radiatus).

It is very probable that silkworm raising began at a much earlier date than is generally believed, but the silk industry was not greatly encouraged until after the eggs of Chinese silkworms were introduced in 195 A. D. Thereafter silkworm raising continued to occupy an important place in farming, until it fell into decline on account of the civil wars, its revival taking place only after the Mikado was restored to power in 1871.

Whether or not any livestock, such as cattle and horses, existed in the remotest antiquity is much disputed, but if so they were certainly not much used. At first even cattle were used solely as beasts of burden, for which purpose, on account of the mountainous character of the country, and the narrow and rugged roads, they were better suited than horses. They were often slaughtered, not for meat but for their hide. The use of milk as food was unknown. It was in the reign of Kotoku (645-654) when the use of milk as medicine was introduced, but such use was discouraged by Buddhism. Horses came into use very early for the saddle and as beasts of burden; indeed the northeastern provinces were celebrated for their horse breeding.

The use of livestock as meat came gradually into use and even swine were raised to some extent. But after Buddhism came into power the Government prohibited the slaughtering of livestock, so the raising of swine was stopped entirely. Cattle were then used solely as beasts of burden and for cultivation, for which purpose small farmers often preferred them to horses, especially in mountainous districts.

It is evident, therefore, that Japanese agriculture must have been the tilling husbandry from the very beginning and remains so to the present day, except in mountainous districts where large tracts of natural pasture are found, on which cattle and horse-breeding is conducted by farmers. The Japanese greatly esteemed agriculture and believed in the Chinese saying, translated into Japanese, «No wa Kuni no moto,» which means, «agriculture is the foundation of the country,» and every sagacious emperor and his advisers encouraged the improvement of agriculture, mainly after the Chinese pattern. But before the establishment of feudalism, when the nobles became very powerful, its encouragement was largely neglected and the land gradually fell into the possession of a few, and heavy rent was levied by landlords. From that time also, on account of the disturbance of internal peace, farmers suffered, and agriculture greatly declined. Notwithstanding these discouragements, various circumstances helped the farmers to improve their agriculture, and new crops and improved implements were gradually introduced, and in some districts agriculture made noteworthy progress. But universal progress began only after the restoration of peace by Taiko Hideyoshi. During the eras Keicho and Genna (1596-1623) many important crops were introduced, among which may be mentioned cotton (which indeed had been introduced once before), tobacco, potatoes, sweet potatoes, sugar cane, etc. Under the long peaceful Shogunate of Tokugawa, agriculture flourished and made great progress. As the country became closed to foreign intercourse, the people were more and more dependent upon agriculture to supply their needs, and Tokugawa Shogun and many feudal lords greatly encouraged it on their estates, though there were other lords who cared very little for their people, and there, under heavy tax, agriculture could not make much progress. Thus even at present, great differences can be seen in the state of agriculture in various localities. After the restoration to power of the Mikado, and the beginning of the Meiji era, there was rapid and great progress, which will be treated under another heading.

2. Area of the Land under Cultivation and Crops Cultivated.—Though agriculture is conducted very intensively, and especially in the warmer part of the country, terracing is employed on an extended scale* on account of the predominant mountainous character of the country and on account of the method of farming which is based principally on rice cultivation. Mixed farming is almost entirely unknown except in the mountainous districts, and the percentage of the land under cultivation is therefore very small. Indeed with the exception of Hokkaido, which may be regarded as a colony, and where a large extent of land is not yet broken, and Formosa, which was only recently annexed, 17 per cent. may be taken as a fair estimate of the cultivated land. If we compare this percentage with 53.5 per cent. for Belgium, 53.3 per cent. for France, 49.3 per cent. for Germany, or even 19.0 per cent. for Switzerland, it will be seen how low is the percentage in Japan.

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*Professor Rein in his work on 'Industrial Japan' much underrates the extent of terracing; he appears not to have seen it in Shikoku, Chiugoku, etc.

The following figures, according to recent statistics, will show how much agricultural land is under cultivation (excepting Hokkaido and Formosa):

	Cho.*	Percentage of whole area.
Land under crops	5,186,148.4	17.0
Forests	16,362,970.4	56.9
Harat† and Pasture	1,731,272.7	1.5

The land under cultivation is divided into «ta» (paddy fields) and «hata» (dry-land fields), the former amounting to 2,822,856.2 cho and the latter to 2,363,292.2 cho. Paddy fields are almost all devoted to rice. But rice is not the only crop which is cultivated in ta, for the climate in the larger part of the country is such that two crops a year can be obtained if the soil is sufficiently drained, indeed the recent government report shows that the area of ta under two crops is 37 per cent. So-called «aftercrops» of rice consist now-a-days mainly of barley; rape cultivation which formerly was extensively practiced being now much decreased, and Gengeso or Rengeso (Astragalus siricus) cultivation, used as green manure, is now being encouraged.

Dry-land fields are more variously cultivated. Their principal use is of course for the cultivation of food crops such as wheat, barley, upland rice, Indian corn, soybean, adzuki, Indian millets, buckwheat, sweet potatoes, potatoes, taro, radish (which is very different from the occidental radish, being much larger and longer), etc. Barley is mainly divided into two varieties, naked and with husk, the former being suited especially for warmer districts and that with husk for colder parts, but as naked barley is easier to handle, its cultivation seems to increase more and more, supplanting common barley. Common barley is much used as food for livestock and for other purposes, but its principal use is for human food; naked barley, on the other hand, being almost exclusively used for human food.

Industrial crops are cultivated with few exceptions, such as i (Juncus effusus) and Shichito i (Cyperus tegetiformis) in dry-land fields. Sugarcane, cotton (which decreased from 55,541 cho in 1895 to 12,870 cho in 1904 on account of the amount of cotton imported), tea plant, ai (Polygonum tinctorium), hemp, tobacco, paper mulberry, rape, sesamun, waxtree, ginseng, lacquer tree, peppermint are the principal industrial crops. The area of crops under cultivation and their productiveness, as returned in the recent census, may be seen from the figures of the following table:

	Cho	Koku
Rice	2,880,714.9	51,430,221
Barley	651,680.8	8,927,025
Naked Barley	690,069.0	6,856,232
Wheat	458,643.2	3,858,991
Awa	213,630.5	1,980,989
Hiye	64,386.7	926,877
Millet	33,899.1	374,390
Buckwheat	167,673.6	1,176,223
Soybean	446,843.9	3,710,459
Adzuki	126,028.1	730,097
		Kwan
Sweet Potato	279,774.3	660,495,079
Potato	47,286.1	81,820,412
Rape	145,553.1	1,019,960
Cotton	12,870.4	*2,820,673
Hemp	15,716.6	2,727,233
Ai	24,662.7	†9,173,055
Tobacco	32,577.8	12,803,863
Tea	50,782.2	7,038,254

One of the most important crops, mulberry, is estimated at 324,941.6 cho, and the number of lacquer trees is 2,630,656 (lacquer 50,341 Kwan.)

On dry-land fields, two crops may generally be taken and even three crops a year are not exceptional, especially in the warmer provinces. It may be remarked that most cereals can be, and indeed are, generally cultivated year after year in succession without fallowing, not only on paddy fields, but also on dry-land fields. Indeed rotation of crops is not much practiced unless it is absolutely necessary with certain crops which will not bear cultivation successively. At present the area of fruit trees is undoubtedly fast increasing, among which may be mentioned mikan or Japanese oranges, pears, peaches, Kaki (Diosporya Kaki) apples, grapes, etc. Apples were introduced in the beginning of the Meiji era, and they are extensively cultivated, especially in the northeastern provinces and Hokkaido, though unfortunately on account of downy aphis they suffer much damage, and in some districts their cultivation has been entirely given up. Vegetables and flowers are much cultivated especially in the vicinity of towns and cities, but not within enclosure as in Europe, market gardens being all in open fields and cannot be distinguished from common farms. There are special gardens, commonly within enclosures, where specialists called Wuyekiya (tree growers) raise ornamental trees and shrubs, flowers, special dwarf trees in pots, etc. These gardeners are distinguished from agriculturists.

3. Agricultural Implements.—Under so small and so intensive a farming, it is no wonder that the implements used are so simple and so rude. The plow (Karasuki) «resembles in its commonest form that of Egypt, which is made and used to-day just as in the time of the Pharaohs.» This statement by Professor Rein is true, but it is also true that it can cut very deep, even a foot or more, and for making high ridges it is very serviceable. There are many kinds of plows but they are seldom used on dry-land fields, the reason being that the «between crops» and «catch crops» make plowing very difficult; and besides the common forms of plows are not suitable for use on dry-land fields. Even on paddy fields plowing is not general, for there are yet many fields, especially in the northeastern provinces, which are undrained and covered with water the year round.

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*One cho equals 2.5 acres.

†Grassland for forage and for manure is but very little used.

*With seed. †Leaf.

Instead of the harrow, farmers use «maguwa,» which is a kind of rake. Except the plow, harrow, and the carts sometimes used, there are almost no agricultural implements used with the horse.

A hand implement for digging extensively used is «Kuwa,» which is often erroneously translated hoe, but which may be properly named a broad-shared mattock. Kuwa is the simplest and most serviceable of all implements. With it the farmer can dig, break clods, pulverize the soil, even press the surface, make high ridges and small and shallow furrows for sowing in rows , cultivate between the rows, dig holes, etc. One of its kind named «Bitschukuwa» has its share divided into three or four teeth, and is used to dig paddy fields when wet. Spades are used in some of the districts.

An implement especially constructed to cultivate between rice is named «Ganzume,» and has long curved teeth and a short handle. Harvesting is done entirely with a sickle (Kama). Cereals are threshed generally with a comb-like implement something like a flax rippler) «inekogi» or «mugikogi.» Grains are chaffed with a specially constructed mill (momisuri-usu.)

4. *Principal Manures.*—From remote ages Japanese farmers have understood how to preserve the soil from exhaustion by using manure. The manure par excellence was and is human excrement. The water closet is generally provided with two earthen jars, one to receive the excrement and another to receive the urine. Farmers reserve these two excreta, mixing both in a large earthen jar or tub, lightly roofing over to exclude rainwater and sunshine. After they have rotted and the urea is changed into ammonia, they are diluted with a large quantity of water and are spread upon the soil. They are often mixed in making compost.

Green manures are largely used, the most common form being grass cut from natural meadows called «magusaba,» or from undergrass in forests; buds, young leaves and shoots of forest trees are also used. «Genge» and soybean are often sown in paddy fields and plowed in as green manure.

Compost manure also plays a great rôle. It is of many kinds, the principal of which is made of farmyard manure, often with a large quantity of grass used as litter. Compost is also made of earth mixed with dead leaves from forests. In districts where farming is intensively conducted, compost is carefully made in a small hut especially constructed for the purpose.

Rape cake is extensively used and was formerly the only manure to be bought. It has now decreased to some extent, but its place is more than replaced by soybean cake imported from China and Corea. Fish manures are extensively used, the principal of which is herring cake, dried sardine and sardine cake.

Rice cleanings are used as manure as well as for food for livestock. Wood and straw ashes are extensively used, being the only potash manure. Lime is much used, especially in paddy fields in the warmer half of the country, but as great harm is done by a too free application of lime, some local governments prohibit its use.

Artificial manures are now extensively used, and many factories have been established to manufacture them, phosphatic minerals being chiefly imported from America. Phosphatic guanos from various islands are also used in manufacturing superphosphate. Superphosphate alone, or with ammonia and potash salts, is sold under the name of artificial manure, complete manure, etc. Farmers in some provinces are now trying ammonia sulphate as manure.

5. *Livestock.*—Cattle and horses are as yet not so numerous as in occidental countries, and meat, milk, butter and cheese are not so extensively used. Milch cows are not kept by farmers, but by special dairy establishments, all food for these cows having to be purchased. Japanese cows have very poor milking quality, so that these dairy establishments depend entirely upon occidental breeds such as Holstein, Ayrshire, Jersey, Swiss Brown, etc. Japanese breeds are very small but very good as working animals and farmers generally use cows instead of oxen. Their meat has a most excellent flavor.

More horses than cattle are used in agriculture, but they are small in size and of primitive breed. The number of cattle and horses is as follows: cattle, 1,200,135 (cows, 762,246; bulls, 437,889; milch cows, 30,852); horses, 1,390,017. Cattle used in cultivation, 952,775 (46.83 per cent.); horses used in cultivation, 1,082,895 (53.17 per cent.). Livestock other than cattle and horses are exceedingly small in number. Sheep were introduced some 32 years ago but without much success, the result barely showing that, notwithstanding the humidity of the climate, they can be raised. The raising of pigs is being much encouraged, and the industry is increasing rapidly. Recent statistics give numbers as follows: sheep, 2,769; goats, 67,972; pigs, 191,952.

Fowls are extensively kept by small farmers. Many varieties were introduced at various times during the Tokugawa shogunate but little care was given to breeding, and they all seem to have greatly degenerated. Great attention, however, is now being paid to breeding and many new varieties are being introduced, but generally speaking, fowl-raising is not yet well understood by farmers, and although quite a large number is kept, something like 1,000,000 yen of fowl eggs is imported every year from China. Duck-raising is not given much attention. Bees are kept in a few districts to some extent, but the art of keeping bees is yet in a very backward condition.

One of the most important industries of Japan is the silk industry, sericulture being extensively conducted by small farmers, who have plenty of labor well suited to it. Silkworms are mainly divided into two kinds, common silkworms and wild silkworms, the former of which is raised within the house and is the principal one. The eggs, or graines, are raised principally by specialists, the art being a very difficult one. The egg raisers have generally a very large house specially constructed and well fitted for sericulture. Farmers, on the other hand, generally use one or more rooms of their houses which they can spare during the season. Farmers often raise silkworms two or three times a year, and plant mulberry trees in plantations, around the fields, on road sides or near their dwellings.

6. *General Features of Japanese Agriculture.*—Japan with her oceanic climate, being located within the boundary of the monsoon, is well suited to rice cultivation, especially in the warmer portion. In the colder section, though rice is also the principal crop, its cultivation extending up to 43° 30′ N. lat., it is rather a risky crop owing to the shortness of summer—hot weather not lasting long enough for its maturing. The wheat and barley crops are also exceedingly risky, for during harvest time, which may be anywhere between the end of May and the beginning of July, the season is liable to be very wet.

Soils vary greatly, often changing within a mile. One kind of soil which deserves special notice contains a large percentage of volcanic ash, very light, with high water capacity and great absorptive power, and occurs to a large extent in Kuwanto and Kiushiu. As a rule, soils are not very rich, and need to be carefully cultivated and well manured.

With such climate and soils, combined with the mountainous character of the country, farming on a large scale cannot be profitable, which accounts for the small farms, the holdings on an average not being more than one cho, or 2.5 acres. Farms of more than five cho are rare exceptions.

Though there are many landlords in Japan, the land is much more equally distributed than in some parts of Europe. Nevertheless farmers cultivating small holdings are not all peasant proprietors, tenancy being by no means rare, which may be seen from the following table:

	Ta.	Hata.
Farming on own land...	50.21 per cent.	60.93 per cent
Tenancy...............	49.79 " "	39.07 " "

These small farmers have to pay a heavy tax on each acre of land, central and local, and for tenants the rent is exceedingly high. The rent varies of course according to circumstances, but generally speaking it is equal to about one-half to two-thirds of the produce in the case of paddy fields, aftercrops being excluded. The rent is generally paid in kind, rice in the case of paddy fields; soybean, barley, or sometimes money, in the case of dry-land fields. Almost no metayage is known, and the tenancy is such that the rent is fixed according to custom, its value changing only very gradually. Owing to various historical causes and also to the fact that paddy fields if not well drained are unsuitable for the erection of buildings, the houses, which often serve both as dwellings and farm buildings, or which are in close connection with the latter, are grouped together into villages or built along the roadside. There are almost no enclosed farms with buildings in the centre, and it is very difficult to make students in Japan understand the meaning of farm in the occidental sense of the word. Paddy and dry-land fields are divided into small parcels, side by side, having no fences, the paddy fields being separated by small ridges designed to hold the water of irrigation on the surface. Each parcel has its owner, but the fields being scattered involves a great drawback to the economy of labor.

These small farmers, often with less than one cho of land, frequently cultivate only one crop of rice, which is sown in sudbeds at the end of April or at the beginning of May and planted in the month of June. The harvest time is from September till November. Where two crops are obtained, the field is cultivated soon after the harvest, and harvest time comes just before rice planting. The farmer's working days are therefore very unequally distributed. Where they have to cultivate dry-land fields their labor is more equally distributed, but then the acreage they have to manage is so small that the work on the farm is not enough for the full employment of their labor, and their income is naturally often not enough to live upon. So the farmers are obliged to resort to various industries other than farming. Formerly the farmers had to spin and weave their own clothes, but now that this is being done by factories, they have to seek other industries, such as sericulture, silk reeling, tea culture, mat making, sugar manufacture, starch manufacture, weaving rice straw mat, making strawplait from barley, weaving cotton and silk goods as commercial articles, making baskets from bamboo stem, and making wood shaving plait. Keeping fowls and swine must be enumerated among these by-industries of Japanese farmers; also forest culture to obtain material to make charcoal, wooden articles, etc.

Small farmers sell their labor to large farmers, or to factories if any such exists in the neighborhood, or seek employment elsewhere. These small farmers, 55 per cent. of whom cultivate below eight tan, with plenty of labor, must naturally farm their land in the most intensive manner possible, thoroughly cultivating, weeding, manuring, which may fairly be designated as gardening. Indeed in rice culture farmers spend some 20 to 25 days' labor per tan, which is equal to 80 or 100 days' labor per acre. For other cereals some 15 days must be allowed per tan. It would seem that the product should be very large. But the statistics show but an ordinary average. For example, rice gives, on an average, about 1.5 koku of husked grain per tan, which is equal to about 30 bushels per acre; barley little less than 1.3 koku or 26 bushels per acre; wheat little more than 0.86 koku or 17 bushels per acre, which certainly are not good crops. The figures quoted above may be too low; on the other hand, even very poor soils are sometimes cultivated by industrious farmers year after year successively without fallowing, as already shown. The climate also is not suited to barley and wheat. These facts must lower the average. So that if we take a medium crop at two to three koku per tan for rice (40 to 60 bushels per acre), or even four koku per tan (90 bushels per acre), in very good soil, and two to three koku per tan for barley, we are probably more nearly right as regards the product of intensive farming.

Notwithstanding such intensive farming, land population is too dense, and small farmers can hardly subsist, especially those who hire the land under the burden of heavy rent, and those who live in the colder districts. Immigration, inland and abroad, and employment elsewhere are depended on to obviate the bad conditions, but improvement in agriculture and more extended employment in by-industries are absolutely necessary to these farmers.

7. *Recent Progress of Agriculture.*—With the downfall of the Shogunate and the opening of the country to foreign intercourse, great changes began to take place everywhere, both in political and in economical spheres. Under the influence of foreign trade and industrial development at home, the farmers lost some by-industries, such as spinning and weaving, and some of their crops declined, as cotton, rape, soybean, ai, hemp, etc., but in many branches there has been great development and progress, as in sericulture and the tea industry, as the government statistics show.

The silk industry was formerly restricted to a few localities, but the export of raw silk has become so extensive that there is now almost no locality without some production of cocoons. So also with the tea industry. Tea was formerly produced in various localities, but had very small market. When, however, it found a foreign market its increase was very rapid, although there seems at present an overproduction, while the silk industry seems to have no limit for its expansion. The following figures will show the progress in these two important industries:

Years.	Cocoons; koku (average per year).	Tea, kwan (average per year).
1886-1895	1,302,845.4	5,596,588.8
1896-1904	2,399,294.2	7,669,592.1

The production of rice has undoubtedly increased very greatly, but the statistics show only very small increase in the acreage of rice culture and in the amount of production, which may be seen from the following table:

Years.	Acreage in average per year, Cho.	Production in husked rice average per yr., Koku.
1886-1895	2,704,064.2	38,244,157.7
1896-1904	2,828,740.1	42,954,300.0

But when we remember that some 20 years ago 2.5 koku per tan was considered a tolerably good harvest, in the same districts less than three koku is not considered a good crop at present, and the harvest of four koku per tan is not rare. And we may conclude the progress is much larger than is shown by the above statistics, for in recent years many good kinds of new crops and new varieties have been introduced, and the quantity of manure used has been exceedingly large, the demand for which could not be satisfied without importing large quantities from abroad each year, amounting to more than 10,000,000 yen.

Efforts have successfully been made to introduce many good breeds of livestock from Europe and America, especially cattle for dairy purposes. Great improvement is noticed in the breeds of fowls, good breeds being largely introduced from abroad.

Farmers are becoming aware of the value and usefulness of science, and under the guidance of experts, directly or indirectly, they are making a gradual but constant improvement, which must of course result in increased production. Governments, central and local, are making constant effort to introduce improvements in agriculture and assist the farmer.

Agricultural education is encouraged. Agricultural instructions are given in the higher primary schools of villages and there are more than 1,000 supplementary schools for agriculture, after the method of the Fortbildingsschool of Germany. Agricultural schools are divided into two classes, higher and lower, almost every prefecture having one or more of the former, and various counties having the latter; special schools, especially for sericulture and veterinary, not being wanting. There are at present three higher agricultural schools, two government establishments, and one private school in Tokyo established by the Agricultural Society of Japan. One of these in Hokkaido is now being promoted into an agricultural college of a new Imperial university which is to be established, while a new higher agricultural school will be established in Kiushiu. There is at present one agricultural college in the Tokyo University. This college has two courses of different grades, one of which is subsidiary in grade to the higher agricultural schools and the other course is intended for the training of teachers of agriculture. Agricultural courses are given in the common and higher normal schools. Local agricultural schools receive aid from the national funds. Agricultural courses of a few weeks are being given in various places of every prefecture. Lectures for farmers are well attended and show excellent results.

There are two sericultural institutes established by the government, one is in Tokyo, the other in Kioto, in which investigations on sericultural matters (in the former also on silk reeling) are made, and higher instruction on this branch of industry is given. Similar institutes, but local and lower in grade, number more than 600.

Experiment stations are many. One central station with its branch stations is supported by government, its work being divided into the following branches: (1) Agriculture proper; (2) Agricultural chemistry; (3) Agronomy; (4) Vegetable pathology; (5) Entomology; (6) Cattle feeding; (7) Tobacco culture; (8) Horticulture; (9) Tea industry. Almost every prefecture has an experiment station, aid being given from the national fund; many countries and villages have trial fields.

Agricultural societies are divided into village societies, county societies and prefecture societies, there being one in every prefecture, in every county, in nearly all villages according to the law relating to agricultural societies, and aid is given from the national fund and often from local governments, counties and villages. There are also many general and special societies aside from those established according to the law relating to agricultural associations.

Prefectures and counties often employ agricultural, dendrological, sericultural and other experts to give free lectures to farmers, and the central and local governments often hold industrial and agricultural exhibitions.

The government is now making a great effort to promote co-operative associations, including a credit corporation. These corporations are all exceedingly important for the small farmers of Japan and they now number 2,455. Besides the law passed in 1900 relating to agricultural and industrial corporations, there exists a law relating to associations for important products, a law relating to livestock breeding associations, and a law relating to tea industry associations, all of which seek to promote these respective industries on the basis of co-operative principles. Great efforts are also being made to promote sericulture by giving special instruction, and a law has been passed to prevent silkworm diseases by securing to the farmer good and sound eggs.

Among the means to promote the improvement of livestock, large pasture has been established in the Imperial domains where good breeds of horses and cattle are raised. The government has also established two stud farms and nine stallion depots, one cattle-breeding farm, with its branch depot where swine and fowls are kept for breeding purposes. Laws have been passed as follows: for the inspection of stallions (1897); for the prevention of animal plagues (1896); and for the prevention of bovine tuberculosis (1901).

Preventive and destructive means against injurious insects are under the guidance of experts and are gradually coming into use among farmers. A law designed to enforce, when necessary, the means for prevention was passed in 1896.

To prevent fraud in artificial manures, a law was passed providing for the supervision of all commercial fertilizers and each prefecture has a chemical laboratory to analyze the manure whenever requested. Besides credit corporations to provide small capital, the government has established the Industrial Bank of Japan, which is a central and special *credit foncier*, and local agricultural and industrial banks of similar nature. These banks lend capital for agricultural and other industries on mortgage, allowing a low interest on a long term.

Land improvements are now going on very rapidly with the aid of the national and local funds, especially to promote drainage and irrigation in paddy fields and to overcome the small size and irregular form of the land parcels, which has been a great drawback in tilling operations. To this end the law relating to adjustment of farm lands was promulgated in 1899. Finally it may be stated that many agricultural products are feeling the pressure from without, on account of the keen competition, which may result in reduced prices. Some think that sooner or later Japanese agriculture will be conducted on a large scale, but those who know the climate and the contour of the country do not believe that Japanese farming could be organized on the occidental large farming system. TOKIYOSHI YOKOI,

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15. Japan—Internal Improvements; Communications and Transportations. *Posts.*—Letter Post.—Though in an imperfect form, the mail service had long existed in Japan. In the Shogunate dynasty the official letters were regularly carried between the capital and the provinces, and it was then that the private post service was first brought to existence. On the advent of the Imperial Government, it was decided to run the postal service modelled on the western system as an official undertaking, and consequently, in January 1871, the new postal service system was promulgated. Postage stamps were issued at the same time. In the following year, the business was extended almost over the whole Empire, and people were forbidden to engage in the business of the transmission and delivery of letters; the state monopoly of the letter post was now settled firmly. In 1873, the postal fee was made uniform irrespective of distance, and after a little while postcards and wrappers were issued.

In the same year, the Post Exchange Contract was concluded with the United States of America. Up to this time, the foreign mail service could be carried on by the Japanese Government only through the Postal Agencies of Great Britain, the United States and France, which were actually conducting postal business in the open ports of Japan: Yokohama, Kobé and Nagasaki. On 1 Jan. 1875, the United States' post offices established in Japan were closed, and all of the rest of the foreign postal agencies in the country were abolished by 1880. In the year 1876, a Japanese postoffice was opened at Shanghai, China; since then a large number of Japanese postal offices have been set up in China and Korea.

Thus, the service being carried on progressively and effectively, the Government entered into the Universal Postal Union in June 1877, just two years after the formation of the Union. In 1886, the business, together with the telegraph service, came under the control of the Department of Communications, and it was at the same time that the telegraph service, which had been previously under the control of the Department of Public Works, was transferred to postoffices specially established; the object, of course, being to conduct them more effectively and economically.

As to the adminstrative system of the local postoffices, Japan experienced several kinds, but at last in 1893, the problem was settled; the whole country was divided into 18 postal districts, each one having in it one so-called First Class Post Office, which, on the one hand controlled the services at all the postoffices existing in its jurisdiction, and on the other, attended to the matters of ordinary post and telegraph services; and this system has been in use since that time.

As soon as the China-Japan War began (1894), a Field Postal Service was established, dependent upon the orders of the Department of Communications, and the service proved an inestimable boon to the military and naval forces. In October 1900, the present Postal Law was published superseding the Postal Regulations, which had proved inadequate. The principle declaring the postal service to be a government monopoly was set forth with great distinctness by this law, the secrecy of letters was guarded with greater strictness, the reimbursement in case of damage or loss, that had previously been confined to parcels with value declared, was extended in scope and made to include many other kinds of mail matter. At the same time, the letter cards were newly issued, and the system of private cards and the collection of cash system were instituted.

During the recent war with Russia, the field post service was carried on again to a great extent, while all of the letters and money orders intended for Russian prisoners, or despatched by them, were sent free of postal rates.

In 1904, the postal service in Korea, together with the telegraph business in the country, was entrusted to the Japanese Government, and this service is now under the control of the Resident General in Seoul.

Parcel Post.—This service was, in the year of its inception (1892), confined only to the postoffices situated in the principal cities. But it was gradually extended, and since 1900, postoffices that handle ordinary mail have undertaken the parcel service as well. The rates were revised in 1902, and one charge was ordered for the same weight irrespective of distance, except in case of city mails.

Postal Money Orders.—The postal money order system was inaugurated in 1875, about four years later than the general post service. Ten years afterwards, the principle embodied in the system was extended to the telegraph service, and at the same time, the petty money order system was inaugurated. In the year 1900, all of the postoffices were made to deal with this business even on Sundays and other holidays. By this time the foreign postal money order system had been established; and in Japan one is now enabled to send or receive money to or from almost any country in the world. The system of paying money orders at residences, and of transferring them by means of crossing, was provided long ago.

Year	Posts								Money Orders					Savings Banks	
	Number of mail matters (in millions)					Number of post offices	Receipts and expenditures (in thousand yen)		Amounts of money (in thousand yen)			Receipts and expenditures (in thousand yen)		Deposits (in thousand yen)	Depositors (in thousand)
	Ordinary				Parc'ls				Domestic	Foreign					
	Letter	Card	Others	Total			R.	E.	Issued	Issued	Paid	R.	E.		
1894	98	191	86	375	1	4,250	4,925	3,174	34	79	379	260	295	25,865	1,108
1899	152	331	118	601	6	4,447	10,404	7,427	63	135	1,547	519	754	23,411	1,396
1902	208	483	164	857	10	5,485	13,293	9,531	88	239	3,819	816	837	29,554	2,859
1903	212	489	168	869	10	5,898	13,901	9,854	93	268	4,355	883	883	31,644	3,501
1904	258	563	204	1,025	12	6,078	15,992	9,539	115	326	4,646	1,030	862	41,236	4,908
1905	302	656	221	1,189	13	6,237	19,715	9,857	146	344	6,996	1,604	673	58,331	6,145

Postal Savings Bank.—This institution was non-existent in Japan until lately. But after half a year's practice in Tokyo, the service was immediately extended throughout the country in December 1875. Each person is now allowed to deposit an amount up to 1,000 yen; provided he keeps a deposit exceeding the regulation limit by the way of purchasing government loan bonds in the custody of the postoffice. The rate of interest is 5.04 per cent. per annum.

The Postal Check System.—This was introduced in April 1906, and proved a great convenience in the monetary transactions.

Telegraphs.—The introduction of the telegraph instrument into Japan took place in 1853, when two sets of the implement were presented by Commodore Perry to the Tokugawa Shogunate. But it was in 1868 that Japan possessed for the first time the service of the telegraph. In 1873, the Telegraph Code and the Telegraph Service Rules were promulgated, placing the service on a regular basis. At the outbreak of the civil war in Kyushu, the service demonstrated with convincing efficacy its usefulness and importance, and after that the progress of the business in Japan was very rapid.

In 1871, the Japanese Government approached the Great Northern Telegraph Company, and induced it to lay cables connecting Nagasaki with Shanghai and Vladivostock, and 12 years afterwards an agreement was entered into between Japan and Korea for laying the Japan-Korea Cable, the work of which was undertaken by the above mentioned company. At that time Japan was still obliged to depend upon the service of foreigners in the work of cable laying, though, in the course of time Japanese experts became fully qualified for it, and now all the work of telegraphic engineering is undertaken by Japanese.

Thus, the telegraph service in Japan being in a state of satisfactory development, Japan joined the International Telegraph Convention in 1879, and in 1884 entered the International League for the Protection of Submarine Cables. The Telegraph Code and the Service Regulations were revised in 1885, and uniform charges were made, except on telegrams sent within a town and those despatched or received in Iki and Tsushima Islands, where, in those days, the messages were sent by the cables of the Great Northern Telegraph Company.

The China-Japan War supplied an unusual occasion for displaying the efficiency of the service. The lines for the use of the army were specially constructed through the interior of Korea, and also new lines were greatly extended in the homeland. The termination of the war and the annexation of Formosa were signalized both by the laying of a cable between it and Japan proper, and the purchase of the cable connecting the island and Fuchow from the Chinese Government.

During the recent war with Russia a great sum was spent in extending the land lines and inland cables, and it is needless to add that the progress of the business since the termination of the war is quite marvellous.

With the opening of the San Francisco-Manilla Cable, and of the Tokyo-Guam Cable in 1906, the transmission of telegrams between Japan and Europe and America is no longer necessarily wired via Shanghai or Vladivostock. Japan has occupied, as far as the telegraph service is concerned, a central position linking together the two hemispheres of the world.

Telephones.—At the time of the introduction of the telephone into Japan, there was talk of leaving the business to private enterprise, but this idea was given up, and it was decided that this service should be undertaken by the Government. In December 1890, the telephone service was opened in Tokyo and in Yokohama and also between the two cities. At first, people did not appreciate the benefits of the service, and the number of subscribers was extremely limited. However, this state of affairs lasted only for a short time, for when the service was opened in Osaka and in Kobé and between these two towns in 1893, many other cities petitioned the central authorities requesting that a telephone exchange should be opened in their districts.

The service developed step by step parallel with the growth of economical conditions in the country. In 1897, and again in 1906, Telephone Exchange Rules were revised, and in 1899, the long distance service was opened between Tokyo, Yokohama, Osaka, Kioto and other cities.

The progress of the service, since the peace with Russia in 1905, is quite noticeable; but still the telephone business in Japan cannot yet be said to be in a very satisfactory condition when compared with Europe or America.

YEAR.	TELEGRAPH.							TELEPHONE.							
	Number of telegraph offices	Length of telegraph routes (in Japanese ri)		Total length of lines and cables. (in ri)	Number of domestic telegrams (in thousands)	Receipts and expenditures (thous'nd yen)		Number of cities having call offices	Number of call offices	Number of subscribers	Number of non-connected subscribers	L'ngth of routes (in ri)	L'ngth of lines (in ri)	Receipts and expenditures (in thousand yen)	
		Land lines	Subm. cables			R.	E.							R.	E.
1894	759	3,846	....	....	8,120	2,185	2,196	4	24	2,843	2,808	176	1,887	132	75
1899	1,447	5,688	846	25,302	14,102	3,753	3,442	11	48	11,813	15,002	640	18,167	1,035	630
1902	2,192	6,608	1,004	33,778	17,212	4,314	4,486	47	285	29,941	23,352	1,076	43,360	2,263	1,273
1903	2,493	6.755	1,025	34,657	18,427	4,907	4,070	84	327	35,013	21,033	1,217	46,484	2,671	1,882
1904	2,546	6,748	1,045	36,398	19,865	6,104	3,929	87	330	35,528	22,039	1,357	49,679	2,913	1,477
1905	2,600	6,845	1,056	37,144	22,621	6,456	3,612	..	340	36,821	28,914	1,361	51,046	3,111	1,179

Shipping and Navigation.—The reason why a maritime country like Japan remained so long without making any substantial progress in navigation may fairly be attributed to the prohibition by the Tokugawa Government, about 300 years ago, of the construction of ocean-going vessels, in order to cut off intercourse with foreign nations. The effect of this policy upon the spirit of enterprise, so far as navigation is concerned, was not wholly swept away after the Restoration. In 1869 and 1870, the Government made repeated announcements to encourage and to protect maritime undertakings. In consequence, a navigation company named the Kaiso Kaisha was established, being the pioneer in the maritime enterprise with vessels of foreign form of construction in Japan. The Government supported the company, granting a certain number of vessels, and then a regular coasting navigation was established for the first time in Japan. In 1872, the said company was dissolved and a new company, called the Japan Mail Steamship Company, was created in its place.

After the expedition against Formosa in 1874, the Government turned over to Mitsubishi & Company a certain number of foreign-built steamers, and accordingly, that company not only established a regular coasting service, but extended it to Shanghai in the following year. When the Japan Mail Steamship Company ceased to exist, the Government purchased the vessels owned by the company and transferred them to Mitsubishi & Company, who succeeded to the business of the former, altering its name to Mitsubishi Steamship Company. Since then, by the aid of Government subsidy, the routes of the company have been extended to Newchang, Tientsin, Chefoo in China, Vladivostock in Russia, and Fusan and Gensan in Korea. In 1882, the Government established the Kyodo Unyu Kaisha (Union Steamship Company) with a capital of 6,000,000 yen. After a disastrous competition, the Kyodo Unyu Kaisha and Mitsubishi Steamship Company were amalgamated into one company in 1885; the new company being called the Nippon Yusen Kaisha, and it continues to the present time. The Government guaranteed the rate of profit of this company during the first 15 years after its establishment. In 1887 the guaranteeing of profit was altered into granting a certain fixed amount of subsidy. In 1884 the Osaka Shosen Kaisha (Osaka Merchant Shipping Company) was established, and afterwards, receiving the Government subsidy for some years, carried the regular coasting service. Thus at the end of 1893 there were 680 steamers of 176,915 tons and 746 sailing vessels of 48,303 tons, making a total of 1,426 ships registering 225,218 tons.

The war with China in 1894-5 resulted in a great increase of the number of vessels, which were used in opening several new lines. At the same time, the Government began to encourage the foreign regular service by way of granting subsidies. Accordingly, many new lines were opened, as follows: Yokohama-Adelaide, Yokohama-Bombay, Japan-Europe and Hongkong-Seattle of Nippon Yusen Kaisha; Shanghai-Hankow and Hankow-Ichang of Osaka Shosen Kaisha; Shanghai-Suchow, Shanghai-Hangchow and Suchow-Hangchow of Daito Kisen Kaisha; and Niigata-Vladivostock and Hakodate-Korsakovsk of Oie Hichihei; and Hongkong-San Francisco of Toyo Kisen Kaisha.

Besides the protection given to the special routes, the more comprehensive method of encouraging the shipping trade in general was adopted in 1896 by the Law of Encouraging Navigation. According to this law, a bounty at the rate of 25 sen per ton per 1,000 miles covered was granted to Japanese shipowners engaging in the business of transportation of goods and passengers, with an iron or steel steamer of 1,000 tons gross and having maximum speed of 10 knots per hour, either between various foreign ports or between ports of Japan and those of foreign countries. Henceforth, shipping made rapid progress, so that at the end of 1903 there were 1,570 steamers of 663,220 tons and 3,934 sailing vessels of 328,953 tons, —a four-fold increase during the interval of 10 years.

The Japan-Russia War necessitated a great number of vessels for transport. Foreign vessels were bought, and special permission was given to use foreign vessels in the coasting trade. After the war, the increased bottoms were used in carrying foreign trade more efficiently.

Shipbuilding.—With only imperfect experience and insufficient materials, Japanese shipbuilders could at first build only sailing ships and small steamers, so that Japan had to depend on foreign shipyards, whenever any large steamers were to be built. The Government being eager to encourage home shipbuilding, the Shipbuilding Encouraging Law was promulgated in March, 1896. By this law, a bounty is granted, at the rate of 12 yen per ton gross in case of vessels of not less than 700 but less than 1,000 tons gross, and 20 yen per ton gross in case of and above 1,000 tons gross, to ships of iron or steel, constructed in accordance with the provisions of the Shipbuilding Regulation. Besides, an additional bounty of 5 yen per indicated horsepower is granted in cases where engines are also manufactured. Moreover, the Law of Encouraging Navigation provides that ships built in Japan are entitled to more bounty than those built at foreign shipyards.

THE NUMBER AND GROSS TONNAGE OF VESSELS

At the end of	Steamers		Sailing vessels		Total	
	No.	Gr. ton	No.	Gr. ton	No.	Gr. ton
1885	461	95,975	509	57,292	970	153,267
1890	585	150,058	865	54,989	1450	205,047
1895	827	341,369	702	44,794	1529	386,163
1900	1329	543,365	3850	320,572	5179	863,937
1905	1988	939,749	4132	336,571	6120	1,276,320

By these stimulations, the shipbuilding industry made rapid progress, so that two years later, Japanese shipbuilders succeeded in building a large steamer of 6,000 tons, well qualified for ocean navigation. As the provisions of the Shipbuilding Regulations are mainly in accordance with those of English Lloyds, the ships built under these regulations have the same qualifications as those classified in the Classification Societies. At present, ships of large size and warships of high power can be built at home. We may mention, as showing the remarkable progress of shipbuilding in Japan, that the great battleship *Satsuma* was launched at Yokosuka in 1906, and that two Pacific liners of 13.500 tons are now building at Nagasaki which will be finished in 1908.

Lighthouses.—In the Tariff Conventions of 1866, which were concluded respectively with Great Britain, France, United States of America and Holland, Japan agreed to construct lighthouses and other nautical signals, in order to secure the safety of vessels entering or clearing at the open ports of the Empire. Japan immediately started to construct lighthouses, etc., and at first, English engineers and artisans were engaged, and they remained in the service until 1879. Since that time Japanese have performed the work, and a great sum of money is spent every year in constructing nautical signals along the coasts of the whole country.

THE NAUTICAL SIGNALS

		At the end of the year				
		1886	1891	1896	1901	1906
Lights	Light house	125	123	105	124	139
	Staff light	15	14	13	13	16
	Light ship	2	4	2	2	2
	Leading light	..	..	..	1	2
	Lighted buoy	..	..	..	3	16
	Beacon light	..	4	8	10	17
Day marks	Buoy	24	22	23	24	39
	Beacon	33	30	20	19	22
	Fair way mark	26	19	22	22	36
	Land mark	2	..	..	..	..
Fog signals	Siren	2	3	5	7	10
	Bell	2	2	4	4	4
	Explosive	..	..	..	..	4

Docks.—The first dock in Japan was established on a small scale by the Government at Nagasaki. Afterwards, it was purchased by the Mitsubishi firm, under whose management it has developed into the most important dockyard in the Far East. The Third Dock, being the largest one in the establishment, measures 728 feet in length, and can take a ship of more than 20,000 tons with little difficulty. Another important dockyard, Kawasaki Dockyard, is at Kobé. This was also originally established by the government, but afterwards passed into the possession of the private firm. After the war with China there was an urgent demand for docks, owing to the rapid increase of shipping, and docks were constructed at several places; namely Kobé, Yokohama, Uraga, etc. The Mitsubishi Dockyard, built at Kobé in 1905, a floating dock of 7,000 tons lifting power, which is of sectional pontoon type with continuous wall, and in 1907 built a large floating dock of 12,000 tons lifting power. In the Mitsubishi Dockyard at Nagasaki, an experimental tank is being constructed which, when finished, may claim the honor of being the first experimental tank in the East.

Open Ports.—At present, there are 33 ports open to foreign trade: Yokohama, Kobé, Niigata, Ebisuminato, Osaka, Nagasaki, Hakodate, Shimidzu, Taketoyo, Yokkaichi, Itozaki, Shimonoseki, Moji, Wakamatsu, Hakata, Karatsu, Suminoye, Kuchinotsu, Misumi, Itsuhara, Sasuna, Shikami, Naha, Hamada, Sakai, Miyatsu, Tsuruga, Nanao, Fushiki, Aomori, Otaru, Kujiro and Muroran. Of these, Yokohama Kobé, Nagasaki and Moji are placed under the Harbor Regulation.

The following table shows the number and tonnage of the ships entered and cleared at these four ports in three years.

		1903		1904		1905	
		No.	Gross ton	No.	Gross ton	No.	Gross ton
Yokohoma	Entered	3147	6,452,237	2817	5,862,652	2987	7,223,444
	Left	3117	6,110,882	2835	5,883,544	3018	7,197,304
Kobe	Entered	15549	12.333,682	12471	10,924,846	11914	12,817,622
	Left	15492	12,494,183	12435	10,870,331	11904	12,891,901
Nagasaki	Entered	6284	4,929,708	4523	3,574,285	4932	4,605,035
	Left	6304	4,864,378	4514	3,539,121	4870	4,555,039
Moji	Entered	5385	8,415,887	6781	12,880,869	7108	13,042,819
	Left	5767	8,420,295	6765	12,856,091	7111	13,068,981

Railways—Construction Work.—In December 1867 the Tokugawa Government planned a scheme for the introduction of a railway system in Japan. But, unfortunately, the Restoration War broke out soon afterwards and retarded every step of civilization. Shortly after the Restoration, the new Government again took up the matter. At this time, however, it was very difficult to raise the necessary capital for any new enterprise, because both the Government and the people were then very poor owing to the war. It was, therefore, after encountering a hard struggle that the Government succeeded in creating the first railway bureau, on 19 March, 1870, afterwards making the decision to construct a line between Tokyo and Kobé (now the Tokaido Railway line). Meantime, a number of English engineers arrived, and they laid out the work. On 7 May 1872, the first train ran through from Tokyo to Yokohama, and two years later, there was a line open for traffic in the west from Kobé to Osaka, a distance of 20 miles. In 1877, the western line was extended as far as Kioto, and a few years afterwards Otsu Section was also opened to traffic; so that, at the end of 1880 there were some 58 miles of railway in operation in this district. The excavation work of the Yanagase Tunnel, 4,185 feet in length, located between Nagahama and Tsuruga, and one of the longest tunnels in Japan was completed in November 1883, nearly three and a half years having been spent in its construction.

In the same year, the Nippon Railway Company, the pioneer private railway company in Japan, opened its first section from Tokyo to Kumagae, a distance of 30 miles. The company, incorporated with a capital of 20,000,000 yen, which has since been increased to 66,000,000 yen, obtained in 1881 a charter for laying a line between Tokyo and Aomori, a distance of 445 miles. It was a rather bold undertaking at that time, for not only did the people lack experience in the work, but no data to form any reliable estimate on profit and loss could be procured. In view of these circumstances, the Government agreed to guarantee a profit within a certain limit, and gave every possible convenience tending to further the work, and at the middle of 1884 the company had a total mileage of 63 miles from Tokyo to Takasaki. At this time, the Government was also busily engaged in extending the Tokaido Line to Ogaki, which was opened in April of the same year.

In December 1887, the third section of the Nippon Railway Company was completed as far as Sendai, which is situated about 220 miles north from Tokyo. In 1888, the Sanyo Railway Company was organized with a capital of 13,000,000 yen, which was later increased to 36,000,000 yen. This company's route, running from Kobé to Shimonoseki, a distance of 329 miles, enjoys the distinction of being the most picturesque in Japan. In November of the same year, the first section of the route, from Kobé to Himeji, was opened. In the following year, the Kyushu Railway Company, the pioneer on the island of Kyushu, opened its first section from Hakata to Kurume, a distance of 22 miles. This company was incorporated with a capital of 16,500,000 yen, but, as the result of the absorption of several companies, it has since increased its funds to 62,000,000 yen. The company was originally authorized to construct a line from Moji to Yatsushiro, a distance of 143 miles, and soon afterwards it was chartered to extend its line to Nagasaki with several branches. In the meantime, the Government, recognizing the importance of a more complete system of railways, undertook to build the Northern Line. Its route begins at Takasaki and passing through the Usui mountain reaches Naoyetsu, 117 miles. This section was not opened till 1 April 1893, owing to the numerous engineering difficulties. The nature of the work on this route will be realized when it is stated that no fewer than 26 tunnels had to be excavated; a ratio of four per mile. This was, indeed, the first rack railway constructed in Japan, worked by the Abt System. On the other hand, the Government continued to extend its line by the Tokaido way, and in 1887, the eastward line, from Ogaki to Hamamatsu, and the westward line, from Yokohama to Kodzu, were opened. The through connection between Yokohama and Kobé, a distance of 358 miles, was satisfactorily effected, 16 April 1889.

During 1890, various sections of private railways were completed, and the Hokkaido Government Railway extending from Temiya to Horonai, 62 miles in length, was transferred to the Hokkaido Colliery Railway Company, a private enterprise. A few years later, the trunk line of the company was extended to Port Muroran with two branches, a total distance of 60 miles; while the Government built some 160 miles in other divisions. At this time, the Kanson Railway, now the Hokkaido Railway, was organized with a capital of 6,000,000 yen, for the purpose of building a line of 158 miles between Hakodate and Otaru, and the line was completed in October 1904. During the three years from 1886 to 1888, railway undertakings were remarkably active, and many small companies were incorporated, but in the year 1889, the failure of the harvest caused a great business depression, and all new projects were suspended. But at the close of 1891, the Kyushu Railway was opened as far as Saga, and the Sanyo Railway to Onomichi, while the Nippon Railway finished its through communication from Tokyo to Aomori.

In June 1892, the Law of Railway Construction was promulgated, prescribing the route along which Government railways were to be built, and those lines that required more rapid construction were set apart to be developed under the First Period Construction Programme. These lines extended altogether over 1,900 miles approximately, and their construction work had to be completed in 12 years from commencement. Under the Second Period Construction Programme the lines omitted from the First Period Construction Programme, were to be completed, extending some 2,525 miles. Toward the end of 1894, the northern section of the Government Ou Railway Line was finished as far as Hirosaki, while the southern section was completed as far as Shinjo. The work on the Central Line also made steady progress, the section from Nagoya to Nakatsu on the western side, and that from Hachioji to Kofu on the eastern side being completed. All these sections were included in the First Period Construction Programme, and now the Government had a total mileage of some 570 miles. Shortly after the China-Japan War, the business boom brought out a large number of railway schemes, no less than 42 companies being formed simultaneously in the western part of the Empire.

At the end of the y'r	Line open miles	Cost of construction (thou. yen)	Passengers No.	Goods tons	Total receipts (thou. yen)	Total expen. (thou. yen)	Net earnings (thou. yen)	Rolling Stock.	
								Engines No.	Cars No.
1875	38	....	2,754,426	....	644	403	240	32	349
1880	76	....	5,315,382	....	1,555	608	947	36	623
1885	267	17,993	4,538,864	429,877	1,761	839	922	66	1,312
1890	1,267	66,576	22,840,630	1,560,206	7,395	3,552	3,842	254	4,604
1895	2,203	107,945	49,251,577	5,331,412	18,338	7,017	11,320	522	9,334
1900	3,736	276,803	113,710,871	14,401,520	45,059	20,893	24,166	1,279	22,753
1905	4,746	411,559	113,675,403	21,530,064	69,033	32,155	36,877	1,717	32,523

At the close of 1898, Japan possessed 3,420 miles of railways, of which 768 miles were under Government control and the rest worked by private companies, numbering 42 in all. At this time, the Government was busily engaged in building the San-in and Kagoshima lines, both prescribed in the First Period Constructing Programme, and the private companies were active. So that in the year 1906, 34 years after the opening of the Tokyo-Yokohama Line, the Government was in possession of some 1,500 miles of railway, while the private companies extended their lines up to 3,270 miles. On 20 May 1906, a grand banquet was held at Nagoya, for the celebration of the completion of 5,000 miles of railway in Japan. The figures of the following table will indicate the growth of the business in 30 years.

It will be seen from the table that the mileage of Japanese railways has been rapidly increased during past years. In 1878, the number of passengers carried was 2,754,426, whereas in 1905 it was augmented to 113,675,403. During the same period, the volume of goods traffic increased to over 21,000,000 tons, while the total receipts increased from 644,459 to 69,033,165 yen. Thus the growth of traffic has been far beyond the most sanguine expectations and it has contributed to advance the activity of railway enterprises in Japan.

The question of the most suitable gauge for Japanese railways has been a matter of much public discussion, but the standard gauge now generally used is 3 feet 6 inches, while for light railway, which is only 63 miles 62 chains in length at present, 2 feet 6 inches gauge is used.

Legislative Measures.—The first railway regulations were published in February 1872, and they were amended in the following May with the general rules relating to the working of railways. Since then they have been followed by many minor regulations until 1887, when the Regulation of Private Railways was promulgated. Five years later the Law of Railway Construction was enacted. In March 1900, two important railway legislative measures were published: the Private Railway Law and the Law Relating to the Working of Railways, which were put in force on October 1 of that year, abrogating all the regulations prior to the enactments. But the railway legislations of far greater importance were the promulgations in March 1906, of the Railway Nationalization Law and the Law for Purchasing the Seoul-Fusan Railway, in Korea. It will be remembered that the first bill for railway nationalization was introduced in the Diet in 1891, but it failed to get the majority. Early in 1899, the bill again appeared, and it again failed. In the following year a modified bill for the purchase of private railways was introduced in the Diet, but it was annihilated by opposition. In the meanwhile, the Japan-Russia War broke out and all new government schemes, except those directly connected with the war, had to be suspended. Soon after the war the Government took up the matter again, and on March 1906, a bill for the state purchase of railways was introduced in the Diet. Tragic contentions were brought up against the bill, but it finally passed in a modified shape. The following 10 extracts will be read with interest:

1. Railways to be purchased.—All railways constructed for the purpose of general transportation, except those built for communication in limited localities; the following being the names of those to be purchased: Hokkaido Colliery Railway, Hokkaido Railway, Nippon Railway, Ganyetsu Railway, Hokuyetsu Railway, Kobu Railway, Sobu Railway, Boso Railway, Nanao Railway, Kansai Railway, Sangu Railway, Kioto Railway, Nishinari Railway, Hankaku Railway, Sanyo Railway, Tokushima Railway, Kyushu Railway.

2. Time of acquisition.—From time to time during the period between 1906 and 1915.

3. Prices to be paid.—These shall be calculated on the basis of: (a) a figure representing the average rate of profit as against the amount of money disbursed in construction account during six semi-annual business terms, commencing the second half of 1902 and ending the first half of 1905, is to be first of all obtained by actual calculation. This figure is multiplied by the amount of construction disbursement up to the date of purchase. Twenty times the product so obtained is to form the purchase price; (b) an amount of Government Railway Loan Bonds of such face value as to cover the market value of the goods in stock, excepting the goods purchased and not yet paid for. («Profit» mentioned above designates the surplus of the gross earnings over the business expenditures, bonus to staff, and interest on the accounts other than the profit account. The «average ratio of profit» is obtained by doubling the total profits during the six terms mentioned above, and dividing by the total cost of construction during the same periods.)

GROWTH OF JAPANESE RAILWAYS.

YEARS	Number of passengers	Tonnage of goods	Total earnings	Total expenditures
1872	494,570	......	174,930	113,464
1874	2,176,001	20,542	592,671	346,803
1879	4,337,422	163,215	1,243,531	512,674
1884	4,785,556	352,407	1,794,295	779,102
1889	20,792,665	1,031,247	6,224,637	2,689,221
1894	36,523,307	4,283,702	13,622,421	5,337,155
1899	* 102,511,280	* 11,886,763	* 38,650,492	* 19,295,311
1904	* 105,498,907	* 19,604,450	* 60,082,671	* 27,583,948
1905	* 115,613,880	* 21,951,648	* 70,739,591	* 33,395,772

*Includes Formosa Railway.

4. Terms of Purchase.—The price of the railway shall be paid by the Government within five years after the date of purchase with 5 per cent. loan bonds, at face value. And, in addition, 5 per cent. interest on the price of railways shall be paid from the date of purchase pending the delivery of loan bonds.

5. Companies' loans.—All loans spent for construction account to be excluded from the purchase price and to be replaced with the loan bonds valued according to the market price.

6. Companies' rights and obligations.—All rights and obligations, standing at the date of purchase, to be taken over by the Government, except those of additional business. The rights and obligations between the companies and stockholders, the balance of the capital stock, and also the rights and obligations belonging to the income account, reserves, and the miscellaneous account, to be excluded.

7. Companies' additional business.—If the railway company operates any additional business, the Government may purchase the property belonging to that business with the railways.

8. Capital expenditures.—All expenditures for the capital account, except that incurred by the loans, shall be considered as the expenditures for the construction account and good in stock account, and the outlay of loans must always come after the capital expenditures.

9. The companies not having three years business terms or any dividend.—The terms of purchase of railways of such railway companies shall be decided by mutual agreement between the Government and the companies.

10. The appraisers' decision.—Companies are allowed to appeal against the decision of the Government with regard to the price and the rights and obligations of the railways, and in the event of the appraisers' decision being unacceptable, to appeal to the Minister concerned.

Three months after the promulgation of the Law, a railway bureau, called The Temporary Bureau for the Preparation of Railway Nationalization was created, and at the end of the year 1906 the Government was in possession of six railway companies, with a total mileage of about 1,600 miles, which have cost some 250,000,000 yen. At present, therefore there are in Japan 31 railway companies and 1,675 miles of railway lines.

Colonial Railways.—The Formosa Railway, which was ceded to Japan in 1895 by the Chinese Government, is now 260 miles in length, extending from Kelung in the north to Takau in the south, and thus, through connection of the two important seaports of the island is satisfactorily effected. The railways in Korea were completed from Fusan as far as the Yale River, with a total mileage of 609 miles while in Manchuria there are also 486 miles of railway under Japanese influence, running from Port Arthur to the city of Kwangchengtsz, which promises a great extension in the future. In 1905, Southern Saghalien was ceded to Japan as the result of the Portsmouth treaty, and there is being built in this new dominion some 27 miles of light railway, extending from Korsakov to Vladimirov.

The above table shows the rapid and substantial growth of Japanese railways from 1872 to 1905.

Tramways and Electricity.—Tramways originated in Japan about nine years later than the ordinary railway, when, in the year 1880, a company named Tokio Basha Tetsudo Kaisha laid in the metropolis a street tramway for passengers. In 1887-9, tramways, on which carriages were generally drawn by horses, were constructed in various parts of Japan. Consequently, the Tramway Act was promulgated in August 1890, in order to encourage and more effectively control the service in the country. Under this Act, any person or company could be authorized to undertake the building of tramways on the public road, with the consent of the Minister of Civil Affairs. Year by year the number of tramways has been increased, and recently, the advantageousness of electricity as motive power being recognized, the change has been made from horse power to electricity.

TRAMWAYS OPEN FOR TRAFFIC

Year	Motive power	Number of tramway Co.'s	Capital (in thousand yen)		Properties of tramway Co.'s (in thous'nd yen)	Length of tramway lines (in ri)	Number of passengers (in thous)	Business Incomes (thousand yen)	Business Expen. (thousand yen)
			Gross	Paid					
1904	Electric.......	13	34,024	19,732	39,632	92	85,399	2,968	1,483
	Horse.........	30	1,827	1,654	2,084	225	6,085	402	389
	Men..........	10	532	430	636	59	302	100	85
	Total.........	53	36,384	21,817	42,345	377	91,787	3,471	1,959
1902	Electric.......	6	3,825	2,665	4,100	42	9,372	443	274
	Horse.........	25	6,377	4,605	7,574	197	26,169	1,134	759
	Men..........	10	570	450	637	55	218	80	68
	Total.........	41	10,772	7,720	12,312	294	35,760	1,658	1,102

THE EMPLOYMENT OF ELECTRICITY (AT THE END OF 1906)

For transacting business		For domestic uses		For official uses		Total	
No. of employers	Horse-power	No. of employers	Horse-power	No. of employers	Horse-power	No. of employers	Horse-power
140	199,019	429	63,660	34	2,349	603	265,028

There can be no doubt as to the great convenience for electric enterprises in such a country as Japan, where there are many rapids and waterfalls to supply an abundance of electric power, and electric railway enterprises are now flourishing in almost all the provinces of Japan.

Roads and Bridges.—On account of the singular policy of the Tokugawa Shogunates and the feudal nobles, the public highways in Japan were long neglected. After the Restoration, however, the Imperial Government was eager to repair or construct roads and bridges. Thus, at the time of the latest survey of 1902, there were in Japan over 22,900 miles of road suitable for carts, and more than 227,000 miles of village pathways. Roads are now divided into three classes: National highways, Provincial Highways, and Village Pathways. The two former classes are generally maintained by provinces; the last by villages.

At the early part of the Meiji era, there were only a few wooden bridges, but gradually they have been increased in number, and their structure has been much improved. At the end of the year 1902, Japan possessed 80 iron bridges, over 49,000 stone bridges, and more than 210,000 of other construction.

His Excellency, Isaburo Yamagata,
Minister of Communications, Tokyo.

16. **Japan—Banking System.** The progress of the banking system in Japan commenced at the enactment of the National Bank Regulations in 1872. The progress was rapid, and at present, 35 years after the enactment, Japan possesses a complete system of ordinary and savings banks; special banks to minister to the development of foreign exchange, agriculture, commerce and industry; clearing houses, and the different associations, information bureaus, brokerage houses, trust companies, etc., to assist the work of the banks.

Even before the Restoration in 1868, there had been in Japan institutions conducting the work of banks. They received deposits, made loans, issued exchange and commercial bills, and conducted exchequer business for feudal lords and shoguns, thus promoting the economic progress of the country. After the Restoration, establishments called exchange companies were organized, at the instance of the government, at several commercial centres. They also conducted a general banking business and issued gold and silver notes. The constitution of these establishments was, however, not perfect enough to entitle them to the name of banks according to the modern understanding. The banking corporation worthy of the name did not exist in Japan until the national banks were established.

After the Restoration in 1868, the Government sent a deputation to inspect the banking system of foreign countries, for the purpose not only of promoting the financial and industrial prosperity of Japan, but of consolidating the Government paper money, which had been issued to an enormous amount. As the result of this inspection tour, the Government promulgated, in November 1872, the National Bank Regulations, drawn up after the model of the American system. According to the Regulations, the National Banks had to pay six-tenths of their capital to the Government in the Government paper money; to receive in exchange the same amount of public loan bonds; to deposit the bonds with the Government and get permission to issue the same amount of bank notes convertible to gold. The First and three other national banks were established in accordance with the Regulations. At the time, however, the Government had to issue inconvertible notes to meet national expenditure, and the result was that there was a difference in value between paper and hard money. Bank notes issued by the banks were returned to the banks instantly, placing them in serious difficulties. About this time the Government gave public loan bonds to the nobility and samurai class to compensate for the loss of their income. In order to increase the utility of these bonds on the one hand and to relieve the banks of their difficulties on the other, the Government encouraged the organization of new banks, and in 1876 made an amendment to the National Bank Regulations. According to the new Regulations, the amount of notes to be issued by the banks was increased to eight-tenths of their capital. The banks had to deposit the same amount of public loan bonds with the Government as security for their bank notes, which were made convertible with coin. As the result of this amendment, the bank notes heretofore convertible to gold became inconvertible, and the banks were able to get more profits than before. This gave an impetus to the organization of banks, the number of which reached 153 at one time.

Moreover, the Government issued a large amount of paper notes in order to meet the expenses relating to the Satsuma rebellion of 1877, with the result that the amount of inconvertible bank notes greatly increased and their value decreased as compared with hard money.

In order to improve the situation, the Government, after 1877, endeavored to discourage the organization of national banks and to decrease the amount of notes. In 1880, it had the Yokohama Specie Bank established as an organ of foreign exchange and of promoting the importation of specie. In 1882, the Bank of Japan was established after the style of the Central Banks in European states. In the next year, the National Bank Regulations were again amended, prohibiting the existence of national banks on the expiration of their respective terms of business. The privilege to issue notes was taken back from those banks and given to the Bank of Japan. By this amendment, the principle of the unification of paper currency was established, and the national banks, hitherto exercising great influence in the money market, were, one by one, converted into private banks, and in 1899 the national banks had ceased to exist.

The progress of private banks was steady after the Restoration, and their number reached 954 in 1884. At the time, however, the national banks still exercised great power in the money market, and as there was little necessity for the Central Government to exercise strict supervision over other banks, the latter were relegated to the control of local governments. Subsequently, the national banks were converted into private banks, due to the amendment of the National Bank Regulations, as already mentioned, and independent of this, there was a tendency for the steady increase of the number of private banks. To cope with the situation, the Government, in 1890, promulgated the Banking Regulations and the Savings Bank Regulations. These laws were not put in force till 1893, to which date the operation of the Commercial Code was postponed.

These laws constituted almost a perfect system of legislation relating to banks, except with regard to the function of making loans of a long term for agriculture and industry. In order to make good this defect, the Government, in 1896, issued the Law of the Hypothec Bank of Japan and Law of the Farmers' and Mechanics' Banks. The former bank was then established in Tokyo and the latter in Tokyo and in each of the other 45 prefectures.

In 1895, Japan came into possession of Formosa, and in order to improve the monetary conditions in that island, the Government, in 1897, promulgated the Law of the Bank of Formosa. The bank was established in 1899 and conducted the issue of convertible notes and general banking business.

As there was no financial organ for the colonization of Hokkaido, the Government enacted in 1899 the Laws of the Colonial Bank of Hokkaido, and the bank was established in the following year.

Meanwhile the number of various industrial companies in Japan kept increasing, and the amount of shares and debentures issued by these companies reached huge figures. In spite of this fact, Japan had few banks which could make sufficient loans on these shares and debentures. This circumstance being considered detrimental to the progress of the nation's industry, the Government, in 1900, promulgated the Law of the Industrial Bank of Japan, and a bank on the basis of this law was established in 1902.

In view of the increasing number of Japanese banks carrying on their business in foreign countries, the Government, in 1905, promulgated a law for the control of such banks, providing that Imperial Ordinances may be issued for the said control according to the conditions prevailing in the country where the banks are engaged in business. In the same year, an Imperial Ordinance was issued in relation to the Dai-ichi Ginko, Ltd., carrying on its business in Korea. By the ordinance, the bank is authorized to issue bank notes in Korea.

The Yokohama Specie Bank obtained the right to issue bank notes in foreign countries in 1901, and has been exercising that right in China. In 1906 an Imperial Ordinance was issued to control the issue of business of the Yokohama Specie Bank.

SPECIAL BANKS.

1. *The Bank of Japan.*—The Bank of Japan is the central bank of the Empire, established in accordance with the Law of the Bank of Japan. In May 1907, it had a registered capital amounting to 30,000,000 yen, fully paid up, and possessed reserves amounting to 20,750,000 yen. Its business consists of discounting or purchasing public loan bonds and commercial

bills, purchase and sale of gold and silver bullion, making loans on security of gold or silver or of bonds guaranteed by the Government, collection of bills, receiving deposits for safety, and making cash accounts for the State treasury.

The bank has the privilege to issue bank notes convertible to gold coins. In principle the bank has to keep the same amount of gold and silver as conversion fund. But at the same time, it is allowed to substitute the specie reserve with sound bonds to the extent of 120,000,000 yen. In the event of the money market demanding a large amount of currency, the bank, subject to permission by the Government, may issue notes in excess over the legal limit. The excess issue must be, of course, backed by security reserves. In this case, a tax of not less than 5 per cent. per annum is imposed on the amount issued over the legal limit. At the end of May 1907, the amount of convertible notes issued stood at 294,202,480 yen, of which the sum of 139,681,012 yen was backed by specie reserve.

The Government exercises the most strict supervision over the bank, being represented by standing inspectors. The governor and vice-governor of the bank are appointed by the Government, and the bank cannot change its regulations (company contract) and take important measures without permission or sanction of the Minister of Finance.

2. *The Yokohama Specie Bank.*—The Yokohama Specie Bank was established in accordance with the Law of the Yokohama Specie Bank, and its principal object is to conduct foreign exchange business. In May 1907, it had a registered capital amounting to 24,000,000 yen, fully paid up, and reserves amounting to 14,784,861 yen. It has branch offices not only in many places in Japan and Kwantung Province, Manchuria, but in London, Lyons, New York, San Francisco, Hawaii, Bombay, Hongkong, and various points in China. The offices in Kwantung Province and China are allowed by the Government to issue notes convertible to silver, against the reserves of the same amount. The kind of the reserves are ordered by the Government. At present, the bank is ordered to keep specie reserves against more than half of the issue amount, and security reserves for the remainder. The Government supervision over the bank is exercised by permanent inspectors, and the appointment of directors, elected at a general meeting of shareholders, is valid only after being sanctioned by the Minister of Finance. On the whole, the bank is supervised by the Government in the same manner as is the Bank of Japan.

3. *The Hypothec Bank of Japan.*—The object of this bank is to promote the improvement and progress of agriculture and industry, and it mostly makes loans on immovable property. In May 1907, it had a registered capital of 10,000,000 yen, paid up to the extent of 3,250,000 yen, and reserves amounting to 1,372,309 yen. In business, it makes loans to be repaid in annual installments covering not more than 50 years, usually on security of immovable property. It may also make fixed loans on immovable property, for a term of not more than five years. Such loans, however, shall not exceed one-tenth of the total amount of loans made for yearly installments. The bank may also make loans without security to public or other sound corporations.

As a means to obtain funds, the bank is allowed to issue debentures up to an amount ten times as large as the sum of its fixed deposits and paid-up capital. As a means of advancing money to the Farmers' and Mechanics' banks, it may take up debentures issued by those banks, make loans on security of right of claim of those banks due to their loans, and appoint those banks to be its agents and make loans on their standing as security. The Government supervises this bank generally in the same manner as it supervises the Bank of Japan.

4. *The Farmers' and Mechanics' Bank.*—This bank has been established in each prefecture, in accordance with the Law of the Farmers' and Mechanics' Banks. It has the same object of business as the Hypothec Bank of Japan, only on a smaller scale. In May 1907, the number of the Farmers' and Mechanics' banks in Japan was 46, having a total registered capital of 28,820,000 yen (28,494,860 yen paid up), and reserves amounting to 4,221,199 yen. Its line of business is, on the whole, the same as that of the Hypothec Bank of Japan. But they are different in that the Farmers' and Mechanics' Bank is allowed to make loans repayable in yearly installments extending over only 30 years, and that the maximum of debentures to be issued is only five times of its paid-up capital. The Government supervision over the bank is similar to that over the Hypothec Bank, except that in this bank the appointment of directors is solely entrusted to election by a general meeting of shareholders.

5. *The Bank of Formosa.*—This is a colonial bank especially organized for the exploitation of Formosa. In May 1907, it had a registered capital amounting to 5,000,000 yen (3,750,000 yen paid up), and reserves amounting to 725,000 yen. It engages in a general banking business and owns the privilege to issue bank notes convertible into gold coin. The issue is conducted in a manner generally similar to that of the Bank of Japan, but the amount of issue is limited to not more than 5,000,000 yen. The method and degree of the Government supervision over this bank is on the whole similar to that over the Bank of Japan.

6. *The Hokkaido Colonial Bank.*—The object of this bank is to supply funds for the work of colonization of Hokkaido. In May 1907, it had a capital amounting to 5,000,000 yen (3,500,000 yen paid up), and reserves amounting to 63,336 yen. Its business consists essentially of making loans for long terms on security of immovable property. It is also allowed to make loans on security of local produce and of shares and debentures; discount bills, take up debentures of the companies whose object is to colonize the island, engage in exchange business and receive deposits fixed or on current account. The bank may issue debentures to the extent of five times its paid-up capital. The Government supervision is conducted in a similar manner to that over the Farmers' and Mechanics' banks.

7. *The Industrial Bank of Japan.*—This bank can be aptly called a bank of movable property. In May 1907, it had a registered capital amounting to 17,500,000 (17,000,000 yen paid up), and reserves amounting to 512,800 yen. Its business consists in subscribing or taking up public and local loan bonds and debentures, making loans on security of these bonds or shares, or of corporations established in accordance with laws relating to mines, factories and railways; in receiving deposits, safe-keeping and trust business relating to mortgage debentures, etc. The bank can issue debentures aggregating not more than ten times its paid-up capital. The method and extent of the Government supervision over this bank are similar to that over the Hypothec Bank of Japan.

8. *The Dai-Ichi Ginko, Ltd.*—In May 1907, this bank had a registered capital amounting to 10,000,000 yen (7,000,000 yen paid up), and reserves amounting to 2,950,000 yen. In Japan it carries on a general banking business in accordance with the Banking Law. In Korea it deals with public money of Korea and issues notes convertible into Korean currency in accordance with special laws. In connection with the issue business security reserves should not be more than 10,000,000 yen. The specie reserve may include the Bank of Japan notes. In case an issue in excess over the legal limit is necessary this may be done subject to conditions dictated by the Government. The Government supervision over this bank is similar to that over ordinary banks as regards its business at home, but special supervision is exercised over its business in Korea.

ORDINARY BANKS.

By ordinary banks is meant those banks which engage in a general banking business in accordance with the Banking Regulation. Of all banks, these are under the most lenient supervision by the Government.

Those who desire to engage in ordinary banking business, must obtain the sanction of the Minister of Finance. The amount of the capital of an ordinary bank was formerly without any limitation; but since 1901, all banks have been ordered to possess a capital amounting to 50,000 yen at least. The classification, number, and amount of capital of ordinary banks existing in Japan at the end of May, 1907, were as follows:

Kinds of Banks.	Number.	Registered Capital, Yen.
Kabushiki Kaisha	1,465	349,474,475
Gomei Kaisha	68	20,367,850
Goshi Kaisha	105	19,741,474
Kabushi Goshi Kaisha	2	652,000
Individuals	82	5,371,520
Total	1,722	395,607,319

According to investigations made at the end of 1906, paid-up capital totalled 256,523,748 yen and reserves 68,180,543 yen. Of the Kabushiki Kaisha (joint stock companies, ltd.), 198 banks are engaged in the savings bank business.

SAVINGS BANKS.

The Savings Banks receive deposits at the rate of compound interest, and are subject to Government supervision more strict than given to ordinary banks, in the following points: (1) They must be organized as joint stock companies, ltd. (2) They must not amend their company contract without the sanction of the Government. (3) Directors must be under unlimited liabilities. (4) They must reserve one-fourth of savings deposits in the shape of public loan bonds or other sound securities and deposit them with the Government as security for depositors. At first there were restrictions with regard to the sort of investment to be made by the savings banks. But these restrictions were removed in 1895, and instead the four provisions above enumerated were instituted. As a result of the measure, the savings banks now invest their money in a similar way as ordinary banks. The number and amount of registered capital of savings banks at the end of 1906 were 460 and 81,508,450 yen, respectively. According to investigation under the same date, the paid-up capital aggregated 42,811,827 yen and reserves 9,824,390 yen. In addition to these, 198 ordinary banks carry on savings bank business.

CLEARING HOUSES.

Clearing Houses.—The Clearing House in Japan was first established in Osaka in 1879 after the model of similar institutions in Europe and America. Subsequently, it was organized in Tokyo and other places, there being at present six clearing houses in Japan. The one in Tokyo has the following regulations, and those in other places have on the whole similar regulations: (1) Members are limited to those banks which are members of the Tokyo Bankers' Association and which have current account connections with the Bank of Japan. (2) New membership shall be awarded with approval of more than three-fourths of the total number of members, to be decided by open ballot. (3) Members shall deposit security money with the House, and in the event of their failing to repay their debts in the clearance of bills, the account will be settled with the security money. In that case, the defaulter loses his membership. (4) Members may represent non-member banks in clearing bills, provided that a majority of the members approve of the representation. (5) In the case of the above clause, the representing bank shall demand a money security from the represented bank, and use that money for settling accounts in case the latter fails to repay debts due to clearing its bills. In that case the Clearing House shall refuse to entertain the representation of that particular bank. (6) In the event of the payer of bills cleared failing to pay, the name of that payer shall be made public. (7) The Clearing House accounts of members are settled by current account at the Bank of Japan. Number and value of bills cleared at different clearing houses in Japan in 1906 were as follows:

Clearing Houses.	Number of Bills.	Valuation, Yen.
Tokyo	3,101,809	3,500,858,675
Osaka	2,123,266	1,463,860,195
Kyoto	588,067	263,137,614
Yokohama	379,186	912,893,003
Kobe	418,934	713,928,495
Nagoya	331,223	269,381,779
Total	6,942,485	7,124,059,761

YOSHIRO SAKATANI,
Minister of Finance, Japan.

17. Japan—The Japanese Army. In 1868, the first year of Meiji, the Imperial Japanese Government was formed under the present Emperor. It had seven departments, one of which was that of the Navy and Army. While the name of the department has been changed several times, naval and military officers have always formed one branch of the administration. In the year 1868, this department of the Navy and Army had come into the possession of the bureaus of the navy, army, construction, warships, ordnance, horse administration, military school, and military administration. Next year it had the addition of the bureaus of account and courts-martial.

In 1871 military stations were established in Tokyo, Tohoku, Osaka, and Chinzei. At the same time took place the organization of the general staff bureau, naval school, shipbuilding office, and other naval offices.

In 1872 the War Office was separated from the Navy Department and made an independent department. Two years later the number of military stations was increased from four to six and established at Tokyo, Sendai, Nagoya, Osaka, Hiroshima, and Kumamoto. At the time, however, the General Staff still formed a bureau of the War Office.

In 1875 military arsenals were established in Tokyo and Osaka. In 1876 the Artillery Council was organized. In 1878 the General Staff Office was separated from the War Office, there being added the hydrographic and kindred offices, compilation, translation, and survey, together with a library. Two years afterwards a telegraph section was added to the General Staff Office.

In 1881 gendarmerie headquarters were established in Tokyo. In the following year a military staff college was established under the direction of the General Staff Office. In 1883 an Engineering Council was organized.

In 1886 a thorough reorganization of the War Office took place. It now consisted of the Minister's secretariats and bureaus of general affairs, cavalry, artillery, engineering, account, and medical affairs. Towards the end of that year a special fortification department was organized.

In 1888 the military stations were converted into Division Headquarters. At this time, the War Office established the woolen factory now existing at Senju. In 1890 the Imperial Bodyguard Headquarters were organized.

During 1895 there existed, as an outcome of the Chino-Japanese war, a special quarantine department. In June, offices having charge of the construction of telegraphs and lighthouses in Formosa were established and a military office was organized under the direction of the governor-general of Formosa.

In 1896 the number of army divisions in Japan was increased from six to twelve, and Totoku-fu (offices of General Superintendence) were created for the eastern, central, and western sections of Japan.

In 1898 the Gensui-fu (Council of Field-marshals and Fleet Admirals) and the Headquarters of Military Education were organized.

The War Office was reorganized in 1900, with new bureaus, viz., those of general affairs, personnel, military affairs, supply, and justice. The Military Supply Depot was established in 1902.

In 1903 the Artillery and Engineering Councils were abolished. Branches of the Supply Depot were established at Ujina and Osaka. On 28 December of that year the Regulations of the Imperial Military Headquarters in Time of War and of the Military Council were amended.

On 13 Jan. 1904, the Totoku-fu were abolished. On 21 February, shortly after the outbreak of the late war, a bureau of information relating to prisoners of war was established in Tokyo. On 24 April the Tokyo Garrison Headquarters were newly organized. On 23 June, a special military quarantine office was established in Tokyo, and quarantine stations were opened at Ni-no-shima and Dairi in November.

In 1905 a special military Central Exchequer was organized. Shortly after the opening of the war depots for the Russian prisoners of war were established at Matsuyama, Himeji, Fukuchiyama, Shizuoka, Hamadera, Navashino, and other places, the total number of such depots being 29. A military quarantine station was newly established at Wada Point, Kobe, in September.

On 31 July 1906, the Regulations of the Military Department of the Government-General of Kwantung and of the Headquarters of the Military Forces in Korea were enacted. On 6 August, the Regulations of the Homes for Crippled Soldiers were enacted. For the time being one home is established in Tokyo.

NUMBER OF OFFICERS ABOVE THE RANK OF SUB-OFFICER, IN TIME OF PEACE.

(Present on 31 December, each year.)

Years	Active Service.	1st Reserve.	2d Reserve.	Total.
1899	7,994	1,931	994	10,919
1900	8,608	2,400	1,165	12,173
1901	9,093	3,118	1,435	13,646
1902	9,612	3,798	1,709	15,119
1903	10,069	4,243	2,011	16,323

DETAIL FOR 1903.

	Active Service.	1st Reserve.	2d Reserve.	Total.
General	116	30	21	167
Gendarmerie	112	45	42	199
Infantry	4,853	2,069	1,209	8,131
Cavalry	541	126	39	706
Artillery	1,820	335	143	2,298
Sappers	491	124	67	682
Commissariats	288	105	37	430
Comptrollers	717	602	184	1,503
Surgeons	966	706	240	1,912
Veterinaries	158	101	29	288
Band Corps	7	......	......	7
Total	10,069	4,243	2,011	16,323

Military Supply System.—Clothing.—Offices for supplying clothing for the army are controlled by the clothing and provisions section in the Comptroller's Bureau of the War Office. There is also the clothing depot, being a central executive organ. Cloth is manufactured at the Senju woolen factory, belonging to the army. The War Office gives clothing materials and money every year to the army, officers, and schools, and causes them to regulate the supply among themselves. With the material and money, clothes are made for non-commissioned officers, soldiers, and students.

Provisions and Fodder.—The clothing and provisions section of the Comptroller's Bureau of the War Office controls affairs relating to the supply of provisions and fodder to the army. There exists also the provisions and fodder depot as a central executive organ. Provisions and fodder required by the army are procured by the Division Comptrollers' Departments, and those for other official establishments and schools by their respective directors. Military bodies are given fixed amounts of provisions and fodder and of money, as also are schools with dormitories, and are allowed to manage their own supply business. The food is supplied after cooking by the military bodies and schools. The supply of fodder is managed in a similar way.

Factories.—Military Arsenal.—The military arsenal engages in the manufacture and repair of arms required by the army and ammunition required by the navy. It is governed by the military inspector of arms.

There are military arsenals in Tokyo and Osaka. The Tokyo arsenal manufactures rifles, cartridges, and gun-equipment, and governs gunpowder manufactories at Meguro, Itabashi and Iwahana, all near to Tokyo. The Osaka arsenal makes guns, gun-carriages, shot, and accessories, and governs the Ujina gunpowder manufactory and the Moji manufactory of arms. Branches of the arsenals, when deemed necessary, are established at the places where the branch arms depots exist. The Artillery and Engineering School belongs to the Tokyo Military Arsenal.

Senju Woolen Factory.—This factory manufactures cloth required by the army and is governed by the Minister of War. It is managed as a special account.

Clothing Depot.—This depot procures cloth mainly from the Senju woolen factory and makes it into military clothes. The depot also procures sundry goods and cloth from the public and supplies the army.

Provisions and Fodder Depot.—This depot conducts the business relating to provisions and fodder to be used in time of war. The examination of such provisions and fodder is conducted here.

Horse Administration.—The history of the supply of horses to the Japanese Army can be divided into three periods. In the first period (1868-1872) grown horses were acquired from the public and supplied to the army; in the second period (1873-1880) grown horses were purchased from the public and supplied to the army after they had been trained; and in the third period (1881 to the present) young horses have been procured and supplied as military horses after being reared as such. The army has a military horse supply department, under the direction of the Minister of War. This department engages in the purchase, training, supply, and investigation of supply resources of military horses. The department has a head office at Tokyo and seven branch offices in different centres of horse-breeding in Japan. The purchase of horses is conducted by purchase officers who are dispatched from Tokyo to Hokkaido, Akita, Aomori, Iwate, Miyagi, Fukushima, Tochigi, Kagoshima, and other prefectures every year, in the spring and autumn. In order to maintain these horses, all branch offices of the Horse Supply Department have their own pastures, to the extent of about 143,000 acres.

Supply of Personnel.—Officers.—In the early stage of the army, as organized after the Restoration of the Imperial Régime, military officers were appointed from among the officers in the military forces of different clans and from among the people in general. The method of obtaining military officers underwent many changes before the present system was organized. At present officers of infantry, cavalry, artillery, sappers, and commissariat troops are selected from among the following classes after the necessary education with the colors and at the Military College: (1) Graduates from the Central Military Preparatory School. (2) Graduates from a Middle School or from a school of an equal or higher grade, who have passed an examination for the service. (3) One-year volunteers bearing testimonial of the commander of their corps, and who have passed an examination for the service. (4) Non-commissioned officers of all arms in active service, who are of good behavior and recommendable character, who bear testimonials of the commander of their corps, and who have passed an examination for the service. (Graduates from the Central Military Preparatory School are those who have received three years' education at a local military preparatory school and one year and nine months' education at the Central Military Preparatory School. Students of the local military preparatory schools are selected from among boys of 13 to 15 years of age who aspire to be military officers.)

Officers of the Military Comptrollers' Department are obtained from the following classes, after the necessary education with an infantry corps and at the Military Comptrollers' School: (1) Graduates from a middle school, or from a school of an equal or higher grade, who have passed an examination for the service. (2) One-year volunteers who bear testimonials of the commander of their corps and who have passed an examination for the service. (3) Non-commissioned officers in the comptrollers' department in active service, who are of good behavior and recommendable character, who bear testimonials of the commander of their corps and who have passed an examination for the service.

Officers in the hygienic department are obtained from the following classes, after the necessary training with an infantry corps and at a military hospital. (1) Graduates from the Medical College of the Imperial Universities, from the Special Medical Schools, or from the Prefectural Medical Schools with the recognition of the Minister of Education as of an equal or higher grade than middle school, who have applied for the military service and who have been educated at those schools at the request of the army. (2) Graduates from the above schools, or those who have acquired equal qualifications at foreign schools, who apply for service. (3) Graduates from the Military Surgeons' School. (4) Those one-year volunteers who bear a license as medical practitioners or pharmaceutists, and who apply for service.

(The Military Surgeons' School admits by selection the owners of the license as medical practitioners or pharmaceutists, who are between 20 and 30 years of age and who apply for service.)

Officers of the veterinary department are obtained from among the following classes, after the necessary education with a mounted corps: (1) Graduates from the veterinary departments of the College of Agriculture of the Imperial University or of the Government Special Industrial School (Jitsugyo Gemmon Gakko), who have applied for service and were educated at those schools at the request of the army. (2) Graduates from the above schools, or those who have obtained equal qualifications at a foreign school, who apply for service. (3) One-year volunteers who possess the license of veterinary surgeon, and who apply for service.

Officers of military bands are promoted from among those who have served in the military band for three years or more and whose merits are recognized.

Non-commissioned Officers.—In the early stage of the modern Japanese army, non-commissioned officers were recruited in the same manner as officers. Under the present system, non-commissioned officers of gendarmerie are recruited as follows: (1) First-class privates of gendarmerie in active service who have been in the gendarmerie service for more than two years and whose behavior is good and character recommendable. (2) Non-commissioned officers of infantry, cavalry, artillery, sappers, and commissariat troops (excepting various artisan corps), who have been in active service for more than six years after joining the colors, who are of good behavior and of recommendable character; who have applied for admission into the gendarmerie department, and have passed the necessary examination and who still have a margin of age for active service to the extent of more than one year. (3) Gendarmerie corporals or sergeants in reserve, who are of good behavior and recommendable character and who apply for active service within one year after the expiration of their term for active service. (4) Reserve corporal or sergeant of infantry, cavalry, artillery, sappers, or commissariat troops, who have been in active service for more than six years, who are of good behavior and recommendable character, and who, applying for the position of non-commissioned officer of gendarmerie, have passed an examination for the service.

Reserves of non-commissioned officers of infantry, cavalry, artillery, sappers, and commissariat troops are as follows: (1) Soldiers of all arms in active service who apply for renewed service as non-commissioned officers, and those troops in the Tsushima Garrison who apply for permission to be with the colors until their term for active service expires and who are fit for such service. (2) Reserve first-class privates who while with the colors have discharged the duties of corporal and who apply for the position of non-commissioned officer within one year after the expiration of their term for active service. (3) Reserve first-class privates, who possess a certificate showing capability to discharge the duties of a non-commissioned officer and who apply for such position in less than one year after the expiration of term for active service. (4) Reserve sergeants or corporals who apply for active service in less than one year after the expiration of their term for active service.

Non-commissioned officers of artillery are obtained from among those persons who are not in the reserve of the navy or army, or first year privates of all arms, who have passed an examination for the service and gone through the necessary education at the artillery and engineering school.

Non-commissioned officers of horseshoe-makers are drafted from horseshoe-makers in the second or third years of active service in cavalry, artillery or commissariat troops, who apply for renewed service and who are fit. They are then given nine months' education at the veterinary school, in order to become chief horseshoe-makers.

Non-commissioned officers in the hygienic department are obtained from the following groups of men: (1) Ambulance hands or soldiers of any arm in active service, who apply for renewed service as non-commissioned officers in the hygienic department, or men in the Tsushima garrison who desire to remain with the colors until the expiration of their term of active service, and who are fit for the position of non-commissioned officers. (2) Ambulance men in reserve, who while in active service have been chief nurses, and who apply for the position of non-commissioned officers in active service in less than one year after the expiration of their term of active service. (3) Ambulance men in reserve who possess a certificate qualifying them for the position of non-commissioned officers and who apply for active service within one year after the expiration of their term for active service. (4) Second and third class chief nurses in reserve who apply to enter active service within one year after the expiration of their term for active service.

Non-commissioned officers in the comptrollers' department are taken from the following: (1) Non-commissioned officers attached to corps of all arms who apply to be such officers in the comptrollers' department, and first-class privates who have been in active service for two years or more after joining the colors and who have applied for renewed service as non-commissioned officers in the comptrollers' department and obtained the necessary knowledge for such position. (2) Reserve first-class privates of all arms, who while in the active service have acted as accountants, and who apply for the position of non-commissioned officer in active service within one year after the expiration of their term of active service. (3) Reserve non-commissioned officers or first-class privates of all arms who possess a certificate showing their fitness to be non-commissioned officers in the comptrollers' department, and who apply for such position in active service within one year after the expiration of their term for active service. (4) Second or third class accountants in reserve, who apply to enter active service within one year after the expiration of their term of active service.

Non-commissioned officers in military bands are drafted from bandsmen who have been in active service for more than two years and who are sufficiently accomplished to be non-commissioned officers.

Privates.—In the early period of the Meiji Era, soldiers were recruited from all clans according to the amount of revenue of their lord. In 1873 the Conscription Law was promulgated, and all men in the country were entered in the army list on their reaching the age of twenty. This laid the foundation of the present Japanese Army. The law was amended several times, but its spirit remained the same. The present system provides: (1) All Japanese male subjects between 17 and 40 years of age are responsible for military service. (2) The army is classified into regulars, second-reserves, recruits, and national army. (3) The regular service is divided into active and first reserve services. The active service is for three years beginning with the 20th year of age. The first reserve service is for four years and four months, for those who have finished the active service. (4) The second reserve service is for 10 years, and enlists those who have finished the regular service. (5) Recruit service is for 12 years and four months and enlists a required number of the surplus men over the required number of regulars each year. (6) The national army service is divided into first and second national army services. The first national army includes the second reserves and trained recruits who have finished their term of service. The second national army is constituted by those who are enlisted in neither of the above services.

Men are drafted independent of the Conscription Law as follows: (1) First-class privates of gendarmerie are obtained from among soldiers of other branches of the army by their application. (2) Bandsmen are obtained from graduates from the Military Bandsmen's School. The total of men at the conscription age in 1902 was 512,801. They are classified according to the Conscription Law as follows:

Classification.	No. of Men.	Percentage.
Conscripts—Enlisted in active service; 1st recruits; 2d recruits	194,495	37.93
Conscription postponed	79,348	15.45
Freed from conscription	186,971	36.66
Freed from military service	34,218	6.67
Others	17 769	3.46
Total	512,801	

Military Education.—Military education in Japan is given in the following schools: (1) Military Staff College; three years' course, admits about 50 students a year. (2) Military College of Artillery and Engineering; three years' course, admits 120 students a year. (3) Military College; 18 months' course, admits 450 students a year. This is a cadets' school. (4) Military Toyama Schools; soldiers are taught tactics, shooting, fencing, and gymnastics, in a two to seven months' course; number of students varies from year to year. (5) Central Military Preparatory School; two years' course, admits 300 students a year. (6) Local Military Preparatory Schools; exist in Sendai, Nagoya, Osaka, Hiroshima, and Kumamoto; three years' course, admits 50 students a year. (7) Military Cavalry Practice School; 11 months' course to be given to cavalrymen; number of students varies. (8) Military Field Artillery Practice School; two and three months' course, number of students varies. (9) Military Siege Artillery Practice School; course two months to one year. (10) Telegraph Educational Battalion; courses, one year and 18 months. (11) Military Comptrollers' School; accountant cadets and accountant officers are taught here; the course for the former is one year nine months, and that for the latter one year. (12) Military Surgeons' School; course for officers covers four months at the most and that for cadets one year. (13) Military Veterinary School; course three to nine months. (14) Military Artillery and Engineering School; trains non-commissioned officers; courses, one and two years. (15) Military Bandsmen's School; attached to the Toyama School and trains bandsmen.

Court Martial.—In 1871, when the military stations were established and regular troops enlisted for the first time in Japan, a naval and military criminal code was enacted. In the following year the War Office was established and a military law court came into existence. The present military penal code was promulgated in 1883 and amended in 1888.

In the Japanese military law court or court-martial, the provisions not only of the military penal code but of the ordinary Criminal Law and other penal regulations are applied.

There exist two sorts of courts-martial; one is the Higher Court-martial, and the other is the Division Court-martial, the latter existing in each division. The Higher Court-martial exists in Tokyo and delivers judgment in offences committed by generals, and conducts the re-examination of cases examined by the Division Court-martial. Trial by courts-martial is not open to the public. Neither debate nor prosecution is allowed. Counsel and appeal are prohibited.

Military justice is conducted by procurators, secretaries, and judges, and presided over by the Minister of War in the case of the Higher Court-martial, and by the Commander of Division in the case of Division Court-martial. Secretaries are civil officials and execute duties resembling those of preliminary judge in the ordinary law courts. Judgment is given by five judges, all of whom are military officers. Secretaries may participate in trial but have no voice in making decision. Procurators are also outside the court-martial, strictly speaking. Judgment becomes valid by sanction by the Commander of Division or of the Emperor, according to the official status of the offender.

Besides those above mentioned, courts-martial are established in Formosa, and in field armies and forts in time of war. They are similarly constituted on the whole as the Division Court-martial. With the progress of the military organization and general litigation system in Japan, the courts-martial will be gradually improved.

Military Prisons.—The organization of military prisons was enacted in 1876 for the first time. It was amended several times, the latest amendment taking place in 1894. Military prisons exist in those places where exists a court-martial, and are governed by the officers who preside over the court-martial. The staff of a military prison consists of a director, clerks, chief jailor, and jailors. In military prisons are imprisoned small offenders who are in active service or military officials still retaining their official positions, and defendants in criminal cases. The prison building is divided into three sections, rooms for defendants, cells for convicts, and detention house. The military prison is so conducted as to execute penalties in a most appropriate way against military offenders, that is with a view to the maintenance of the military spirit and discipline.

Sanitation.—In 1868, the first year of Meiji, a naval and military department was established in the Imperial Government, and in October, the same year, a soldiers' provisionary hospital was founded in Tokyo. This forms the beginning of the hospital system of the Japanese Army. In February 1870, another military hospital was established in Osaka. At the time military surgeons were engaged in the treatment of patients as well as in teaching subordinate physicians. These hospitals gave medicine not only to soldiers, but to the general public. In 1871 a Bureau of Naval and Military Surgeons was organized in the War Office, and was ordered to control all affairs relating to medicine for the army in the whole empire. At the same time regulations relating to the organization of military hospitals were published. The bureau of surgeons, above mentioned, was placed under the direction of a surgeon of the rank of major-general. In those days surgeons were appointed by periodical examination from among ordinary physicians.

In 1872, military hospitals were established at each military station. The organization of the hygienic administration in the army underwent various modifications afterwards. The present regulations of military hospitals were promulgated in February 1898.

According to the present system, military hospitals exist at all places where is stationed a military garrison. These hospitals not only give medical treatment to soldiers, but engage in storing and supplying medicines and medical instruments and in teaching non-commissioned officers and men of the hygienic department. According to their size and importance, the hospitals are divided into five classes. These hospitals are so constructed as to be able to take in as patients about 3.5 per cent. of the total troops stationed at the place where the hospital exists.

The personnel of the hospital includes a director, surgeons, pharmaceutists, accountants, chief nurse, and nurses. The director of a military hospital is appointed from among surgeons of the rank of captain to colonel, inclusive. He is controlled by the chief surgeon of the division to which he belongs in the execution of his medical duties.

Veterinary Department.—At the beginning of the modern Japanese Army, veterinary affairs were conducted by the Bureau of Surgeons, and a regulation for providing cavalry, artillery, and other corps requiring horses, with veterinaries, was enacted. At the time veterinaries were drafted from the general public. In 1873, an independent department of veterinaries was established, and the rank of veterinary officers fixed. In the following year, non-commissioned officers and men of the veterinary department were appointed. At first these non-commissioned officers and men were taken from graduates from the military veterinary school. But subsequently this school was ordered to devote itself to the supply of officers, and men of lower ranks were taken from among conscripts. At present this school gives training to horse-shoe-makers. The course in the school for officers is about five months, that for non-commissioned officers three months, and that for candidates for non-commissioned officers nine months.

M. Terauchi,
Minister of War, Tokyo.

18. Japan—The Navy. Naval affairs had been fairly well developed in Japan until the isolation policy of the Tokugawa Shogunate in 1635 prohibited the building of ocean-going vessels under pain of capital punishment.

A few ancient naval undertakings which are noteworthy in Japanese history are: The expedition of the Empress Jingo to Sankan (ancient Korea) in 200 A.D.; the fighting in the Inland Sea of Japan between the clans Gen and Hei in 1186; the Chinese attempt to invade Japan and the arrival of Kublai's armada on the coast of Kiushu and the annihilation of it in 1280; the encounters between the Japanese and Korean fleets on the southern coast of Korea on the occasion of Taiko's (Hideyoshi's) invasion of that peninsula in 1592-1598. In the beginning of the 17th century the predatory visit of Japanese pirate junks to the coast of South China is notable and it was about that time also that Japanese junks sailed, for commercial purpose, to China, the Philippines, Java, Siam and India. The ocean-going vessels of Japan at that period numbered over 200.

It may perhaps be worth while to recall how warships of Western style were introduced into Japan.

In 1838 the Mito clan, obtaining some necessary information from a Dutchman (the Dutch were the only foreign traders who were allowed to come to Nagasaki until after the commercial treaty was made with the United States of America) built the first ship on a foreign model ever constructed in Japan. Although this ship was completed and named *Hitachi-maru* it was never allowed to be used.

After the visit of American men-of-war in 1853, the Tokugawa Shogunate permitted the building of large ships, and at the same time ordered from Holland, through their trading agents, one steam corvette, one sailing corvette, with auxiliary steamers of different sizes; but these vessels did not arrive in Japan, owing to the trouble existing in Europe at that time.

In 1854 a two-masted ship, the *Howo-maru* (length 130 feet, beam 30 feet) was built at Uraga, on an English model; and at about the same time two more were built, one at Yedo (Tokyo), the other at Satsuma, both of which were planned on European models.

At the time of the Crimean war a Russian sloop was wrecked on the coast of Japan, and permission was given that Japanese workmen might be employed in repairing the vessel; this gave an opportunity to obtain some practical working knowledge of Western naval architecture.

In 1855 His Majesty the King of Holland presented a steam corvette to the Tokugawa Shogun, which was named the *Kanko-kan.* At this time the Japanese ensign Himomaru (the sun or a red ball in a white ground) was introduced, and has been used as the national flag ever since.

Subsequently the naval school was established at Nagasaki by the Tokugawa Shogunate, and instruction in naval matters was given there by Dutch naval officers. The students for admission to this school were appointed by the Shogunate, and also selected by the different clans. Another naval school was organized at Yedo with *Kanko-maru* as a training ship, and employed both Dutch and English officers as instructors. Some new ships were built at Nagasaki, and two ships were bought abroad, one of which named the *Kanrin-maru* afterwards (1860) made a cruise to San Francisco manned by Japanese officers and crew under Captain Katsu (late Count Katsu).

In 1857 Her Majesty Queen Victoria presented a steam yacht to the Tokugawa Shogun, and it was named the *Hanrio-kan.*

In this way the navy of the Tokugawa Shogunate was slowly gathered together and organized, and in 1867 nine men-of-war and 36 auxiliary vessels were on the list (besides the ships belonging to the different clans).

Then came the War of Restoration (1867), and most of the ships of the Tokugawa Shogunate, except the Iron-clad *Kotetsu* (old «Stonewall Jackson»), led by Admiral Yenomoto (the rebel chief), fled to Yezo Island (Hokkaido) and fought a battle at Hakodate which resulted in the total destruction of the rebel fleet, which, however, had lost some of their best ships before the battle.

After the War of Restoration the clans in possession of the warships presented them to His Majesty's Government, and the Imperial Navy was formed and organized in 1867-1870. The ships in 1872 were 20 in number, the aggregate tonnage being 12,390 tons.

The Imperial Navy had experienced a few engagements before the war with China in 1894-1895, such as the Formosan Expedition of 1874; the bombardment and capture of Yeisojo in Korea by H. I. M. S. *Unyo* in 1875; the Satsuma Rebellion in 1877.

At the time of the war between Japan and China in 1894, the Japanese naval force consisted of 1 small iron-clad of 3,777 tons displacement; 3 coast-defence cruisers (Itsukushima class) of 4,278 tons; 1 second class cruiser (*Yoshino*) of 4,216 tons; 4 protected cruisers of between 2,230 and 3,700 tons; 11 corvette and gunboats of between 1,000 and 2,000 tons; and 25 torpedo boats. The aggregate tonnage of the above was 59,006 tons.*

The most noted engagements of the China-Japan War were: The opening engagement off Asan, Korea; the battle of the Yalu; the torpedo-boat attack at Wei-hai-wei; the occupation of the Pescadores, Takao and Ampin.

After the China-Japan War the Japanese Navy commenced the building of battleships and cruisers under the new scheme to increase its strength, and at the outbreak of the war between Japan and Russia in 1904, the Japanese force consisted of 6 battleships of 13,000-15,000 tons; 8 armored cruisers of 7,700-10,000 tons; 14 protected cruisers of 3,000-4,800 tons; 10 coast-defence ships of 7,000 tons and under; 19 gunboats, etc., of 2,000 tons and under; 19 torpedo-boat destroyers and 87 torpedo boats. The aggregate tonnage of the above was about 270,000 tons.

At the end of the Russo-Japan War, the loss sustained by Japan was as follows: 2 battleships; 2 protected cruisers; 2 coast-defence ships; 4 gun vessels, etc; 2 torpedo-boat destroyers; and 9 torpedo boats. The captured Russian men-of-war, etc., augmented the Japanese Navy as follows: 6 battleships of 9,600-13,500 tons; 1 armored cruiser of 7,700 tons; 2 protected cruisers of 6,600 tons; 2 coast-defence ships of 4,900 tons: 2 torpedo gunboats of 400 tons; and 3 torpedo-boat destroyers.

The Naval Administration.—At first, after the Restoration, the Imperial Army and Navy were controlled by one department; but in 1872, in the process of organization, they were made separate and independent departments of the Government.

The management and control of the Imperial Navy is carried out under the direction of the Minister of Marine, who is appointed from the flag officers of the active list. Being a member of the Cabinet, he is directly responsible to the Emperor for all actions of the Ministry of Marine. He acts in naval matters concerning the movement of ships, schemes of mobilization, national defence and naval intelligence, in consultation with the chief of the Naval General Staff.

The Naval General Staff Department is independent of the Ministry of Marine, its chief being under the direct control of H. I. M. the Emperor.

There are five Bureaus in the Ministry of Marine: Military Affairs, Personnel, Medical, General Account Provision and Clothing, and Justice.

There are also four departments under command of the Minister of Marine: The Department of Materiel (naval construction, engineering, ordnance and torpedoes, general supply and stores), the Department of Naval Education, the Department of Works and Buildings, and the Department of Hydrography.

Naval Station and Dock Yards.—The coast of the Empire is divided into four naval districts, and the headquarters of each is placed at the chief naval port of that district, and is called Chinjufu (naval station). Headquarters of the first naval district are at Yokosuka; the second at Kure, the third at Sasebo, the fourth at Maizuru. Port Arthur was added as another Chinjufu after the Russo-Japan War. There are also three secondary naval stations: Takeshiki (Tsushima Island); Bako (Pescadores Islands); O-minato (Bay of Awomori).

Each Chinjufu is commanded by an Admiral, who is Commander-in-Chief, and the following official functions are under his control: The Personal Staff, consisting of the Chief of Staff, Adjutants, Aid-de-camp, Inspector of Signal Stations, Recruiting Officers, etc.; the Arsenal (dockyards, ordnance and torpedo factory and depot, general supply stores); the Accountant Department (including works and buildings, provision and clothing stores); the Hospital; the Naval Barrack; the Torpedo Division; the Steam Reserve; Port Office; Court Martial.

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*The Chinese naval force at the same period was 81 ships, 77,389 tons, and 25 torpedo boats, 1,042 tons; but at the conclusion of the war most of the Chinese men-of-war and torpedo boats were either destroyed or surrendered and only the Nanyang and Kanton fleets, insignificant in power, were saved.

The Secondary Naval Stations are organized on a smaller scale and have the means of small repairs for torpedo craft, etc.

The arsenals and their present capacity is as follows: Kure—able to build armored and unarmored ships, engines and guns of any size; to furnish armor plates, torpedoes and ammunition. Yokosuka—able to build armored and unarmored ships and engines of any size; and make all kinds of repairs to ships and armaments. Sasebo and Maizuru—able to build ships of moderate size and make all kinds of repairs to ships and armaments. Tokyo—the manufacture of small stores for ordnance and torpedoes, and some special articles. (The arsenal at Tokyo does not belong to any naval station.)

Personnel.—For the fiscal year ending 1907 the number of officers and men voted for the Imperial Navy were as follows: Officers, 3,088; Warrant officers, 976; Petty officers and men, 34,701. Officers and men in reserves in 1907 numbered: Officers of N. R., 322; Warrant officers, 143; Petty officers and men, 13,978.

The officers of the Imperial Navy are divided into two classes, the executive and non-executive officers. The executive naval officers are Admirals, Captains, Commanders, Lieutenant-Commanders, Lieutenants, Sub-lieutenants, Midshipmen, Naval Cadets, Gunners and Boatswains. The non-executive naval officers are Engineer Officers (Engineer-Admiral, Engineer-Captain, Engineer-Commander, etc.); Medical Officers; Paymasters; Naval Constructors; Ordnance Engineers; Hydrographical Engineers; Carpenters; Bandmasters and Warranted Writers.

Executive Officers.—In the Imperial Japanese Navy the naval cadets are appointed by competitive examination, which is open to the sons of all Japanese subjects. The entrance examination is held, at present, in 13 of the principal towns of the country, under the supervision of the superintendent of the Naval College. The number of cadetships available for the year having been previously gazetted by the Minister of Marine, applications are made to the superintendent of the Naval College through the local authorities within the specified limit of time. A candidate must not be under 16 or over 20 years of age. A candidate is examined in the following subjects: Japanese composition, mathematics, English, Chinese, geography, history, physics, chemistry and drawing; also, if the candidate desires, in French, German or Russian. Successful candidates become naval cadets and join the Naval College at Yetajima, on the Inland Sea near the Kure naval station. The traveling money to the college is paid, and at the college everything is provided by the Government.

The cadets remain in the Naval College three years, and are instructed in seamanship, navigation, higher mathematics, English, physics, chemistry, gunnery and torpedoes, steam engineering, etc.

After having passed the final examination successfully they are appointed to the sea-going training-ships as midshipmen. At the end of eight months' cruising the midshipmen are examined in what they have learned on board, and then transferred to a commissioned ship, generally appointed from among the ships of the squadron, and after four months, if favorably recommended by the captain of the ship, are commissioned as Sub-lieutenants.

Promotion of naval officers is entirely by selection, and the list of candidates deserving that honor is decided upon by the Board of Admirals, which meets once a year. This Board is composed of eight or nine members, but when sitting to decide the list of promotions, all the Commanders-in-Chief of naval stations and the squadrons, with the senior officers of the different branches, such as engineers and medical corps, etc., are summoned, and the Minister of Marine takes the chair. Officers of the following rank who have been on duty for the specified number of years are eligible for nomination: Sub-lieutenants, 1 year; Lieutenants, junior grade, 2 years; Lieutenants, 5 years; Commanders, 2 years; Captains, junior grade, 2 years; Captains, 2 years; Rear-Admirals, 3 years.

Naval officers are placed on the retired list on account of age, ill-health or disability. The age-limit of the several ranks is as follows: Admirals at the age of 68; Vice-Admirals at the age of 63; Rear-Admirals at the age of 58; Captains at the age of 53; Captains, junior grade, at the age of 48; Commanders at the age of 45; Lieutenants at the age of 43; Lieutenants, junior grade, at the age of 38; Sub-lieutenants at the age of 38; Chief Gunners and Boatswains at the age of 51; Gunners and Boatswains at the age of 48.

All officers are retired five years after being placed on the reserve list.

Engineer Officers.—The appointment of engineer students is effected in the same manner as the appointment of naval cadets. The student joining the Naval College of Engineering remains three years and four months, going through a course of advanced mathematics, physics, chemistry, theory of the steam engine, etc. They also receive practical training in the engineering workshops of the Yokosuka dockyard, receiving instruction in iron shipbuilding, the working of marine engines and boilers, the practical use of the various instruments used in the engine-room, as well as in the construction and working of electric light, torpedo and gun machinery. The student successfully passing the final examination becomes an Engineer Sub-lieutenant, and is appointed to a sea-going training-ship, where he receives the practical training necessary for a man-of-war.

After eight months' training on board, the students are examined and commissioned as Engineer Sub-lieutenants, gaining the succeeding steps of promotion, as in the case of executive officers.

Medical Officers.—Candidates for the medical branch of the navy are required to pass a medical examination before being allowed to go up for the competitive examinations. The latter include medicine, surgery, science, and modern languages. Successful candidates become probationary Assistant Surgeons of the navy, and have to join the Navy Medical College for instruction. They remain there not less than one year, and if they pass the examination at the college successfully, are appointed to the hospitals of the different naval stations. After a certain period of time, if recommended, they are commissioned as Assistant Surgeons; succeeding steps of promotion are by selection. The successive grades of rank are Assistant-Surgeon, Surgeon, Staff and Fleet Surgeon, Surgeon-Inspector, and Surgeon-General. Surgeons are also appointed from among the graduates of the Imperial Universities without the examination of science.

Paymasters. — Probationary assistant paymasters are selected by competitive examination after having successfully passed the required medical examinations. Candidates must not be under 20 or over 28 years of age. Successful candidates are appointed probationary assistant paymasters, and sent to the Paymaster Training School to receive a course of instruction there for eight months. At the end of that time they are, after examination, appointed to different commissioned ships to receive practical experience, and after four months of that training, if favorably recommended, become Assistant Paymasters, gaining succeeding steps of promotion by selection. Ranking is as follows: Assistant Paymasters, Paymasters, Chief, Staff, and Fleet Paymasters, Paymaster-Inspectors, and Paymaster-Generals.

Naval Constructors.—Every year a certain number of the naval architecture students from the Imperial University can make application to become students of the navy. The expenses of the successful candidates are paid by the navy, and on being graduated they are appointed Assistant Naval Constructors. Promotions to Naval Constructor, Chief Inspector and Inspector-General of Naval Construction are gained by selection.

Ordnance Engineers.—Ordnance Engineers are appointed in the same manner as Naval Constructors. Naval officers and engineers can also enter this branch by special appointment if desired.

Hydrographical Engineers.—Students in this branch are taught in the Hydrographical Office the theory and practice of surveys, etc., and, passing a successful examination, are appointed assistants. Assistants can acquire rank as high as that of Captain. As this branch of the service can be performed by naval officers, the continuance of this department in the future is doubtful.

Warrant Officers.—The executive warrant officers are gunners and boatswains, gunners and torpedo-gunners having to have their qualification of gunnery or torpedo instructions before promotion. The non-executive branches holding relative ranks are engine-room artificers, bandmasters, carpenters, writers, and nurses. They are all selected from the petty officers of their respective bodies, having served at least two years at sea. A warrant officer of more than ordinary ability can, after six years of service, be promoted to be chief warrant officer which ranks with Sub-lieutenant, and chief warrant officers of long and meritorious service receive the rank of Lieutenant when placed on the reserve list.

Petty Officers and Men.—The Petty officers and the men of the navy are divided in the same method as the warrant officers. Petty officers, with the exception of the writers, are all appointed from the men. There are three ranks in every branch—viz.: The chief or first, second, and third class petty officers. The men are enlisted in two classes, the volunteers and the conscripts; the first serve for eight years, the second for four. Both classes are allowed to renew their enlistment for terms of three years until the petty officers reach the age of 45, and the men that of 40 years of age. Men appointed to be petty officers must serve six years from the day of appointment. The age of enlistment for volunteers is as follows: Seamen and Stokers, 17 to 21 years; Carpenters' Crew, Nurses, Blacksmiths, etc., 17 to 26 years; Bandsmen, 16 to 19 years. The age of conscripts must be over 20.

Examinations for the promotion of petty officers and men are held twice every year, and they are eligible for the examination if they have served at sea as follows: Petty Officers—First class or chief petty officers, one and a half years as second class petty officers; second class, one year as third class petty officers; third class, one year as leading seamen. Men—Petty officers, leading seamen or first class men, able seamen or second class men, and ordinary or third class men, are examined in April and October. Boys are examined in May and November. Boys are trained for four months in the naval barracks at each naval station, and then sent to the sea-going training-ships for two months at least before being distributed among the ships of the squadron, etc. From among able seamen and upwards to first class petty officers inclusive, a certain number of men are selected and examined to become seamen gunners and torpedo men, and the successful candidates are trained respectively at the gunnery and torpedo-training stations at Yokosuka.

There are three different courses of instruction for seamen gunners, torpedo men, torpedo instructors, etc.: (1) A course for seamen gunners; (2) a course for gunnery instructors; (3) recapitulatory, or short course. Stokers, carpenters' crews, and blacksmiths are given the same instruction as seamen, and are trained in the artificers' training station according to their standing as seamen. Further details of the instruction of other branches of petty officers and men are unnecessary, it being similar in principle to that given for the seamen class.

The Naval Academy.—Advanced instruction for naval officers and engineers is given at the Naval Academy situated at Tokyo. It is conducted by a Rear-Admiral superintendent and several instructors and officers of different ranks, as well as by a staff of professors. The courses of instruction for officer students are divided as follows: (1) Officers' long course, two years; (2) officers' short course, one year; (3) optional course, one year (nearly); (4) engineers' long course, two years; (5) engineers' short course, one year.

Officer students are nominated by the Commander-in-Chief of naval stations and squadrons, and by officers having similar authority, according to a notice given once a year by the Minister of Marine. A candidate for a long course must have had experience of sea duty for three years, be in good health, possess good judgment and a fair knowledge of his profession, and have a good record. Officer students for the optional course are not nominated, but make application, stating the subjects to be studied, and permission is granted them by the Minister of Marine if he sees no objection. Officer students of this class include Captains, Commanders, and Lieutenants.

The principal subjects taught at the academy for officers are: (1) Strategy; (2) Naval Tactics; (3) Military Tactics; (4) History of War; (5) Ordnance and Machinery, including gunnery, torpedoes, naval architecture, steam engines, hydraulic and electric machinery; (6) Navigation, Meteorology, Coast Survey, etc; (7) Fortification; (8) Land Survey; (9) Navy and Military Administration; (10) International Law.

Preparatory subjects are advanced mathematics, dynamics, physics, applied dynamics.

Optional subjects are criminal law of the navy, modern languages, photography.

The subjects for engineer officers are, first part: (1) Steam engines; (2) Practical Engineering; (3) Designing of Engines and Machinery; (4) Naval Architecture; (5) Construction of Ordnance.

Second Part. (1) Theory of Steam Engineering; (2) Kinematics of Machinery; (3) Strength of Material; (4) Resistance and Propulsion; (5) Hydrodynamics and Hydraulic Machinery; (6) Electricity and Electric Machinery and Apparatus.

Preparatory subjects are Mathematics, Dynamics, Physics, Chemistry, Metallurgy.

Optional subjects are Criminal Law of the Navy, Modern Languages, Photography.

Officers choosing the optional course may select any of the subjects enumerated above, but the selection thereof must be made at the time of application.

Naval Expenditure.—The expenditure for The Imperial Navy is divided into two classes: Ordinary expenditure and extraordinary expenditure. The ordinary expenditure is for the maintenance of the navy and the extraordinary expenditure for construction and new establishments.

The following figures will give some idea of the increase in expenditures of the Imperial Navy since 1870, compared with the tonnage of the ships:

Fiscal year	Expenditures.		Tonnage
	Ordinary, yen.	Extraordinary, yen.	
1870.....	886,856	....	13,767
1880.....	2,817,912	291,890	25,727
1890.....	5,412,491	4,089,201	61,763
1900.....	19,484,952	24,494,374	255,497
1901.....	21,063,345	15,262,843	258,077
1902.....	21,530,237	14,587,619	263,077
1903.....	8,132,720	12,480,498	298.222
1904.....	12,332,139	11,079,801	280,524
1905.....	28,914,073	11,693,495	367,894
1906.....	33,414,695	49,067,524	426,234

The special expenditures of the Japan-China War and the Russo-Japan War were as follows: Japan-China War (1894-1895), 35,955,137 yen; Russo-Japan War (1904-1905), 239,578,251 yen.

Besides the ordinary and extraordinary expenditure, the navy has special funds for shipbuilding and ordnance materials, which are divided among the dockyards and arsenals as follows: Shipbuilding Material Fund.—Yokosuka, 1,060,000 yen; Kure, 860,000 yen; Sasebo, 860,000 yen. It is intended to increase this fund to 6,500,000 yen in aggregate ($3,237,000). Ordnance Fund.—Kure, 805,000 yen; Tokyo, 240,000 yen; Yokosuka, 142,000 yen; Sasebo, 135,000 yen; Shimose powder factory, 45,000 yen. This sum is to be increased to 3,000,000 yen in aggregate ($1,494,000).

Conclusion.—The strength of the Imperial Japanese Navy will be maintained in the following manner: In 1899 an Act was passed supplying 30,000,000 yen as a fund for the reconstruction of ships and torpedo boats. This sum of money was placed in deposit at the Treasury, and increases by compound interest. This interest (saving always the 30,000,000 original) can, at the discretion of the Minister of Marine, and making it clear in the Budget, be expended on reconstruction works. In addition to this, from 1904 on, the fund is added to per annum according to the following proportions: For protected ships, 3.9 per cent.; for unprotected ships, 5.4 per cent.; for torpedo boats, 6.15 per cent. of the value (first cost) of a warship or torpedo boat.

Ships and torpedo boats which have been constructed for the following periods are removed from the list, and no funds are raised for them; protected ships, 25 years; unprotected ships, 18 years; torpedo boats, 15 years.

VICE-ADMIRAL SAITO,
Minister of Marine, Tokyo.

19. Japan—Russo-Japanese War. *Causes of the War.*—The Russo-Japanese War was caused by the conflict of interests between the two nations owing to the pursuance by Russia of a policy of expansion in the Far East.

Commencing the colonization of Siberia from the latter part of the 16th century, Russia steadily advanced towards the East, until after about a century she succeeded in the subjugation of nearly the whole of that vast region. She then advanced into Manchuria, with the result that China objected to her action and the Nertchinsk Treaty, by which the boundary line between the two countries was fixed, was concluded on 27 Aug. 1689. By virtue of this treaty, Russia had to withdraw from the Amur region, which she had occupied, and was checked from seeking an outlet on the Pacific coast for about a century and a half. This did not mean, however, that Russia abandoned her eastern policy, and with the appointment of Muravieff to the governorship of Eastern Siberia in 1847, she began to move towards the southeast, and by way of the Amur at last reached the Sea of Okotsk. On 16 May 1854, she concluded the Treaty of Aigun with China, by which she annexed the district to the north of the Amur. Two years after, when China was invaded by the allied troops of Great Britain and France, General Ignatieff, the then Russian Ambassador at Peking, took the opportunity to win the good will of the Chinese Government by intervening between China and her enemies. In return for this service, the Treaty of Peking was signed on 2 Nov. 1860, by which Russia took possession of the district east of the Usuri, and thus for the first time in her history expanded her dominion to the coast washed by the Sea of Japan. She now founded the city of Vladivostock, which she made the basis for carrying out her long-cherished Far Eastern policy.

But as the long distance between St. Petersburg and Vladivostock proved impeditive in many ways to the successful realization of her scheme, Russia determined to connect the two cities by rail. Thus the construction of the Siberian railway was commenced in May 1891 and finished about ten years later. Russia now found herself in possession of a powerful instrument in realizing her policy, but she was not satisfied, for being ice-bound in winter Vladivostock was not suited to her commercial and strategical purposes. Russia, therefore, wished to get an ice-free port somewhere in the south and waited for an opportunity to attain that object.

In 1894 the Japan-China war broke out and in the following year, by the Treaty of Shimonoseki, China agreed to cede to Japan the Liaotung peninsula. Seeing in this a great obstacle to the pursuance of her policy, Russia, backed by Germany and France, coerced Japan to return the Liaotung peninsula to its original owner, which act of Russia was viewed by the Japanese people with anything but gratitude.

In 1896 Russia signed a secret treaty, the celebrated Cassini Treaty, with China, by which she obtained the privilege of constructing railways in Manchuria. She founded the Eastern Chinese Railway Company, and immediately set herself to the work of building railways in that region. In December 1897, she took another decided step forward. She occupied Port Arthur and Talien, the very places from which she had ousted Japan, obtained the formal lease of the two ports from China on March 27 of the following year, and immediately began to equip them with armaments.

In 1900 the Boxer rising took place in China, which was quelled by the allied troops of the Western Powers and Japan. Russia, which had now completed her two lines of railway in Manchuria, seized the opportunity to send out a large force to that region on the pretext of guarding the railway, and after the Boxer disturbances were over refused to withdraw her troops. Thus she not only continued the practical occupation of Manchuria, but, gradually increasing pressure on Korea by encroaching on the Yalu as well as by diplomacy in Seoul, menaced most seriously the independence of that kingdom. As a matter of fact, Russia's ambition on Korea was not a new thing. After the conclusion of the Japan-China War, M. Waeber, the then Russian Minister at Seoul, left nothing undone to extend Russia's influence in the Korean court by utilizing the anti-Japanese faction. Subsequently, M. Speyer, who succeeded M. Waeber as the representative of Russia in Korea, attempted to get practical control over the financial and military power of that country. This attempt, however, was frustrated owing to a strong protest made by Japan and Great Britain. During the years following the Japan-China War, no less than three agreements had been arrived at between Russia and Japan, and at last it looked as if Russia was going to slacken her pace. As soon, however, as her plans were matured in Manchuria, her activities again began to show themselves in Korea, in many cases completely ignoring the agreements above referred to.

The attitude of the Japanese Government toward this state of affairs is best expressed by the following quotations from Baron Komura's dispatch to the late Japanese Minister in St. Petersburg. He says: «The unconditional and permanent occupation of Manchuria by Russia would create a state of things prejudicial to the security and interest of Japan. The principle of equal opportunity would thereby be annulled and the territorial integrity of China impaired. There is, however, a still more serious consideration for the Japanese Government. That is to say, if Russia was established on the flank of Korea, it would be a constant menace to the separate existence of that empire, or at least make Russia the dominant power in Korea. Korea is an important outpost in Japan's line of defence, and Japan consequently considers her independence absolutely essential to her own repose and safety. Moreover, the political as well as commercial and industrial interests and influence which Japan possesses in Korea are paramount over those of other powers. These interests and influences, having regard to her own security, Japan cannot consent to surrender to, or share with, another power.»

The Japanese Government, however, was eager for peace and made overtures to the Russian Government in July 1903 to come to a friendly agreement concerning the settlement of the Manchurian and Korean problems. Having obtained the consent of the Russian Government, a memorandum was drafted which would form the basis of agreement.

The main points in the memorandum were (1) that Russia and Japan should both respect the independence and territorial integrity of China and Korea and maintain the principle of equal opportunity toward all nations; (2) that the two nations should reciprocally recognize Japan's preponderating interests in Korea and Russia's special interests in railway enterprises in Manchuria, and that each had right to take such measures as was necessary for the protection of their respective interests; (3) that each nation was free to send troops to protect the interests mentioned above; (4) that Russia should recognize the exclusive right of Japan to advise and assist Korea in the interest of civil and military reform. Against this memorandum Russia sent on 3 October a counter proposal demanding that Japan recognize Manchuria to be outside her sphere of interest and forego her exclusive right to assist Korea in making military reform, and that Japan and Russia should mutually engage not to use Korea for strategical purposes, as well as to consider that part of Korea lying to the north of the 39th parallel as a neutral zone.

Besides, Russia quietly suppressed in this counter note the important clause providing for equal opportunity for the commerce and industry of all nations. On the receipt of this counter note the Japanese Government, after several conferences with Baron Rosen, the then Russian Minister in Tokyo, proposed a fresh memorandum containing the «irreducible minimum,» which was accordingly communicated to the Russian Government on the last day of October. In this new memorandum Japan made several important concessions, (1) Japan would engage not to undertake on the coasts of Korea any military works capable of menacing the freedom of navigation in the Korean Straits; (2) she would agree to the proposal of Russia to create a neutral zone, but that said zone to be created at the Korean—Manchurian frontier and to extend 50 kilometres on each side; (3) that Russia and Japan should mutually declare that Korea was beyond the sphere of the «special» interest of Russia and Manchuria of Japan.

To this note Russia replied only on 11 December. In this new counter note Russia was entirely silent on the subject of Manchuria, and regarding Korea repeated the restrictions proposed in September, including the restriction of Japan's giving advice and assistance on military matters. On 21 December Japan made her last attempt to come to terms with Russia, and M. Kurino, the then Japanese Minister to St. Petersburg, was instructed to present a *note verbale* to the Russian foreign minister. In this *note verbale* the Russian Government was requested to reconsider her contention that Japan had no right to have a voice in the affairs of Manchuria and that Japanese assistance to Korea be limited to civil affairs only; besides Japan finally requested Russia to give up the idea of creating a neutral zone out of the Korean territory north of the 39th parallel. To this Russia gave reply which reached Tokyo on 6 Jan. 1904, again insisting that Japan should recognize Manchuria as beyond her sphere of influence; that Japan should agree to the Russian proposal of creating a neutral zone in North Korea; that Japan should be accorded full right to the privileges according to the existing treaties, but no right to establish settlements; and no mention was made of China's territorial integrity in Manchuria.

Against this the Japanese Government made another proposal on 13 January making further concessions, such as giving up the claim to special interest in Manchuria, provided Russia agreed to grant full privilege for the enjoyment of treaty rights acquired from the Chinese Government besides giving up her claim to special interests in Korea. But to this last proposal Russia kept postponing reply, while reports of Russian military preparation on the Yalu side of Manchuria kept coming.

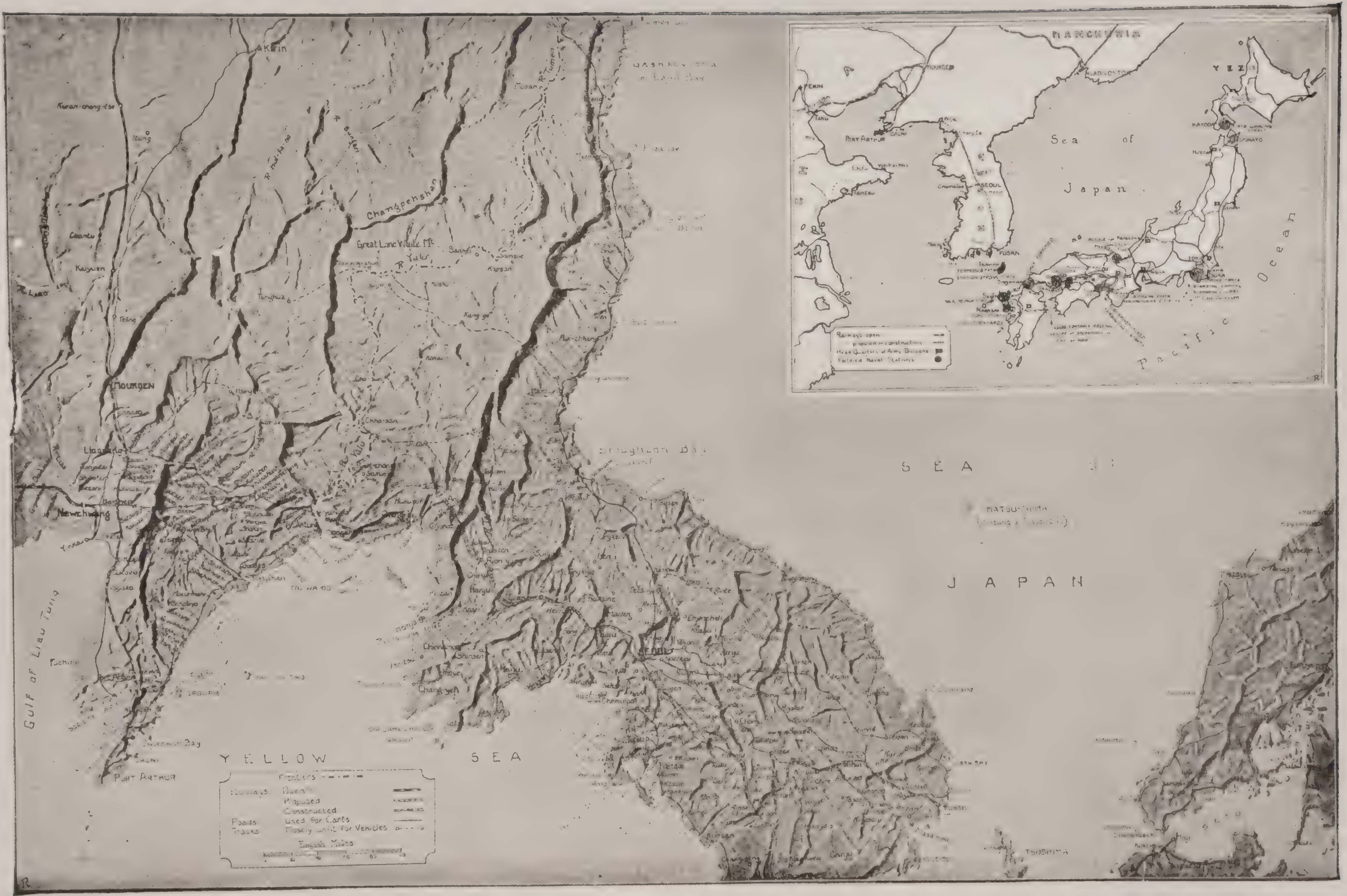
On 1 February the Governor of Vladivostock warned the Japanese commercial agent there to prepare for withdrawing his compatriots. Under these circumstances it seemed doubtful to Japan whether the Russian Government was really sincere and wished an amicable agreement. The Japanese government felt that it had made all possible concessions in the interest of peace, and on 5 Feb. 1904 sent a note informing the Russian Government of the severance of friendly relations between the two countries. On 10 February Minister Kurino withdrew from St. Petersburg, while Baron Rosen, the then Russian Minister at Tokyo, left the Japanese capital on the following day.

Opening of Hostilities.—No sooner was Russia informed of the severance of friendly relations than Japan prepared for hostilities. In order to assume the offensive attitude, it was necessary for Japan to hold the command of the sea. With that object in view, the naval authorities organized a combined fleet consisting of four divisions.

Vice-Admiral Togo, who shortly before had been appointed commander-in-chief of the combined squadrons, left Sasebo on board his flagship *Mikasa* on 6 February with the entire fleet. Russia's Pacific squadron consisted at that time of 57 vessels, whose aggregate tonnage was about 190,000 tons, while Japan possessed 76 warships with an aggregate tonnage of about 270,000. The main strength of the Russian fleet was then concentrated at Port Arthur, only two vessels being stationed at Chemulpho and three others at Vladivostock. The main strength of the Japanese fleet went to attack the enemy's squadron at Port Arthur. It was found that most of the Russian warships were at anchor on roadstead outside the harbor of Port Arthur. During the night of 8 February, 18 Japanese destroyers approached those warships and by torpedoing greatly damaged the *Retvizan* and two other vessels. On the following day, the fleet again opened fire on the Russian ships, and after an indecisive engagement, withdrew to its base in the Korean sea. Previous to this, the Fourth Division of the fleet, commanded by Rear-Admiral Uryu, went to Chemulpho and by summoning out the Russian gunboat *Coreets* and the cruiser *Varyeg* engaged them in battle in the neighborhood of the island of Phalmi on the 9th and greatly damaged them. After 35 minutes' action the Russian ships were compelled to return to Chemulpho, where shortly after the two ships blew up.

By these two naval actions Japan secured the supremacy of the sea, so that henceforth her troops could be sent free of danger to any place in Korea and Manchuria. On the 10th the war was formally declared by the Emperors of both powers and on the 12th Japan established military and naval headquarters in the Imperial Palace at Tokyo.

Operations of the Manchurian Armies.—Under the escort of a squadron commanded by Rear-Admiral Uryu, the advance-guards of the Japanese army, which consisted of four battalions, landed at Chemulpho on 8 February, and passing through Seoul rapidly advanced northwards and occupied Phyng-yang, which is a town of the greatest strategical importance between Seoul and Wiju, a town on the left bank of the Yalu. By that time some Russian troops had been advancing southward, and made their appearance on 28 February at a point about five miles north of Tsi-sing-man, one of the gates of Phyng-yang. A skirmish with the Japanese outposts took place, in which the Russians were repulsed. This was the first land engagement of the war. The Japanese troops, now greatly augmented by contingents which constantly arrived, marched northward, and having occupied



RELIEF MAP OF THE FIELD OF RUSSO-JAPANESE WAR.

FROM A MAP PREPARED BY THE INTELLIGENCE BUREAU OF THE WAR DEPARTMENT OF JAPAN

Wiju on 3 April concentrated on the left bank of the Yalu. These constituted the First Army, being made up of three divisions, with General Kuroki as the commander-in-chief. The Russians, who had occupied the right bank of the river, concentrated their main strength at Kiuliencheng, and tried to prevent the Japanese from crossing the river. In face of incessant and heavy firing of the enemy, however, the troops succeeded in constructing a bridge across the river and by means of this bridge carried out the general attack of the enemy's position at Kiuliencheng on 1 May. Severe fighting, lasting for more than two hours, took place, resulting in the complete victory of the attackers. The Russians, who were greatly outnumbered, fled, hotly pursued by the Japanese, who captured Feng-hwancheng on 6 May and continued to advance in the direction of Liaoyang. Hsihoyen, to the east of Liaoyang, was the key to the defence of that city. The Russians had stationed three brigades there and defended the place with the greatest tenacity. But Japanese troops belonging to the Twelfth Division made a most fierce attack and compelled the Russians to evacuate the place on 18 July. Thus by the beginning of August the Japanese were already menacing Liaoyang. Previous to this, the Independent Tenth Division, commanded by Lieut.-General Kawamura, which had the mission of connecting different armies assigned to it, landed at Takushan on 19 May, and coöperating with a detachment of the First Army occupied Sinyen on 8 June. By this time the organization of the Fourth Army was completed, with General Nozu as commander. It landed at Nauchienao and joined the Tenth Division at Sinyen. The combined army now advanced by way of Fenshuiling, and after occupying Tohmucheng, turned northward and pressed on toward Liaoyang.

The Second Army, led by General Oku, landed in Liaotung peninsula at Yentaao on 5 May, being charged with the task of bringing pressure on the rear of Port Arthur. About the middle of the peninsula, there is a narrow isthmus, on which a high hill called Nan-Shan stands, and at its foot is a town called Kinchow. It is a place of the greatest strategical importance, constituting the first barrier to Port Arthur. General Stoessel, commander of the Port Arthur garrison, resolved to retain it at all cost, so that he might respond to the advance of the relief army from the north on the one hand and defend Talien on the other. For several weeks past he had spared no pains to fortify the hill by digging trenches, mounting heavy cannon, laying subterranean mines and wire entanglements and adopting every other method of defence known to military science. Against this strongly defended hill, General Oku hurled three divisions on 26 May, and with the coöperation of three Japanese warships, which fired on the enemy from the sea, succeeded in dislodging the Russians from their position after a fierce battle. In this way, Port Arthur was completely isolated. The Russians in the direction of Liaoyang thought to recover the hill in order to restore communication between the south and north. With that object in view, they concentrated their strength to the north of Wafangtien. The Japanese turned to the north to meet them and fought a battle at Tehlitz on 16 June, inflicting a crushing defeat on the enemy. The Japanese then pressed on Kaiping and after three days' fighting occupied the town on 9 July. Subsequently they marched further north and by taking possession of Haicheng and Niuchwang on 3 August, menaced Liaoyang.

Thus, the First, Second and Fourth Japanese Armies won victory after victory, and now marched on Liaoyang from three sides; while the Third Army under General Nogi took the place of the Second Army in pressing the siege of Port Arthur.

The Siege of Port Arthur.—Soon after Russia leased Port Arthur from China, she commenced to convert it into one of the strongest fortresses in the world. She built there many forts and mounted on them guns of various calibres, quick-firing guns, machine guns and heavy cannon. Between each fort, trenches or tunnels were built for communication, and in front of the forts covered trenches, wire entanglements, subterranean mines, abatises and other means of defence were prepared. In fact, Port Arthur was armed to the teeth with every description of the latest and most powerful of weapons and defended by every means which human ingenuity could devise, while a great army and a powerful fleet, commanded by General Stoessel and Admiral Stark respectively, were awaiting the attack of the Japanese. There is little wonder that in the course of the Russo-Japanese War, the Japanese found Port Arthur the hardest nut they had to crack.

Beginning with the attack made on 8 February, the Japanese fleet repeatedly essayed its strength against Port Arthur. On 13 February, in face of a great snowstorm, it attempted a torpedo attack, but without much avail. It then attempted to block the entrance to the harbor by sinking steamers there. The first attempt was made on 24 February, when four steamers were sunk at the entrance. Later three more similar attempts were made, in which the Japanese were partly successful. One remarkable fact in connection with those daring blocking attempts was that officers and men vied with each other to take part in the task, which meant almost certain death. As a matter of fact, more than 2,000 officers and men volunteered to serve in the third attempt. On 13 April, several Russian warships suddenly emerged out of the harbor and appeared to be attempting to escape, but being met by the Japanese fleet with heavy firing steamed back to the harbor.

It was at this time that the Russian flagship *Petropavlovsk,* striking one of the mechanical mines which had been laid by the Japanese the previous night, exploded and sank. Vice-Admiral Makaroff, who had succeeded Admiral Stark as commander-in-chief of the Russian fleet some time before, was on board the *Petropavlovsk,* and was drowned with more than 600 of her officers and crew. The Japanese, however, were not free of similar disasters. On 12 May the despatch-boat *Miyako* struck a Russian mine and sank while engaged in clearing the Talien harbor of mines. Three days after, the cruiser *Yoshino* sank off Port Arthur in consequence of a collision during a thick fog with the cruiser *Kasuga.* On the same day, the battleships *Hatsuse* and *Yashima,* two of the most powerful ships of the Japanese navy, were destroyed, having struck the enemy's mines; and to add to these misfortunes, the gunboat *Oshima* and the destroyer *Akatsuki* were also lost. In spite of these repeated disasters the Japanese commanders continued to harass the enemy with greater vigor than before. On 26 May, when the town of Kinchow was taken, thus isolating Port Arthur, Vice-Admiral Togo declared blockade over the coast of Liaotung between Pitszwo and Pulantien, and while keeping up a vigilant watch over those vessels which attempted to smuggle provisions and ammunition to Port Arthur, greatly assisted the land force in harassing the enemy. On 10 August the whole of the enemy's fleet attempted to escape from Port Arthur. The Japanese fleet met them about 30 miles off Port Arthur and in a fierce battle which ensued inflicted heavy damage. For instance, the Russian flagship *Cesarevitch* was greatly injured and Rear-Admiral Vithoft was killed. Other Russian ships also sustained severe damage and steamed back to the harbor of Port Arthur, except four which made good their escape to Kiaochow and elsewhere. After this great naval engagement, the Russian fleet lay concealed in the harbor and never again attempted to escape.

On 6 June, General Nogi landed at Liaotung peninsula at the head of the Third Army, and starting from Kinchow, which had been occupied by the Second Army, advanced southward, pressing the rear of Port Arthur by the beginning of August. The Russian garrison in that fortress was now apparently doomed. On 16 August a *parlementaire* was sent by the Japanese army to the commander of the fortress communicating him of the Imperial wishes with regard to the disposal of non-combatants and also counselling his surrender. On the following day, the enemy replied to the communication, refusing either to deliver the non-combatants or to surrender. So the Japanese army opened a general attack on the fortress on the 19th. A bloody fight followed, which lasted till the 23d. The Russians held their positions with great tenacity and courage, and the Japanese were only able to capture the East and West Forts of Panlungshan at great cost. The attack on the North Fort of Tungkeikwanshan proved most costly, the losses sustained by the Japanese being extraordinarily heavy. Under these circumstances, the Japanese concluded that Port Arthur could not be taken by storm, and resolved to carry on a long siege.

Japanese Naval Operations in the Direction of Vladivostock and Saghalien.—At the beginning of the war, the Russians had three warships at Vladivostock and were ready to meet the Japanese on the sea by the coöperation of the Vladivostock squadron and the Port Arthur squadron. On 6 March, Vice-Admiral Kamimura, commander of the Second Squadron, led seven warships to a bombardment of Vladivostock. The enemy's ships, however, did not venture out and give battle. On 25 April they unsuspectedly made their appearance off Gensan, Korea, and attacked and sank the *Kinshu-maru,* a Japanese transport. On 15 June they again sank another transport, the *Hidachi-maru,* and on 30 June some of their torpedo boats raided Gensan. Despite these frequent appearances, they successfully eluded the Japanese warships, until on 14 August they were caught by the Kamimura squadron off Ulsan, Korea, while they were steaming southward. In the engagement which followed, the *Rurik,* one of the Russian cruisers, was sunk and two others were heavily damaged. The Vladivostock squadron then became entirely inactive.

The Russian cruiser *Novik,* which had escaped to Kiaochow from Port Arthur after the naval engagement on 10 August, was requested by the German authorities there to leave the port. In consequence, she left Kiaochow and for some time her whereabouts was unknown. It was later found that she was proceeding towards Vladivostock by a roundabout way on the Pacific. The Japanese cruisers *Tsushima* and *Chitose* at once gave chase and, overtaking her at Korsakoff, in Saghalien, completely disabled her.

The Battles of Liaoyang and of the Shaho.—The first goal of Japan's Manchurian armies was Liaoyang. As the different armies approached it there arose the necessity of establishing headquarters, which should control and direct their movements. Thus, on 24 June, the headquarters of the Manchurian armies were created with Marshal Oyama as its head and General Kodama as chief of the staff. They left Tokyo for the front on 6 July. In the meantime, General Kuropatkin, commander-in-chief of the Russian armies in Manchuria, had his headquarters between Liaoyang and Mukden, and was trying to check the advance of the Japanese armies. At the beginning of August, Japan's First Army was at Yushulingtsz and Yangtzling, the Second at Haicheng and the Fourth at Tohmucheng. Marshal Oyama made the First Army the left wing, the Fourth Army the centre and the Second Army the right wing, and ordered a general advance on Liaoyang, so that by about 23 or 24 August the Japanese armies found themselves in the vicinity of Liaoyang. Confronting them, the enemy had Lieut.-General Stackelberg with three army corps opposed to the Second and Fourth Japanese armies, Lieut.-General Ivanoff with two army corps opposed to the First Army, and General Kuropatkin with all the reserve forces stationed outside Liaoyang, besides providing a flying column to meet a flanking attack. On 25 August the Japanese right wing opened fire on the Russians, and steadily defeating them pushed forward until on 1 and 2 September it occupied positions behind Liaoyang. In the meantime, the Japanese Central Army and left wing also operated against the enemy. They dislodged him from his positions at Anshantien and Sheushampao one after another, and hotly pursuing pressed on Liaoyang. It was originally the plan of the Russians to rendezvous their retreating troops at Liaoyang, but due to the hot pursuit of the Japanese armies much confusion occurred among the Russians, and a great army, probably 250,000 strong, fled northward. By 4 September the Japanese armies completed the occupation of Liaoyang. The Japanese armies in this fight probably numbering 200,000. In this engagement the Japanese casualties were roughly estimated at 18,000, and those of Russia at more than 25,000.

The news of the Russian defeat at Liaoyang caused consternation at St. Petersburg, and at a conference held before the Throne loud were the voices condemning General Kuropatkin. The result was that General Gripenberg, who had always been on bad terms with Kuropatkin, was appointed commander of the Second Russian Army. Moreover, Kuropatkin was constantly urged to go to the relief of Port Arthur. In these circumstances, Kuropatkin decided to take the offensive with the view of wiping out the disgrace he had sustained at Liaoyang. He led a great army southward and the battle of the Shaho ensued.

On that occasion, the Russians marched against the Japanese positions by three different roads. On 9 October, General Stackelberg, at the head of two army corps, attacked the Japanese right wing. This was the beginning of the great battle, which continued to be fiercely fought in all directions until the 15th, there being some minor engagements till the 17th. Everywhere the Japanese were victorious and the Russians fell back in the direction of Mukden by taking three roads to the east of the railway.

After the battle of the Shaho, the Japanese Manchurian armies remained inactive for some time, taking no step other than checking the advance of the enemy in the direction of the Shaho. Their intention was to wait for the fall of Port Arthur and join General Nogi's army to themselves, so that they might advance northward *en masse* and inflict a crushing defeat on the enemy.

The Fall of Port Arthur.—Since the first general attack made on 19 August, the investing army of Port Arthur made altogether four general attacks on the fortress before 26 November. But every time the Russians offered a stubborn resistance, causing great losses to the Japanese. There is a hill known as the 203-metre hill at the northwestern extremity of the line of fortifications behind Port Arthur. It is the highest hill at the back of the fortress and from its summit the whole view of the harbor and town can be obtained. For this reason, the hill is the key to the fate of the fortress. On the occasion of the second general attack, the First Division attacked it with all its might for four consecutive days and nights, but failed to take possession of it after having lost heavily in its fighting strength. From 27 November, the investing army again made another attempt to capture it, concentrating all the fires of its artillery and hurling column after column against it. A most fierce and bloody hand-to-hand fighting resulted, and at last during the night of the 30th a detachment of Japanese succeeded in carrying the hill. On the following day, however, the Russians returned to a counter-attack in great force and innumerable were the casualties on both sides. So heavy indeed were the losses that the sides of the hill were literally covered with the killed and wounded, and in order to recover them the *parlementaries* from the opposing forces met and arranged for a partial armistice.

After the killed and wounded were removed, fighting was resumed with redoubled fury. It was only on 5 December that the Japanese succeeded in repulsing all the counter-attacks of the Russians and completing the occupation of the 203-metre hill.

When the 203-metre hill fell into the hands of the Japanese the fate of Port Arthur was practically sealed. Establishing a watchtower and mounting heavy cannon on its summit, the Japanese army bombarded the enemy's warships in the harbor day after day, which, without having any shelter to protect them, were easily hit and sunk one after another. The *Sevastopol* and some other vessels, which had escaped beyond the range of cannon, were attacked with torpedoes and completely disabled, and by 11 December the Russian Pacific squadron was annihilated. Then the Tungkeikwanshan Fort was taken by the Japanese on the 16th, the Erhlungshan Fort on the 28th and the Sungshushan Fort on the 31st.

By this time, the Russian garrison found itself in the last extremity of distress. Its store of food and ammunition was almost exhausted, it had no place to take in the wounded and sick, and its combatants were nearly worn out, due to unceasing fighting, with scarcely enough strength left to take up arms. In these circumstances, General Stoessel saw no other way but to surrender. On 1 Jan. 1905, he sent a *parlementaire* to the Japanese army in order to negotiate terms of surrender. General Nogi, commander of the investing army, accepted the request, and commissioned Major-General Ijichi, chief of his staff, to meet and discuss the terms of surrender with the Russian commissioner on the following day at Sinshiying. At this meeting the terms of surrender were agreed upon and signed by both commissioners. After all the fortifications and other military equipments had been duly delivered by the Russians into the hands of the Japanese, on 5 January General Stoessel came out of the fortress and met General Nogi. Previous to this, the Emperor of Japan, on hearing of the capitulation of the Port Arthur garrison, magnanimously desired that, in appreciation of General Stoessel's arduous services for the sake of his fatherland, he should be accorded all the honors of war. In consequence, General Stoessel and 536 officers were allowed to wear arms and return to Russia under obligation not to take part again in the present war. General Vock and a number of officers, however, refused to be released on parole, and were consequently sent to Japan as prisoners of war. Altogether 40,243 officers and rank and file were made prisoners of war.

Thus Port Arthur fell, and in consequence the blockade over the coast of Liaotung by the Japanese navy was discontinued, and a Naval Admiralty was established at Port Arthur with Vice-Admiral Shibayama as commander, and on 15 January General Nogi made the formal entry into the fortress.

The Battles of Heikautai and of Mukden.—The Russian defeat at Liaoyang and the fall of Port Arthur made a great impression on European Russia. Russia, which had enjoyed the fame of being a great military power, must inflict at least one defeat on the Japanese in order to save her face. It was at this time that General Kuropatkin saw that the strength of the right wing of the Japanese Manchurian armies, which were stationed in the direction of Heikautai, was comparatively weak. Here was a chance to score a victory. So General Kuropatkin ordered General Gripenberg to cross the Hunho and commence forward operations against the right wing on 23 Jan. 1905. Lieut-General Tachimi, who was commanding the Japanese troops at Heikautai, confronted him and the battle was opened on the 26th. It was fought for three consecutive days and nights, and yet the fortune of war remained undecided. On the 29th, all the Japanese regiments, determining either to drive off the Russians once for all or be annihilated in the attempt, made a most fierce attack, and despite great losses caused by machine-guns, pushed forward and on the following morning at last succeeded in compelling the enemy to retreat.

After the defeat at Liaoyang, the Russians had been gradually concentrating their strength at Mukden, where they assiduously prepared defence-works and attempted to check the advance of the Japanese toward the north. In the meantime, the Japanese army was also greatly augmented, due to the joining of the Third Army after the capitulation of Port Arthur and that of the Yalu Army under the command of General Kawamura. Marshal Oyama now saw the opportune moment had arrived to take Mukden, and ordered a general advance on the enemy's lines centering on Mukden. His general plan was: the Central, Left and Right Armies were to essay a frontal attack on the enemy by disposing themselves between Penhsiku in the east and the left bank of the Hunho in the west; the Third Army was to be in the left of the left wing, and the Yalu Army in the right of the right wing, so that the one might be between the right bank of the Hunho and its left bank and strike at Mukden from the northwestern direction by taking a roundabout way, while the other might work in conjunction with the right wing from the direction of Hsiencheng, attack the enemy in the direction of Hsingcheng and capture at one blow both Mukden and Fushun. This plan was faithfully and excellently carried out. The memorable battle was opened 19 February. The extreme right wing of the Japanese armies pushed northward after occupying Chinghocheng, pressed on the left bank of the Hunho and, occupying the entire neighborhood of Fushun by 10 March, drove off the enemy in that region northward. The Russian casualties in this direction were not less than 20,000, while those of the Japanese were only some 3,800. As for the extreme left wing, it commenced operations on 27 February, and advancing from the west toward the northwest emerged in the rear of the enemy, and while the Japanese Central, Left and Right Armies were still confronting the Russians along the Shaho, was menacing Mukden itself with the railway line between it and the city. These prompt actions of the Japanese two extreme wings greatly contributed to victory, for the Russians, already hard pressed in front, were thrown into utter confusion, finding themselves attacked from the rear. By 11 March, the Russians in the direction of the Shaho retreated to the right bank of the Hunho in disorder, and either by being hotly pursued or being surrounded, lost heavily. So great was the Russians' defeat indeed that in the direction of the Shaho their casualties were over 90,000. On the 15th Marshal Oyama made the formal entry into Mukden, and the office of the Tartar-General of the city was made the seat of his headquarters. The Battle of Mukden was probably one of the greatest battles since history began, its battle line having extended to more than 125 miles, while the armies confronting each other numbering probably 450,000 on the Russian side and 350,000 on the Japanese side. After that battle the Japanese armies continued the pursuit of the retiring Russians, and Tiehling, Kaiyuan, Changtu and other places fell into their hands one after another.

The Battle of the Japan Sea.—When Port Arthur was completely isolated, Russia organized a second Pacific squadron with the purpose of relieving it. Led by Vice-Admiral Rojestvensky, it left Libau for the Far East on 16 Oct. 1904. The squadron was divided into two divisions, one of which voyaged round Africa, while the other passed through the Suez Canal. They joined again at Madagascar on the day on which Port Arthur capitulated. In April 1905, it stopped at different ports in French Annam, one after another, and on 5 May was joined by a third Pacific squadron commanded by Rear-Admiral Nebogatoff. As Port Arthur had already fallen, the Russian fleet steamed northward with the purpose of entering Vladivostock. Admiral Togo, commander-in-chief of the Japanese fleet, anticipated that the enemy's fleet would attempt the passage of the Straits of Tsushima, and calmly waited for its coming, having concentrated all his naval strength at the base of operations. At 5 A. M. on 27 May, he received a wireless telegram saying that the enemy's fleet was sighted. He at once issued orders to different detachments of warships to sally forth and meet the enemy according to a prearranged plan. At 2 P. M. on the same day, the opposing fleets confronted each other to the north of Okinoshima Island. Admiral Togo hoisted on the masthead of his flagship, *Mikasa, a* signal saying: «The fate of the Empire depends on the issue of this battle. All are expected to do their best.» At 2.08 P. M. the enemy opened fire, but the Japanese fleet refrained from responding until the range became less than 6,000 metres. Then it opened fire. It was both fierce and effective, and in a short time, beginning with the *Oslabya,* which led the enemy's fleet, and the flagship, *Kniaz Suvaroff,* most of the Russian warships were either sunk or disabled, and when darkness set in the Japanese destroyers and torpedo-boats made daring attacks on the still remaining vessels of the enemy. On the following day, the Japanese fleet succeeded in intercepting five Russian vessels, which were trying to escape northward. Rear-Admiral Nebogatoff, who commanded this detachment of the Russian fleet, saw the utter futility of resistance and surrendered. As for Vice-Admiral Rojestvensky, he was found on board a captured destroyer in a seriously wounded condition and made a prisoner of war. Of the 38 vessels which had attempted the passage of the Straits of Tsushima, 20 were sunk and five were captured by the Japanese, and only four cruisers and a few destroyers and transports made good their escape. Thus it is no exaggeration to say that the Second and Third Russian Pacific Squadrons were practically annihiliated. In contrast to this overwhelming loss sustained by Russia, the Japanese losses consisted of only three torpedo-boats.

Thus Russia lost on land Liaoyang, Port Arthur and Mukden, while on sea the First, Second and Third Pacific Squadrons. The issue of the war was now clearly decided.

The North Korean Army.—For some time after the outbreak of the war, Japan stationed only small garrisons at different places in Korea, but in view of frequent raids made by the Russians into the northern province of Hamgyong, headquarters of the Japanese troops in the peninsula were established at Seoul in the summer of 1905, with Lieut.-General Miyoshi as commander-in-chief. The North Korean Army thus organized for the first time occupied the important town of Kyong-syong on 20 June and steadily advancing northward cleared the Pu-ryong and Pu-peuk districts of the enemy by 24 July, and occupying Kyong-heung, a town on the frontier of much strategical importance, was in a position to menace Vladivostock.

The Subjugation of Saghalien.—Not long after the battle of the Japan Sea a Saghalien expeditionary army was organized with military and naval contingents under the command of Lieut-General Haraguchi. On 4 July 1905, a squadron commanded by Vice-Admiral Kataoka left Otaru escorting a number of transports with troops on board. On 8 July the Japanese occupied Korsakoff without difficulty and advancing further north occupied Alexandrovski on the 24th, and on the 30th Lieut-General Haraguchi proclaimed military administration over the whole island. On the same day the Russian Military Governor of the island asked for an armistice, and on the following day the Japanese and Russian commissioners met to discuss the terms of surrender. The Russians agreed to Japan's terms, and 3,270 officers and men surrendered. In this way Saghalien was completely subjugated in three weeks.

Since the outbreak of the war, Japan had won every battle on land and sea. Especially the great victories of the battles of Mukden and of the Japan Sea placed her in a most favorable condition as to the ultimate issue of the war. It was at this time that President Roosevelt of the United States urged the two combatants to lay down their arms. After duly considering different aspects of the situation, the Japanese Government concluded that it was wise to listen to the friendly advice of President Roosevelt. On 3 July 1905, Baron Jutaro Komura, Minister for Foreign Affairs, and Mr. Kogoro Takahira, Japanese Minister at Washington, were appointed plenipotentiaries for negotiating the terms of peace with Russian plenipotentiaries, (M. Witte and Baron Rosen). The peace conferences, which were held at Portsmouth, U. S. A., 29 August, arrived at a satisfactory conclusion and the Treaty was signed by the plenipotentiaries of both parties on 5 September. See PORTSMOUTH, TREATY OF.

TOKIWO YOKOI.

20. Japan — Retrospect and Prospect. Japan has never known a foreign invasion. In the middle ages a formidable armada was sent by the famous Kublai Khan to subdue the country, but it was successfully repulsed with the help of a timely gale. Hence the Japanese naturally entertain a deep sense of pride, are strongly inclined to uphold the independence and dignity of their country, highly respect the traditions of their forefathers and in all ways endeavor to maintain their national characteristics. Such is the ideal which they have always cherished and the spirit with which they are animated. But there is another trait—the people are ready to recognize anything good in other nations and do not hesitate to accept foreign ideas and adapt them to the advantage of their own country. This is shown by the introduction of the Chinese civilization in ancient times and by the importation of the Western civilization in our own day.

During the 7th, 8th and 9th centuries, A. D., Japan had much intercourse with China. In those days China was the most enlightened country in the East, and it was then that Japan introduced the Chinese civilization. It was then also that the Korean civilization was introduced, which, however, was nothing but a branch of the Chinese civilization. Thus we can say that Japan in her civilization is indebted in no small degree to China and Korea, but the time came when there was a fear that the nation had gone almost too far in imitating things Chinese,—making itself too subservient to them. Thereupon, at the instance of the famous scholar and statesman, Michizane Sugawara, Japan's official intercourse with China was terminated. The phrase «Japanese soul and Chinese intelligence» is said to have originated with him. The fact that the national intercourse was given up in order to save the nation from temporary evils is not, as the proverb says, unlike the killing of a bull by trying to straighten his horns. It is, therefore, impossible to give absolute approval to the above measures, but they are historical facts. Not long after this, the country was plunged into a state of continued civil disturbance, followed by the ascendency of militarism. With this, the civilization imported from the Continent showed a decline, military simplicity taking the place of ornamentarism in manners and customs as well as in all kinds of institutions. The good single feature we acquired during these days in the formation of the national character was the development of the Bushido. The attempted invasion of the Mongolian armada, above referred to, was an event which took place in the latter part of the 13th century and its cause was the refusal of the Japanese to recognize the extension of the supremacy of the ruler of the Chinese Empire over their country. Such being the case, intercourse with China, which had been suspended previously, naturally continued in the same way after the war. But it was not rare that Chinese priests as individuals visited Japan, and some of them were even naturalized, while some Japanese priests also went over to China where they pursued their ecclesiastical studies. This state of things continued to the time of the Ashikaga Shogunate, when even commercial ships, under the direction of feudal lords in the western provinces, went over to China for trade.

Towards the end of the Shogunate many trading vessels of Europe—Spanish, Portuguese Dutch, and later on English,—began to visit Japan for trade. At this time also many Christian missionaries came to Japan. Foreign trade made fair development and the missionaries were well received by the natives. Owing to indiscretion on the part of the missionaries, however, the time came when the native authorities thought it necessary to keep them at arm's length. About the same time the Korean complication took place, and a large army under the direction of Hideyoshi crossed the sea to the peninsula and occupied it. As, however, China espoused the cause of Korea and sent large reinforcements, the Japanese troops encountered much difficulty in overcoming them, and moreover the sudden death of Hideyoshi made it disadvantageous to continue the war. Besides, previous to this Korean expedition the country had long been disturbed by domestic wars. For these reasons the nation now needed a rest, and the statesmen of the time saw the necessity of doing their best to bring about peace and work for the progress of the country. Hence the Tokugawa Shogunate, succeeding Hideyoshi, decided upon the policy of the entire seclusion of the country from the rest of the world. Then, not only was the prohibition of residence of the Western missionaries enforced more rigidly than ever, but the visits of the Western and Chinese trading ships were also stopped, with a few exceptions. At the same time Japanese were prohibited from leaving the country with the object of carrying on trade, and the building of large ships was also forbidden. This condition of affairs lasted till the advent of Commodore Perry.

This policy of seclusion had its advantages and disadvantages. During this time the country enjoyed a long spell of peace, and all kinds of art, industry, and intellectual pursuits in native style made progress in an unprecedented degree. But at the same time the Japanese lost all chance of developing themselves in a cosmopolitan way by shutting their eyes to outside progress. The arrival of Commodore Perry was the occasion that awakened the people to the reality of the situation. Since then the nation, from necessity, under the leadership of men of foresight, has discovered that the old style of civilization was not enough to preserve an independent existence inherited from their ancestors. Intercourse was therefore opened with Occidental countries and a new appetite was created for learning and a new desire awakened to utilize everything good in Europe and America. It is also no doubt true that the recent history of the two European military campaigns in China, and the latter's defeat on each occasion, provided a lesson for the Japanese, who thereby obtained an additional impulse to adopt the new attitude.

It must be noted that this principle of opening the country, which became a fixed national policy with the inauguration of the new Imperial Government, experienced many difficulties for the 14 years following the advent of Commodore Perry on the coast of Uraga. An anti-foreign movement was a very powerful factor. It is true that this movement was largely due to a real sentiment against foreigners, but it would be a mistake to attribute all the actions of the people connected with the movement to a sense of hatred against Occidentals. Among those joining the movement were men who did so on the ground that it was a disgrace to the country to have been forced to conclude treaties at the dictation of foreigners; men who would like to first effect the consolidation of the country and then to propose from their own side the conclusion of treaties. Moreover, at that time another important movement, which aimed at the restoration of the Imperial authority, had already been mooted. This came to exercise a sharp influence concurrently with the confusion produced by the pressure from outside. There was then at Kyoto the Imperial Court, which was nominally the Supreme Government, and the Shogun's Government at Yedo, which actually governed the country, so that the country was under a sort of dual Government. Besides, the different provinces had their own feudal lords, who practically enjoyed autonomy. Thus there was no uniformity of administration. From the domestic point of view it was desired by those loyal to the Imperial Court to do away with the power of the Shogun and simultaneously augment that of the Emperor. From the point of view of Japan's international relations, it was necessary to improve the condition of the country and bring about uniformity of administration and other things, if she wished to open intercourse and maintain an equal footing with foreign Powers. Such being the case, there was much political dissension in the country, often resulting in conflicts of arms among the Japanese themselves and in attacks on foreigners and their ships. One thing, however, was certain; it was impossible to stick to the old condition of seclusion, and therefore with the inauguration of the new Government the principle of opening the country was definitely settled by the universal acquiescence of the people at large.

The history of Japan during the last 40 years may be said to be that of the unification of all sorts of domestic affairs and the introduction of western civilization. With the restoration of the Imperial authority 40 years ago, dual government was replaced by a unified Government under the Emperor. But as the different provinces still had their feudal lords, there was no real uniformity in military affairs, administration, education, judicial matters, economic and financial affairs, etc. It was necessary to effect a radical change in all these matters. The most difficult task was the abolition of the feudal system, but thanks to the wisdom of the Emperor and the sagacity of his Counsellors, as well as to the loyalty and patriotism of the feudal lords and their retainers, it was achieved without much difficulty not many years after the Restoration. Subsequently, all kinds of reforms, which were necessary for the unification of all departments of Government, were carried out with success one after another. In doing all this Japan's teacher was the Occident, because it was seen that it was necessary and advantageous to cast off the old notions and to introduce the new ideas from the West.

One of the five items in the oath which the Emperor took on the occasion of his ascension to the Throne was to seek wisdom from all parts of the world. The policy above described was nothing more than the carrying out and extension of that Imperial oath. Moreover, one chief aim of the new Government was to do away with arbitrary ruling, and to govern the country by the assistance of the people, making the latter feel a common interest in the Government in order to maintain and promote the general welfare of the whole community. In other words, the object was to allow the people to share in state affairs. This was also the principle enunciated in another of the five Imperial oaths. And at last, in the year 1889, the Imperial Constitution was proclaimed, and the country made a Constitutional Monarchy. The Constitution was not suddenly granted at the urgent desire of the people, but was in truth the result of the Imperial oath, the different edicts subsequently issued, and the reforms carried out according to the principles under which the nation was now being governed.

Regarding foreign affairs the revision of the treaties was one of the most difficult tasks of the new government. The treaties which had been concluded with the Western Powers were not made, as we have already seen, *at the instance of Japan*, and therefore the chief provisions were not reciprocal, especially so with regard to jurisdiction and tariffs. Concerning jurisdiction, all foreigners enjoyed extra-territoriality both in civil and criminal cases. In reference of the tariff Japanese customs houses were subject to conventional tariff by virtue of the treaties. If we look back at the condition of the civilized countries of the West at the time when these treaties were concluded, such terms might not have been unreasonable from their point of view. But there was no reason why the Japanese people should permanently subject themselves to these one-sided obligations. Because, not only from mere sentimental reasons, but from the practical point of view, extra-territoriality had caused much inconvenience and abuse, and the restriction of the tariff crippled the good management of the country's finance. Further, as Japan had a right by the provisions of the treaties to demand their revision, she often attempted to effect such revision, but was unable to obtain the consent of the Powers. In consequence of this, several difficulties arose in domestic politics. At last, however, the consent of the Powers was obtained, and in the year 1894 the revised treaties were successively signed between the parties concerned. By this revision extra-territoriality was totally abolished and tariff autonomy was restored to Japan, excepting on some points regarding which conventional tariffs still remain effective for some years to come. Japan was now on an equal footing with the Occidental countries, and for this result she has reason to be grateful to Great Britain and America.

The past history of Japan's foreign relations is not without important events, the greatest being the China war and the recent war with Russia. These were not sought by Japan, but fortunately from the beginning the Japanese contentions secured the sympathy of all counries, and at last, as the result of the late war, Japan obtained the honor of being classed among the great Powers of the world. At the same time Japan increasingly feels the heaviness of her responsibility. Japan's military reform was executed mainly for defensive purposes and not from any desire of expansion. But the Army and Navy, reformed, helped Japan not only to secure victory in recent wars but to make her, beyond all her expectations, better known to the world.

I am not a prophet and therefore I cannot say anything for certain about Japan's future, but this much I can say: Japan will continue to feel more and more the seriousness of her responsibility, which has been made so great, and not inconsistently with this determination she will endeavor to contribute towards the maintenance of peace and the promotion of the general welfare of the world at large. Along with this, she will continue at home the progressive administration which was inaugurated with the establishment of the new Government, and will introduce reforms in places where there is still room for such. Thus she will continue to follow the common path of the world's civilization and share the benefits of its fruits with other countries.

MARQUIS ITO.

Japan'ning, the art of varnishing in colors. The article to be japanned is first brushed over with two or three coats of seed-lac varnish to form the priming. It is then covered with varnish, previously mixed with a pigment of the tint desired. This is called the ground color; and if the subject is to exhibit a design, the objects are painted upon it in colors mixed with varnish, and used in the same manner as for oil-painting. The whole is then covered with additional coats of transparent varnish, dried and polished. See Lacquering; Varnish.

Japheth, jā'fĕth, the second of the three sons of Noah, Gen. x. 1. His descendants peopled Europe and northern Asia. The Armenians, Medes, Greeks, Thracians, etc., were of the stock of Japheth. In Arabian legend he is said to have had 11 sons, each of which was the founder of a nation. Some philologists designate the Indo-Germanic languages by the term Japhetic, thus identifying his progeny with the Aryans; and the patriarch is said by others to be represented by the Japetus of Greek mythology, whose wife was Asia, and bore him a son Prometheus, the founder of civilization.

Jarves, jär'vĕs, **James Jackson,** American art writer: b. Boston, Mass., 20 Aug. 1818; d. Tarasp, Switzerland, 28 June 1888. In 1838, he sailed for the Sandwich Islands, and resided for several years in Honolulu, where he published the first newspaper ever printed there, the *Polynesian.* Before returning to the United States he traveled in California, Mexico, and Central America, and subsequently published a ‘History of the Hawaiian or Sandwich Islands’ (1843); ‘Scenes and Scenery of the Sandwich Islands’ (1844); and ‘Scenes and Scenery in California’ (1844). He afterward resided in Europe, and engaged in making a collection of old masters which eventually became the property of Yale University. For his services to Italian art he was made a chevalier of the Crown of Italy. His later works include: ‘Parisian Sights and French Principles’ (1855–6); ‘Art Hints’ (1855); ‘Italian Sights and Papal Principles’ (1856); ‘Kiana, a Tradition of Hawaii’ (1857); ‘Confessions of an Inquirer’ (1857); ‘The Art Idea’; ‘The Old Masters of Italy’ (1861); ‘Glimpses at the Art of Japan’ (1876); ‘Italian Rambles’ (1884).

Jarvis, John Wesley, American painter: b. South Shields, England, 1780; d. 1840. John Wesley was his uncle and sent him in his fifth year to Philadelphia, where his father, a seafaring man, had settled. Jarvis had but little regular art training, but was encouraged by Malbone. He had a studio in New York and painted portraits of statesmen, preachers and soldiers, some of which are in the City Hall, New York, and in the collection of the New York Historical Society.

Jasher, jā'shėr, **Book of,** a lost book of the Hebrew Scriptures, twice mentioned in the Bible (Josh. x. 13, and 2 Sam. i. 18), and about which various conjectures have been made. It was most probably a national song-book of post-Solomonic age, whose contents were partly secular, partly religious. From the mention of the book in Joshua and 2 Samuel it has been inferred that the book of Joshua could not have been written before the time of David's lamentation. But this assumes that the book of Jasher was all written at once, an assumption which in our ignorance regarding it we are not at liberty to make; for the book of Jasher may have been written at different times. The theory of Dr. Donaldson as to its scope and contents, in conformity with which he proceeded to reconstruct it from the fragments which he thought he could trace throughout the several books of the Old Testament, has met with little favor either from English or Continental scholars. See Donaldson, ‘Fragmenta Archetypa Carminum Hebraicorum in Masorethico Veteris Testamenti Textu passim tessellata.’

Jasmin, Jacques, zhäk zhäs-măṅ (Provençal, Jaquou Jansmin), Provençal poet: b. Agen 6 March 1798; d. there 4 Oct. 1864. In his ‘Mous Soubenis’ (My Recollections) he gives a humorous description of the humility of his origin and of the poverty of his kindred. All his poems and songs are written in the patois of the peasantry on the banks of the Garonne, supposed in its purest state to be identical with the old Provençal, the language of the troubadours. His poetry deserved and acquired more than a local celebrity, and was warmly welcomed not only in Southern France, but throughout the whole of Europe. He was elected a member of the academies of Agen and Bordeaux; the city of Toulouse awarded him a gold laurel; and in 1846 he was created a Knight of the Legion of Honor. The poetry of Jasmin is distinguished by beauty and power, and though his genius inclined him to gaiety rather than to pathos, yet perhaps his most striking and successful passages are those in which he addresses himself to the feelings. His principal works are: ‘The Charivari’, (1825), a mock-heroic poem; ‘Lou Tres de May’ (1830), an ode; ‘The Blind Girl of Castel Cuillé’ (1836), his masterpiece in poetry, which has been translated by Longfellow; ‘The Curl-papers of Jasmin’ (1835); ‘Françouneto’ (1842); ‘The Two Twin Brothers’ (1846); ‘Maltro L'Innoucento’ (1847); and ‘La Semmano d'un Fil’ (1849). Consult Rabain, ‘Jasmin, sa vie et ses oeuvres’ (1867); Montrond, ‘Jasmin, poète d'Agen’ (1875); Andrien, ‘Vie de Jasmin’ (1882); Smiles, ‘Barber, Poet, Philanthropist’ (1892).

Jas'mine, or **Jessamine,** a genus (*Jasminum*) of beautiful plants of the olive family, including many cultivated species and varieties. Most of these are shrubs with long twining branches bearing usually compound leaves and panicles of fragrant white or yellow flowers. They are natives principally of the East Indies. The common jasmine (*J. officinale*) has become naturalized in the south of Europe, where it grows eight or ten feet tall, and is practically an evergreen. The oil of jasmine is obtained from *J. officinale* and *J. grandiflorum,* but it is usually imitated or adulterated. *J. sambac* also furnishes an oil in the East; and a very common greenhouse species is *J. humile.*

Several shrubs are called jasmines which are only loosely related to the true jasmine. Thus the red jasmine of the West Indies (*Plumeria rubra*), the source of the perfume frangipanni, is of the oleander family; the Chile jasmine, *Mandevillea suavolens,* is another fragrant species of the same family, widely cultivated, and others might be mentioned. Two of these outside «jasmines» are familiar in the United States, one of which is a native. The Cape jasmine

(*Gardenia florida*) is a Chinese (not South African) shrub of the madder family, which found its way to England and America about the middle of the 18th century; it is cultivated everywhere in greenhouses, in a double-flowered variety; and it grows out of doors along the southern seaboard, it being the special pride of Charleston, S. C., after one of whose citizens the genus *Gardenia* was named by Linnæus.

The native species is the Carolina or yellow jasmine (*Gelsemium sempervirens*), an exceedingly odorous climbing plant of the family *Loganiaceæ*, common throughout the South Atlantic States. It is a vine, whose blossoms grow in axillary racemes of from one to six vivid yellow tubular flowers; and «evening trumpet-flower» is a common name. «Early laden, indeed, is the warm air of spring with its delicious perfume. . . . Through woods and thickets it wends its way vigorously and gleams as brightly as does later the Cherokee rose. It is one of the joys of the season.» The roots are regarded by the country people as possessed of medical virtues.

Ja'son, in Greek legend, the son of Æson, king of Iolcos in Thessaly, a hero of ancient Greece, celebrated for his share in the Argonautic expedition, before which he had distinguished himself in the Calydonian hunt. He belonged to the family of the Æolidæ at Iolcos, and his instructor was the centaur Chiron, who educated most of the heroes of that time. (For his adventures in the Argonautic expedition see ARGONAUTS.) On his return to Iolcos with Medea as his wife he avenged the murder of his parents and his brother by putting Pelias to death. But he was unable to retain possession of the throne, and was obliged to resign it to Acastus, son of Pelias, and flee with his wife to Corinth. Here they passed ten years, till Jason, wearied of Medea, fell in love with Glauce (Creusa, according to some accounts), daughter of Creon, king of Corinth, married her, and put away Medea and her children. Medea, having revenged herself on her hated rival, fled from the wrath of Jason in her car drawn by winged dragons, the gift of Helios, to Ægeus, king of Athens, after she had put to death Mermerus and Pheres, her sons by Jason. According to some, Jason killed himself from grief; but others relate that, after passing a miserable wandering life, he came to his death by accident. Others say that he was reconciled to Medea, and returned with her to Colchis, where he ruled many years.

Jas'per, William, American soldier: b. South Carolina about 1750; d. Savannah, Ga., 9 Oct. 1779. At the commencement of the revolutionary war he enlisted in the 2d South Carolina regiment, in which he became a sergeant. Subsequently, in the attack upon Fort Moultrie by a British fleet, he distinguished himself by leaping through an embrasure to the ground, under a shower of cannon balls, and recovering the flag of South Carolina, which had been shot off. Governor Rutledge presented him with his own sword, and offered him a lieutenant's commission; this, however, Jasper declined, saying: «I am not fit to keep officers' company; I am but a sergeant.» His commander gave him a roving commission to scour the country with a few men, and surprise and capture the enemy's outposts. His achievements in this capacity seem to belong to romance rather than history and in boldness equal any recorded in the revolutionary annals of the southern States. Prominent among them was the rescue by himself and a single comrade of some American captives from a party of British soldiers, whom he overpowered and made prisoners. At the assault upon Savannah he received his death wound while fastening to the parapet the standard which had been presented to his regiment. His hold, however, never relaxed, and he bore the colors to a place of safety before he died. A county of Georgia and a square in Savannah have been named after him.

Jasper, Ind., town, county-seat of Dubois County; on the Patoka River, and on a branch of the Louisville, E. & St. L. railroad; about 47 miles northeast of Evansville. Jasper is situated in an agricultural region. The chief manufacturing establishments are saw-mills, lumbering and planing-mills, flour-mills, a furniture factory, and a brick-yard. Pop. (1900) 1,863.

Jasper, an impure quartz, less hard than flint or even than common quartz, but which gives fire with steel. It is entirely opaque, or sometimes feebly translucent at the edges, and presents almost every variety of color. It is found in metamorphic rocks, and often occurs in very large masses. It admits of an elegant polish, and is used for vases, seals, snuff-boxes, etc. There are several varieties, as red, brown, blackish, bluish, Egyptian. Ribbon or agate jasper is jasper in layers.

Jassy, yäs'sē, Rumania, the former capital of Moldavia; on the Bahluiu River. The churches and educational institutions are quite noted; the industrial enterprises are few; but the commerce is extensive and important. The chief exports are petroleum, grain, meat, and salt; the chief imports are coal and clothing. It was in Jassy, in 1821, that Alexander Ypsilanti really began the work for Greek independence. About one-half the population are Jews. Pop. (1902) 80,500.

Jastrow, jăs'trō, **Joseph,** American psychologist: b. Warsaw, Poland, 30 Jan. 1863. He was a son of Rabbi Jastrow (q.v.) and came to America in childhood. He was graduated from the University of Pennsylvania in 1882 and has been since 1888 professor of psychology at the University of Wisconsin. He became president of the American Psychological Association in 1900. He has published ‹Time-Relations of Mental Phenomena› (1890); ‹Epitomes of Three Sciences› (1890); ‹Fact and Fable in Psychology› (1900); ‹Modern Psychology.›

Jastrow, Marcus M., American rabbi and lexicographer: b. Rogasen, Posen, 1829; d. Germantown, Philadelphia, 13 Oct. 1903. After the usual rabbinic and academic studies he graduated from the University of Halle in 1854, became a barber in Berlin, and then rabbi at Warsaw. After five years he was obliged to leave by reason of his political opinions, after being subjected to arrest. He was called to the Congregation Rodef Sholen, Philadelphia, in 1866, with which he was connected until his death, within recent years as rabbi *emeritus*. Besides some monographs and contributions to the press, he is best known for his ‹Dictionary of the Targumim, the Talmud Babli and Yerushalmi, and the Midrashic Literature,› which is nearing completion (1903) and is a monument of untiring erudition and broad scholarship.

Jastrow, Morris, Jr., American Orientalist: b. Warsaw, Poland, 13 Aug. 1861. He was a son of the preceding, and coming to Philadelphia with his parents in early childhood, he was trained in the schools of that city, graduated from its university in 1881, and from the University of Leipsic 1884. He has been for many years professor of Semitic languages and librarian of the University of Pennsylvania. He was originally trained for the Jewish ministry, studying for some time at the Jewish Seminary of Breslau, Germany, and was appointed assistant to his father's synagogue, Philadelphia, which position he voluntarily resigned. His published works are: ‘Religion of the Assyrians and Babylonians’ (1898); ‘Two Grammatical Treatises of Abu Zakariyya Hayyug’ (1897); ‘A Fragment of the Babylonian Dibbarra Epic’ (1891); ‘The Study of Religion’ (1901). He has edited ‘Selected Essays of James Darmesteter’ (1895). He is a frequent contributor to learned periodicals and to various encyclopædias.

Jatropha, jăt′rō-fạ, a genus of euphorbiaceous plants of the tribe *Crotoneæ,* tropical and chiefly American. They are of interest principally for their medicinal properties, which reside mostly in the seeds. These, in the case of *Jatropha curcas,* are called Barbados or physic nuts,— the last in allusion to their purgative power. The so-called jatropha-oil is extracted from the seeds of the coral-plant (*J. multifida*) and of the East Indian *J. glauca,* and is used externally as a stimulant. A common species in the southern United States is the spurge-nettle or tread-softly (*J. stimulosa*). Compare MANIHOT.

Jats, jâts, the most numerous of the agricultural population of the Panjab, India, numbering about four and a half millions. They are by many identified with the *Getæ;* and some of the best authorities accept the theory that they are descended from Scythian invaders of India in prehistoric times. Some scholars believe them cognate with the Gypsies (q.v.).

Jaundice, jän′- or jân′dĭs, a morbid condition arising from the circulation of bile in the blood, with consequent staining of the tissues and a peculiar train of symptoms resulting from the poisoning. The tint of the skin and certain mucous membranes varies from a light yellow to a brownish or saffron hue. Staining of the conjunctiva is first observed, and is most intense. Jaundice, with reference to its origin, may be either obstructive or toxic. The term obstructive means causing a hindrance to the outflow of the bile from the gall-ducts into the intestine, with its consequent absorption into the hepatic vein and general circulation. Not only is the skin stained, but all the secretions as well, the urine becoming dark brown. As no bile is thrown into the intestine, the stools become clay-colored and usually hard. There is frequently distressing cutaneous itching, and other skin-maladies are not uncommon. The blood partially loses its power of coagulation, and the vessels are apt to allow the escape of blood into the tissues, giving rise to purpuric spots. The pulse is usually slow, and the patient somewhat melancholic. In bad cases death may follow a period of convulsions, delirium or coma. The cause of this obstruction may be anything occluding the lumen of the ducts from within, as catarrh of the membrane of the intestine, where the bile-ducts open, or catarrh anywhere along the course of the ducts; stones or thickened bile may block up some part of the tubes, or they may be occluded from pressure on the outside by tumors, constricting bands, or shrinking of the liver-substance. (See LIVER, DISEASES OF THE.) The toxic form of jaundice is due to the circulation of poisons in the blood which break down the red cells or, more rarely, destroy the liver cells. The jaundice in this form is not so intense, and the other symptoms caused by the poison are of more importance. Many of the infectious diseases, such as influenza, typhoid fever, yellow fever, pneumonia, pyæmia, and acute atrophy of the liver, cause this form. Mineral poisons, particularly phosphorus, act in the same way. Jaundice in the new-born is so common as to be considered a natural condition, and usually lasts but a few days. It is evident from the many conditions that may give rise to jaundice that it must be considered as a symptom, and treatment should be directed to aiding the bodily functions until the exact cause can be determined.

Jaurés, Jean Leon, zhŏṅ lā-ôṅ zhō-rā, French Socialist: b. Castres 1859. He taught at Albi and Toulouse, and in 1885 entered politics and was elected to the Chamber of Deputies from Tarn; at this time he was a moderate Republican. In 1889 he failed of re-election, and returned to Toulouse, where he was active in the establishing of a college of medicine. Becoming a Socialist, he defended the strikers at Carmaux, and in 1893 was again elected to the Chamber, where he became one of the leaders of the Socialists. He failed of re-election in 1898, but was again elected in 1902. When the Socialist Millerand accepted a position in the cabinet, Jaurés defended his action, thus opposing Guesde and the *Parti Ouvrier,* but sought at the same time to reconcile the factions. He also took an important part in obtaining a revision of the Dreyfus case. He still holds a position of leadership and influence in the Socialist party of France, and is one of the best orators in the chamber of deputies. He has published ‘Studies in Socialism’ (1906).

Java, jä′vạ (native, *Siti-Java* or *Yava,* land of millet), an island of Dutch East India; situated between lat. 5° 52′ (Saint Nicholas Point), and 8° 50′ (South Cape) S.; and lon. 105° 13′ and 114° 39′ E. The island is bounded on the north by the Java Sea, on the east by Bali Strait, which separates Java from Bali Island, on the south by the Indian Ocean, and on the west by Sunda Strait which separates the island from Sumatra. It extends east and west, declining 15° toward the south. It is about 660 miles long, from 40 to 125 miles wide, and the area, including Madura Island, off the east coast, is about 50,554 square miles. The Indian Ocean, which beats with great force along the south coast, has prevented the formation, on that side, of such alluvial plains as extend along the north coast. From the same cause the south coast is generally unsafe for shipping, while the north affords excellent anchorage at almost all times and places. The south presents a continuous front of crags and rocks, forming the outer edge of an extremely mountainous country; the north is flat and low, and covered in many places with mangrove swamps. The chief harbors on the north are those of Surabaya and Batavia; on the south that of Chilatjap, formed by the small island Kambangan.

Topography and Hydrography.— The whole configuration of the island has been transformed by volcanic action. There are at least 50 volcanoes in Java, of which half are active. In the western end of the island they are grouped in a mass and attain a height of 10,000 feet, but in the eastern portion, though more scattered, they are generally higher, one, Semeru, 12,044 feet, being the highest in the island. Among the chief are Salak (7,266), near Batavia, now extinct; Gedé (9,720); Tjirmaj (10,075); Marbabu (10,670); Raun (10,820); Slamar (11,250). Papandayang, in the southwest, destroyed about 3,000 persons in 1772. In 1822 great damage was done by the eruption of Galungung, one of the volcanoes in the western part of the island. In 1686, about 10,000 lives were lost by the eruption of Ringghit, once over 12,000 feet high, but now a low mountain. The eruption of Kloet (q.v.), in 1901, was most disastrous. The eruption of Krakatoa (q.v.) in 1883, was one of the horrors of modern times.

The island is subject to earthquakes, usually not severe. Three earthquakes are known to have preceded and 19 accompanied volcanic eruptions. In 1867 occurred a most destructive earthquake. A low range of non-volcanic hills, about 3,000 feet high, extends along the south coast. The crater of an extinct volcano called Guwa Upas, or the Vale of Poison, about one half mile round, is held in horror by the natives. It is said that every living creature that enters it drops dead, and the soil is covered with the carcasses of deer, birds, and even the bones of men, killed by the carbonic acid gas which lies in the bottom of the valley; but its terrors have been much exaggerated. «In another crater in this land of wonders,» says Sir Charles Lyell, «the sulphureous exhalations have killed tigers, birds, and innumerable insects; and the soft parts of these animals, such as the fibres, muscles, hair, etc., are very well preserved, while the bones are corroded and entirely destroyed.» Numerous rivers flow from the north and south sides of the mountains, carrying fertility with them, and affording supplies to innumerable artificial water-courses used in irrigation. These streams are generally rapid, shallow, and so encumbered with sandbanks as not to be navigable; so that only two rivers, the Solo and the river of Surabaya, are navigable for large boats; the others are only suitable for proas or canoes of the lighest draught, or for floating down timber from the mountains. The Tji Tarun and the Tji Manuk are navigable a part of the year.

Climate.— Java is considered fairly healthy, but proper care must be taken to avoid the excessive heat of midday and the night air from the marshes. The temperature of the plains and valleys is during the day from 85° to 94° F., and during the night from 73° to 80°. At an elevation of 6,000 feet the thermometer descends to 60°, while the tops of the highest peaks are often covered with ice but no snow falls. The breezes from the water modify the temperature. There are two seasons; the dry from April to October, and the rainy season from October to April. During the rainy season there is an almost continuous rainfall except for a short time in the morning. The annual rainfall is about 80 inches. The island is not subject to storms which injure life or property, but near the high mountains there are frequently thunder storms.

Geology.— Java is formed mainly of tertiary, though partly of post-tertiary strata; but by volcanic action the arrangement has been much disturbed. Rocks containing fossil invertebrates are common, but the fossils of vertebrates have not been discovered. There are no metallic veins of sufficient length or depth to be profitable for mining; the Bantam coal-mines, in the northwestern part of the island, yield only lignite; sulphur, naphtha, and asphalt are found in several places, and small quantities of salt saltpeter, and magnese. Limestone and marble are in the southern part. Its minerals are not considered of sufficient value to be classed among its natural wealth-producing resources.

Vegetation.— With a temperature ranging from 94° to the freezing-point, a volcanic soil plenteously watered naturally and artificially, it is not surprising that Java should be of astonishing fertility; the range of its vegetation naturally follows that of its temperature, from the palms of the tropics to the mosses of the temperate zone. The coast is fringed with cocoanut trees; behind them the ground rises gently to the foot of the mountain chain, and is completely cultivated. Vast fields of rice, artificially watered, distributed amphitheatrewise on the flanks of the hills, yield often three harvests annually. In the same altitude are found the cotton plant, the mangoes, sugar-cane, indigo, palm-trees, and other tropical vegetation. Higher up than the rice-fields the bases of the mountains are covered with vast forests of the fig-tree tribe of different species, remarkable for their great height and vigorous growth. Tea, coffee, fruits, cinchona, sandalwood, mahogany, camphor, bamboo, rattan, and many other forms of vegetation are found in this altitude of from 2,000 to 4,000 feet. These are followed still higher up by the plane-like liquidambars, with their erect stems covered with parasites, also rattans and *Rubiaceæ,* the latter of numerous species, some of them exhaling a very fœtid odor. Along the upper limits of the liquidambars about 4,000 feet above the sea, lofty trees are still plentiful; here may be seen *Podocarpus cupressus,* with its lofty straight stem, a tree allied to the yew, and furnishing the best timber in Java; the Dammar pine, rhododendrons, laurels of numerous species, chestnuts, oaks, and several others, magnolias, myrtles, tobacco, maize, potatoes, and other vegetation common to the temperate zones. About 7,000 feet high the vegetation changes its aspect, and mosses appear, which, with heaths, are the principal plants found on the loftier elevations. Before leaving the natural vegetation the famed poison-tree, the chettik or upas (*Antiaris toxicaria*), may be named as a noted Javanese plant. The vast forests likewise claim notice; they are 791 in number, and cover a very extensive surface in 13 of the provinces, and consist mainly of teak. To prevent the waste which was going on, the government has placed them under superintendence, and draws from them a large amount of revenue.

Animals.— Including domestic and marine animals 100 kinds of mammalia inhabit Java. In the west part the one-horned rhinoceros is not uncommon; and in the higher districts the royal tiger, panther, and tiger-cat keep the inhabitants in constant alarm by their depredations. The babiroussa and two kinds of wild hog form the large game of the island. There are only two species of the ape kind, but they people the forests in countless numbers. Two kinds of lemurs inspire the inhabitants with superstitious fear by their mysterious nocturnal habits; and this island may be esteemed the native seat of the largest bats, some of which measure five feet across the wings. They may be seen suspended from the branches in hundreds during the day, and at night they devastate the orchards and gardens. Two civets are common, and supply a perfume of which the Javanese are passionately fond; the wild ox abounds in the woods; and the buffalo is the only animal used in agricultural labor. The horses are small, but vigorous, and, as in India, are not used for agricultural purposes. Two species of wild dogs and six species of deer are found here. Among the domestic animals are the buffalo, ox, horse, goat and sheep. The ornithology of Java is rich and varied, both in genera and in species. About 300 species of land birds have been found on the island, among them the peacock, partridge, quail, 10 different species of pigeon, 11 species of heron, two of cuckoo, the woodpeckers, the black and crimson oriole, the hornbill, eagle, owl, the brilliant looking, and appropriately named minaret flycatcher, the «swift» (q.v.), and the minor bird so apt in learning to mimic human speech is common. Almost all the known generic groups of rapacious birds are found here in great numbers, and gallinaceous fowls are plentiful. A variety of reptiles are found on the island, among them the python. Insects cover the grounds and plants in countless numbers; but few are distinguished for brilliancy or variety of color, or are remarkable in form. Fish are plentiful in the rivers and along the coast; but those of the rivers are of inferior quality for food. Excellent oysters are abundant on the north coast, and prawns, from which a condiment called trasi is prepared and considered delicious by the natives. Crocodiles from 20 to 30 feet in length inhabit the water courses.

In 1895 there were in Java in all about 2,643,000 buffalos; 2,572,000 oxen and cows; and 485,500 horses.

Occupations and Productions.— The Javanese are almost entirely occupied in agriculture. There is a small class of fishermen on the north coast, and a few artisans in the towns, but the great bulk of the people live directly or indirectly by the cultivation of the land, in which they have made greater progress than any other Asiatic nation except the Chinese and Japanese. The chief crop is rice, of which with the aid of irrigation, industriously and almost universally applied, two crops are raised in a year. Lands that cannot be irrigated are used for growing pulses, oil-giving plants, cotton, sugar-cane, and tobacco; and on the mountain slopes, at an elevation of 2,000 or 3,000 feet, coffee is cultivated. «In the most fertile parts of Java,» says Crawfurd, «and these from the neighborhood of the high mountains are usually also the most picturesque, the scenery is at once agreeable and magnificent, and certainly for grandeur and beauty excels all that I have seen even in Italy, that country which in summer bears the nearest resemblance to Java. In such situations we have mountains 10,000 feet high, cultivated to half their height, the valleys below having all the appearance of a well watered garden, in which the fruit trees are so abundant as to conceal the closely packed villages.» The mechanic arts among the Javanese are not so far advanced as their agriculture. About 30 crafts are practised among them, of which the principal are those of the blacksmith or cutler, the carpenter, the sheath maker, the coppersmith, the goldsmith, and the potter. Bricks and tiles are largely made. The carpenters are skilful in house and boat-building. They make vessels of all sizes from 50 tons down to fishing canoes, and under European superintendence build large ships. The ordinary dwellings of the people are built of a rough frame of timber, thatched with grass or palm leaves, and with walls and partitions of split bamboo. The Javanese excel all other nations of the Malay archipelago in the working of metals. They are especially skilful in the manufacture of the national weapon, the kris or dagger, which is worn by every man and boy above 14 years as part of his ordinary costume, and by many ladies of high rank. They make also excellent gongs of brass, and these with other musical instruments of the same metal have long been exported to the neighboring countries. The only native textile material woven by the Javanese is cotton, of which they make only a stout durable calico, and this is purely a domestic manufacture, carried on exclusively by the women. From raw silk imported from China, the silkworm not being reared in Java, a coarse cloth is woven by the women. Paper of the nature of the ancient papyrus is a manufacture peculiar to the Javanese.

The greater part of the agricultural lands of Java is claimed by the Government of the Netherlands and the private estates are principally in the residencies in the western part of the island. The government or the private landowners can enforce one day's gratuitous work out of seven, and in some cases more, from all the laborers on their estates. In 1882 the greater part of the enforced gratuitous labor for the government was abolished in return for the payment of one guilder (40 cents) per head yearly. In 1900 the natives had under cultivation 7,073,036 acres. Prior to 1891, the government raised sugar; but since 1891 the sugar is all raised on private properties and on lands hired by the natives, or on lands held on emphyteutic tenure from the government. In 1900 the number of sugar estates was 191 and in 1901 the yield of sugar was 766,238 tons. The yield of cinchona for 1900 was 1,415 tons; of tobacco, 5,435 tons; of tea, 1,659 tons; of indigo, 180 tons.

Trade and Commerce.—The trade of Java is now large, and what was once a burdensome colony has become one of the principal sources of wealth to Holland. The great bulk of the foreign trade is carried on through the ports of Batavia, Samarang, and Surabaya. The principal exports are sugar, coffee, cinchona, indigo, nutmegs, mace, cloves, cinnamon, pepper, tea, rice, cocoa, tapioca, cochineal, cubebs, arrack, tobacco, hides, india rubber, and tin. The exports, in 1900, of sugar, and coffee, nearly all of which was sent to Holland, amounted to nearly $55,000,000. A large amount of rice is sent to Borneo and China. The principal imports are cotton yarns and cloth, machinery, iron, coal, and woolen goods.

Education.— The Europeans and the natives have separate schools with a slight difference in their methods of government. Ample provisions are made by the government for the education of the natives. There are public and private schools, about 20 schools for girls only, and one normal school for the training of teachers for the natives, and two for the training of teachers for the schools for Europeans and those assimilated with them. There is an agricultural college, a museum, and a fine botanical garden at Buitenzorg, and a gymnasium at Batavia. In science the people have made little progress, possessing only a rude notion of astronomy and a slight knowledge of arithmetic. Their architecture at present day hardly deserves the name, though the country abounds with remarkable remains of temples built many centuries ago by the ancestors of the present inhabitants. Of the other fine arts, music is the one in which they have made the greatest progress. They are passionately fond of it, and have generally good taste. Their melodies are wild, plaintive, and interesting, and more pleasing to the European ear than any other Asiatic music. They have wind and string instruments, but their best and most common instruments are drums and gongs.

Religion.— All religious denominations are allowed perfect freedom in Java. The Javanese are Mohammedans, which faith was established by Arab conquerors in the 15th century and has almost displaced Brahminism and Buddhism, the ancient religions of the country. In 1896, in Java and Madura, there were 19,193 native Christians. In 1900 there were about 100 missionaries working among the natives.

Banking.— The «Java Bank,» established in 1828, has a capital of $2,400,000 and a reserve of about $480,000. The government of the Netherlands has control over the administration. Two fifths of the amount of credits, notes, and assignats must be covered by bullion or specie. In March 1901, the notes in circulation amounted to $22,534,000, and the bank operations to $18,637,200. There are postal savings-banks and other savings-banks have been established. The legal coins are the same as those of Netherlands.

Weights and Measures.— The legal weights and measures are the same as those of Netherlands (q.v.).

Ethnology.— The native population of Java comprises two distinct nations, the Sundese and the Javanese. The Sundese occupy the western end of the island, and are greatly inferior in number to the Javanese, and less advanced in civilization. They speak a distinct language. Both nations are of the Malayan race. They are generally about two inches shorter than the men of the Mongolian and Caucasian races, with round faces, wide mouths, high cheek bones, short and small noses, and small, black, deep-seated eyes. The complexion is brown with a shade of yellow, and is never black. The hair of the head is thick, black, lank, and harsh, and is either scanty or altogether wanting on other parts of the body. A few short, straggling hairs compose the beard. The people are not active, and make but poor runners or wrestlers. They are described as a peaceable, docile, sober, simple, and industrious people. Mr. Crawfurd, author of ‹A Descriptive Dictionary of the Indian Islands,› who lived several years in Java, says: «From my own experience of them, I have no difficulty in pronouncing them the most straightforward and truthful Asiatic people that I have met. The practice of running amuck, so frequent with the other cultivated nations of the archipelago, is of very rare occurrence with them.» They are patient, enduring, and easily led when convinced that the orders given are not contrary to the ancient laws and customs of the country, which are held in religious reverence. They are very susceptible of affronts, which they are not slow to avenge with the kris, which is invariably worn, and they are frequently likewise armed with the sabre or pike. The mass of the Javanese take only one wife, but people of quality and wealth take advantage of the latitude allowed by the Koran, and practise polygamy. All, without distinction, are passionately fond of gaming, more especially of cock-fighting.

Population.— Java is one of the most densely peopled countries of the world. The population in 1900 was 28,745,698. The population of the principal towns in Java, January 1900, was:

	Europeans	Natives	Chinese	Arabs	Other Orientals	Total
Surabaya...	8,906	121,886	13,035	2,791	326	146,944
Batavia....	8,893	77,700	26,817	2,245	232	115,887
Samarang..	4,800	70,426	12,372	724	964	89,286

The whole population of Java is legally divided into Europeans and persons assimilated with them, and natives and persons assimilated with them. The Europeans and those assimilated with them are generally living under the laws which prevail in Netherlands, while the natives and those assimilated with them observe the customs and laws of India. The division of the population into the two classes mentioned is in accordance with the code which specifies the limits and conditions for legislation in Dutch East India. The governor-general, together with the council, has power to make individual exceptions to the general rule.

Government and Revenue.— The most important feature of Javanese society is the village, which forms a complete body politic, with considerable powers of self-government. Its officers are elected by the people, and are charged with the collection of the taxes and the maintenance of public order. The general government of the island is entrusted to a governor-general, appointed by the king of Holland. He is commander-in-chief of the army and navy, and possesses nearly absolute power. Justice is administered to the European inhabitants by a supreme court at Batavia, and by three provincial courts at Batavia, Samarang, and Surabaya. There are besides these other courts for the Asiatic population. In 1832 Gen. Johannes Graaf Van den Bosch introduced into Java a system of government known as the "culture system." In principal, it was based upon the officially superintended labor of the natives, directed so as to produce not only a sufficiency of food for themselves, but a large revenue for Netherlands. This obligatory labor was applied to the culture of coffee, sugar, indigo, pepper, tea, tobacco, and some other products; but at present the labor of the natives is required only for the culture of coffee which is marketed by the Government. By the terms of a bill which passed the legislature of the Netherlands in 1870, the obligatory cultivation of the sugar-cane is now totally abolished.

Java, including the island of Madura, comprises 17 residencies, each governed by a resident, assisted by assistant residents, and other officials. Before receiving government appointments, these officials must first have had examinations. The resident and his assistants, together with a number of native officials, exercise almost absolute control over the province in charge. The native officials are remunerated for their services by salaries or by a per cent on the amount of taxes collected. No law can be enacted or enforced by any governor-general which will conflict with the "Regulations for the Government of Netherlands India," laws passed in 1854 by the king and states-general of Netherlands.

The revenues are derived from the government monopolies of railroads, salt, opium, and from the sale of government products obtained under the "culture system." Other revenues are obtained from taxes on houses and estates, sale of government lands, custom duties, licenses, personal tax, and from a number of indirect taxes. The greatest expenditures are for the general administration, about one third, and for the army and navy another third.

Defense.— The army and navy of Java form a part of the defense of the whole Netherlands India. The army is colonial, and the regular army of Netherlands is not allowed on duty in any part of Dutch East India. The commissioned officers are Europeans, except a few prominent natives to whom honorary offices have been given. One half the non-commissioned officers must also be Europeans. There is a school attached to every battalion, and a military academy on the island of Java, at Meester Cornelis, a place near Batavia.

History.— Ancient Javanese history is written in the still existing magnificent remains of temples and other public buildings, which are plentifully scattered over the island. These attest that the worship of Brahma and Buddha once prevailed in the island under the Hindu empire of Modjopahit, the dismemberment of which was consummated by the Arabs 1478 A.D., by the destruction of a vast capital of that name. Islamism had previously supplanted the rival worships, and had driven their last adherents into the neighboring island of Bali. The island then fell under the dominion of numerous petty chiefs, and was found in that state by the Portuguese, the first European settlers on the island, who arrived in 1511. They were followed in 1595 by the Dutch, who soon eclipsed them. Though their views were at first directed wholly to commerce, the Dutch merchants, like the British East India Company, soon found it necessary to assume the position of a governing power, and treated accordingly with the native princes, with whom they were frequently at war. In 1811 Java was taken from the Dutch by the British, who, however, restored it after the Peace of 1816, since which time it has remained in their hands. Up till 1825 various portions of the island were still under native princes, who paid tribute to Holland; but in that year a revolt took place, which resulted in the whole island falling under the Dutch sway; although two provinces have been left, but only nominally, under the government of Javanese princes — Surakarta and Jokjokarta. Both princes have a court, nobles, ministers, etc., but are the mere instruments of the Dutch government, by whom they are allowed handsome pensions. Since the close of this war the island has been rapidly increasing in population and prosperity. On 20 Sept. 1859 the Dutch legislature totally abolished slavery in Java. The natives never had slaves, and there never were but a few thousand on the island.

Language and Literature.— It is not certain whether the name of Java be connected with the Sanskrit Javana and Yavana, both of which, beside being related to Ἰωνία as names of Greece, also signify (especially the latter) Bactria, Arabia, and other foreign countries, and, moreover, swift, horse, etc.; or whether its etymon be of a different origin. As regards the affinities of the Javanese language, Roorda considers it as a branch of the Malay. Crawfurd derives it from the vernacular of the aborigines, to whom he attributes the primitive culture of the Malayan islands. Domeny de Rienzi supposes it to have arisen from the language of the Bugis of Celebes, by an admixture of Malay and Sanskrit. Humboldt connects it, both as to words and grammar, with the Tagala, the most developed Malayan tongue of the Philippine Islands, as well as with other Malay idioms and with Sanskrit. Others see in it a type of the unmixed tribes of Oceania. It certainly shows all these affinities, and contains also some Arabic elements. The Javanese is the most cultivated of all Polynesian languages, owing to the very early intercourse of the island with the continent of India, whose Aryan as well as Dravidan influence is attested by the presence of Malabaric words along with those from the Sanskrit, not only in Javanese, but also in the idioms of Sumatra, Madagascar, etc. Both religious and political revolutions have served to modify the condition of the languages. There are four dialects, according to Raffles, on the three islands which form the linguistic group in question, namely: (1) The tongue of the mountaineers of Sunda, in the western part of Java, east of Tagal, probably vernacular through this whole region before the introduction of Mohammedanism, now spoken by about one tenth of the population of the island; it contains many Malay and some Sanskrit words, stands in the same relation to the principal language as the Welsh does to the English, and is best spoken at Bantam, sluggishly at Bogor and Chianjore, and verging to the Javanese at Cheribon. (2) The Javanese proper, east of the last named city, extending through the rest of the island, especially along its north shore; its words are long at Tagal, shorter at Samarang, full, short, and strong at the courts of Surakarta in the centre, and Jokjokarta in the south; it approaches the Madurese at Surabaya, and the Balian at Banyu-Vangi. (3) The dialect of Madura and Sumanap, which has many Sunda words, with more of Malay, and with peculiar endings. (4) That of Bali, little different from the general Javanese. This island preserves the ancient letters as well as Brahminism, both expelled from Java in the 15th century. A sort of jargon, analogous to the *lingua franca,* is spoken at Batavia, being a medley of Dutch, Portuguese, Javanese, and Malay. Along with the preceding there are also peculiar styles or idioms of speech, varying in accordance with social position and age, as the *madhjo* (intermediate), between equals; the *bása* or *bohoso-ngoko* (language popular), to inferiors; the *bása-kramo* (language superior), urbane, court idiom, about three fourths of it Sanskrit, used by poets as the speech of gods, heroes, and ghosts. As to locality, there are also two vernacular idioms, namely, the *bása-dalam* of the interior, and the *bása-luar,* spoken along the shores. The Kavi (learned, wise, poet) is the ancient sacred language of Java, and consists of about six parts of Sanskrit, less altered than in the Pali, to four of Javano-Malay. It owes its origin to Brahminic immigration, about the beginning of our era. It is to the Javanese what Sanskrit is to the Hindostanee, and Pali to the Indo-Chinese languages. Declining in the 14th century, it took refuge in Bali, and was imperfectly known by the Panambahan at Sumanap at the time when Raffles was in Java. Passages in the Kavi are sometimes quoted on peculiar occasions, as for instance in fables and dramas; the term itself is employed as a title of works, etc., such as *Sekar-kavi,* flowers of poetry, whence *Sekarini,* a Kavi metre; *Rama-kavi,* the Javanese Ramayana; *Kavindhra,* principal singer or poet (named *ma-kathā,* narrator, in Tagala). A few specimens of words may show the relation of the Javanese to the common Malay, where the difference, if not specially noted, is sometimes more in the accent than otherwise: *langit,* heaven; *tanah,* earth (Mal. also *benua,* region); *ayer* (Jav. also *banyu*), water; *laut* (Jav. *lahut*), sea; *dhina,* (Mal. *hāri*), day; *bengi* (Mal. *mālam*), night; *vūlan* (Mal. *būlan*), moon; *terang* (Mal. *trang*), light; *mati,* to die; *lulat* (Mal. *kāsih*), to love; *ďara,* virgin; *dhēva* (Mal. *tuhan*), god, lord; *mangan* (Mal. *mākan, santap*), to eat; *bāpa, pak* (Mal. *pā,* politely *ayah*), father; *ma, bok* (Mal. *mā, amā,* politely *ibu, bonda*), mother, etc. Compounds and derivatives abound, but the latter are more frequently formed by suffixes than by prefixes, in which the Tagala is very rich. There are many contractions into *tr, ngl, ngr,* with the dropping of short vowels, together with the alteration of the initial sound (similarly to the Celtic), and other variations which obscure the etymic origin, thus: Sans. *nātha,* master, lord, becomes *tata,* order, to reign; Jav. *neda,* to eat, *teda,* food; *nulis,* to write, *tulis,* scripture; *nitik,* to prove, *titik,* proof. The prefix *n* denotes verbs, *t* substantives; other changes are: *nyatur,* to tell, *chatur,* tale; *nyerrat,* to write, *serrat,* writing, etc. The doubling of the first syllable makes verbs, as *tutulung,* to help, from *tulung,* aid; *gagriya,* to dwell, from *griya,* house. The insertion of *in* is the sign of the passive voice. Substantives are also made by prefixing *pem* (*pen, pe*), denoting an agent; thus: *pem-pekto,* carrier, from *pekto,* to carry; *pen-dahar,* eater, etc.; by prefixing *ka,* a sign of the past participle; *ka-bekto,* Lat. *allatum;* by suffixing *n* (*en, an*): *bakt-en,* the carrying, *dahar-an,* Lat. *cibus;* and by both prefix and suffix: *ka-dahar-an,* an eatable. Articles, gender, and the dual number are wanting. In the plural, cases are denoted by particles, and also by reduplication, as in the Japanese. The genitive relation is shown by the precedence of the noun or by inserting *ing.* The other relations of case are indicated by means of verbs. The adjective is unchanged after the substantive. Pronominal forms are fewer than in Malay: *kita,* we in Malay, means I in Javanese. The numerals are: (1) *sidshi,* (2) *loro,* (3) *telu,* (4) *papat,* (5) *limo,* (6) *nem,* (7) *pitu,* (8) *volu,* (9) *songngo,* (10) *sepuluh,* (11) *savelas,* (12) *volas,* etc. Ordinals are formed by prefixing *ping* or *ka-ping.* The figures of numbers are modified letters. The person, number, tense, mood, and voice of verbs are indicated by certain particles. Many verbs and nouns are expressed by the same word, others are distinguished as stated above. The suffixes of the imperative are *o, ono, en, enno.* The following are examples of a verb in various forms: *ningngalli,* to see; passive, *dhipun, tingngalli, katingallan,* etc.; *kula, tingngalli,* I have seen; *badē kula tingngalli,* I shall see; *tinningngallam,* to see one another; *sampeyan tingngalli,* see; *kula tingngallana,* that I may see, etc. The construction is as follows:

Rama kahula kang vonten ing surga, vasta andika dadi
Father our who art in heaven, name thy be
elapienno.
hallowed.

As regards the shape and employment of letters, the graphic system is derived from the Devanagari, but not as regards their order, which is as follows: *'ha, na, tcha, ra, ka, ḍa, ṭa, sa, va, la, pa, da, dja, ya, ṇya, ma, ga, ba, ťa, ng'a.* These 20 *Akshara* (letters) are consonants with an adherent *a* in the general language, or *o* at the courts of princes, which, when not suppressed, gives to the syllabarium the epithet of *lagana.* As many *Pasangan* (consonants) are vowelless, three of them are annexed, the others subscribed to other letters. This peculiar succession of letters must have originated prior to that of the organic scheme of the Devanagari, and it is explained by its signifying: «There were two messengers, disputing, equally courageous, till both died.» The *Akshara-Buddha,* being ancient, differ in form from the later *Akshara-gede.* Some Kavi letters are almost like those of the Sanskrit, while the more recent resemble the square Pali. The vowels are called *Sandang'an* (connection), namely, *a, i, u, ē, ĕ* (almost French *muet*), *o,* either used as initials or (except *a*) attached to the consonants instead of the inherent *a.* The diacritic signs are analogous to those of the Devanagari. There are also characters for the quasi-vowels *le* and *re.* The writing runs from left to right, each letter being connected with the others in words, and these following one another without any space left between them. Tradition assigns the introduction of writing as well as of Brahminism and political institutions to Aji Saya Baya. Palæography finds a rich harvest in Java, its subjects being distributed in four classes: (1) inscriptions in ancient Devanagari near the ruins of Brambanan and Sinagasari; (2) those in square Kavi letters, from which the cursive are derived, mostly on stone and metal; (3) those in a dialect resembling the language of Sunda; (4) the *Chandra-Sangkala* (light of royal times or dates), which consist in selecting such words, symbolic of numbers, as may also express a fact that is to be recorded. Thus, for instance, the date of the destruction of Majapahit, a fact most important in Javanese history, is thus inscribed (1400, reading from right to left):

Sirna (0) *ilang* (0) *kertāning* (4) *bumi* (1)
Lost and gone (is) (the) work, (pride of the) earth (land.)

The date of certain long graves at Gresik, near the tomb of the princess of Chermai (1313), is thus written:

Kāya (3) *vulan* (1) *pūtri* (3) *īku* (1).
Like (to the) moon princess (that) was.

The literature, which is in Kavi, dates from about the commencement of our era, and is rich, especially in legends concerning cosmogony. The subjects of the works are mostly either of a mythical or ethical character. Prominent among the former are: the *Kānda* (Sans. *Khandata*, fragment, section) *Pepakem* (book), or *Sejarah* (history); *Manek-Maya*, a mythical genesis, in which Buddhism predominates; *Vivaha-Kavi* (matrimonial poem), about a *Rasaksa* (evil spirit) who courts a *Vidaduri* (nymph); *Rama-Kavi*, the Javanese *Ramayana; Parikespit*, «Arjuna's Grandson;» *Mintaraga*, a poem on Arjuna in the Indra mountain. This kind of composition comes down to the time of Aji Saya Baya. Of the ethical order are the *Niti Sastra Kavi*, in the purest style, of about the 13th century; and *Srūti*, which already alludes to Islam. But the *Brata Yudha* («Holy War») is an epos mostly on the deeds of Arjuna; being an episode of the Mahabharata, in 712 stanzas, with varying rhymes. The *Sastra Menava* is a Javanese imitation of the ordinances of the Indian Menu. Indeed, most of the Kavi works are such imitations. Whether mere versions of Sanskrit works have been made or still exist is not precisely known; but there are many Javanese versions from the Kavi. Javanese literature abounds in romantic compositions, mostly of elegiac form. Among these, the adventures of the popular hero Pandji are most prominent. Dramas, and especially puppet shows, called *vayang* (shadows), and with figures of either leather or wood personating heroes, are popular.

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Java Almond. See KANARI.

Java Fowls. See POULTRY.

Java Sea, a body of water with Borneo on the north, Celebes on the east, the island of Java on the south, and Sumatra on the west. It borders on a number of other islands, all small. The direct route from Singapore to Australia is through Java Sea; and it is crossed by two approved routes to China, one by Pitt's Passage and the other through the Straits of Macassar.

Java Sparrow, a species of Oriental weaver-bird (*Munia oryzivora*), called rice-bird or paddy-bird by the British in India and China, where it has become naturalized from its original home in Java. It has a poor song but is kept in cages for its beauty and liveliness, and is sold by bird-dealers all over the world. Its colors are slate-blue and black, with conspicuous white cheeks and a swollen rosy bill.

Javary, zhä-vä-rē', a river which has its rise in the northwestern part of Bolivia, flows northwest, then north and northeast into the Amazon River. The greater part of its course of 350 miles, it forms the boundary line between Brazil and Peru. It is navigable from the mouth to the Anahuacas Mountains. By treaty between the governments of Brazil and Bolivia, the source of the Javary is the demarkation of the boundary line between the countries.

Jav'elin, a short and light spear thrown from the hand, and in ancient warfare used by both horse and foot soldiers. The *pilum* of the Romans was a weapon of this description, and was used either to throw or to thrust with. The shaft was 4½ feet long, and the barbed iron head was of equal length, but as it extended half way up the shaft, the whole length of the weapon was nearly 7 feet. The shaft, made of some tough wood, often cornel, was an inch in diameter. The use of the javelin was not confined to the Roman legionaries, for many barbarous tribes, and especially the Goths, employed this weapon in their military operations.

Jaws, Anatomy of the. The upper jaw is formed by the union of the two superior maxillæ; these bones each form part of the cheek, the outer wall of the nasal cavity, the hard palate, and the lower part of the eye-socket. The lower jaw is formed of one bone, the inferior maxilla, which presents a horseshoe-shaped body, and vertical plates of bone ascending from the body posteriorly. The top of these vertical plates is widened into a knob-like end for articulation with the skull.

Dislocation of the jaw may take place during excessive laughter or yawning. The articular knob slips forward and the jaw is held open. Reposition is accomplished by placing the thumbs on the back teeth and making forcible downward and slightly backward pressure until the bone is felt to snap into place.

Fracture of the upper jaw is uncommon except when the face is crushed in. Usually in fracture it is the body of the lower jaw near the front that is broken. Besides the usual signs of fracture (q.v.) the attitude may be characteristic; the patient is unable to shut the jaw; and the difference in the line of the teeth may show clearly. Repair of the fracture is facilitated by fastening the upper jaw with a sling-bandage carried around the head, and keeping it so fastened until union is established. During this time the patient is forced to eat liquid foods almost entirely.

Jaxartes, jăk sär'tēz. See SYR DARYA.

Jay, John, American statesman and jurist: b. New York 12 Dec. 1745; d. Bedford, Westchester County, N. Y., 17 May 1829. His father was a wealthy merchant of Huguenot stock, and his mother a daughter of Jacobus Van Cortlandt. His father,— early discovering, to use his own words, that Jay was of «a very grave disposition, and took to learning exceedingly well»— sent him to a school in New Rochelle something like Dotheboys Hall in ‹Nicholas Nickleby.› Three years at school were followed by study under a tutor until he entered King's College at 14. He was graduated in 1764, the subject of his oration being the blessings of peace, of which he was to have still keener appreciation. Two weeks later, on payment of £200, he entered the office of Benjamin Kissam, a prominent lawyer of New York, as an apprentice bound to serve five years, the last two years to be devoted to the study of the law. Admitted to the bar in 1768, he soon attained prominence in the profession, forming a partnership with Robert R. Livingston, afterward chancellor of the state, and secretary of foreign affairs. In 1773 he began his public career, as secretary to the Royal Commission to determine the boundary between New York and Canada; and for the following 28 years his public services were constant, varied and of supreme importance to the country so fortunate in being his birthplace. All his duties in the many fields covered by him during his splendidly successful life were performed in a manner indefatigable, zealous and faithful, and with marked ability.

Bound by no ancestral ties to England, and having married in 1774 a daughter of the famous Whig, and Revolutionary Governor of New Jersey, William Livingston, many would suppose that in the conflict impending between the colonies and mother country, Jay's voice, like those of James Otis and Samuel Adams, would have been from the first «still for war.» But he was constitutionally so calm and conservative that he was unwilling to be too precipitate in determining upon a change in the mode of government. When, however, the colonists decided that their only safety lay in separation, Jay was found to be as staunch and aggressive a patriot as any, and represented the citizens of New York on the committee to settle the question arising out of the Boston Port Bill. Jay drafted the suggestion of that committee that «a Congress of Deputies from the Colonies in general» be convoked — in fact, the convocation of the Continental Congress. He was a member of that congress, and met with it in Philadelphia on 5 Sept. 1774. Congress at once appointed a committee to «state the rights of the colonies in general,» of which Jay was made a member. This committee designated him to draft an address to the people of Great Britain, which was so satisfactory that it was at once reported to Congress, and adopted by it. Jefferson, without knowing who was the author, pronounced it «a production certainly of the finest pen in America.»

Jay was also sent to the 2d Continental Congress, but in the interim devoted himself to shaping the public mind in the direction of obedience to Congress and in hostility to enforcement of Parliamentary taxation. When the 2d Congress convened, the signal shot — «heard round the world» — had been fired at Lexington, and Congress, realizing that a condition of war existed, deputed Jay to draft an address to the people of Canada, which was prepared and adopted, and circulated in that country. He also wrote an address to the people of Jamaica and Ireland by request of Congress, but the second petition to the King that he prevailed upon Congress to make was written by Dickinson. Other important and effective work by him in that general direction might be cited, but I shall be content with the assertion I deem supported by the facts, that as a creator and molder of public opinion at that particular juncture Jay stands unrivalled; and all this was in the main accomplished through the wise use of his pen, the efficacy of which was strongly presented by John Adams when he wrote regarding it to Jefferson, «I never bestowed much attention to any of those addresses, which were all but repetitions of the same things; the same facts and arguments; dress and ornaments rather than body, soul or substance. I was in great error, no doubt, and am ashamed to confess it, for these things were necessary to give popularity to the cause, both at home and abroad.» Jay's contribution to the debates in Congress, like all his public work, showed that he followed in all things and upon all questions the path illuminated by the light of his well balanced judgment, and his conscience, thinking not of personal popularity, but simply of the right. He served actively upon the committee that carried on negotiations with foreign powers friendly to America and inimical to England. Indeed, during the year 1775 he was a member of so many committees, each having different and important objects, that it is difficult to understand how he was able to accomplish so much important and laborious work.

If it be asked why so good a patriot as Jay was not a signer of the Declaration of Independence, the answer is, that in 1776, while a member of the Continental Congress, Jay was also elected to the New York Provincial Congress, and the Continental Congress having directed the colonies to each adopt a government, Jay, on the call of his colony, proceeded to New York to take part in the formation of the local government, where he was forced to remain while the Declaration of Independence was being signed. During 1777, and while the war was going on in the vicinity of New York, the Provincial Congress, then styled the Convention of the Representatives of the State of New York, was laboring with exceeding difficulty, the members, as is recorded, performing «all the various and arduous duties of legislators, soldiers, negotiators, committees of safety and ways and means, judges, juries, fathers and guardians of their own families, flying before the enemy, and then protectors of a beloved commonwealth.» Yet amid all this turmoil and unrest a constitution was drafted by Jay which was, in the main, adopted as drafted, and was published upon 22 April 1777, by being read in front of the court-house in Kingston. A committee was at once appointed, Jay being a member, to organize a new government; and a council of safety was created to act until the legislature should meet. Robert R. Livingston was appointed chancellor and Jay chief justice, and the judicial department of government was temporarily organized.

Jay was urged to be a candidate for governor at the first election under the Constitution, but declined. General Clinton was elected over his opponent, General Schuyler, and took the oath of office, it is said, while «clothed in the uniform of the service, standing on the top of a barrel in front of the Court-House in Kingston.» On 9 September following, Chief Justice Jay delivered an address to the grand jury at Kingston, which is to be found in the first volume of his correspondence and public papers. The address is a much prized document of revolutionary times, and was, undoubtedly, intended to reach and affect a much larger constituency than the grand jury to whom it was delivered. Of course, in those unsettled days, with the struggle between the old and the new countries raging, but little litigation of importance came before the supreme court, so that during Jay's chief justiceship the work of the court was mainly confined to criminal trials, and the court never sat in banc. During 1778 he was active in the Council of Revision, of which he was a member ex-officio. The legislature in 1779 appointed Jay to Congress without requiring him to vacate the office of chief justice, it being resolved that owing to serious questions between certain States «a special case» obtained under the Constitution. Shortly afterward Congress elected him its president. Later in the year, however, he resigned the office of chief justice, designing, he said, to recoup his failing fortunes. But his desires in that direction were not to be gratified. More than 20 years elapsed before the public he had served so well would submit to be deprived of his services.

In October, 1779, Jay resigned the presidency of Congress to accept the office of minister to Spain. His instructions in part were to secure if possible a commercial treaty with Spain similar to that existing with France, to acquire a port in Spanish dominion on the Mississippi, and to negotiate a loan of $5,000,000. That his mission was not entirely successful, and was personally disagreeable, was due to the fact that Spain disliked the new nation because it occupied lands formerly held by Spain, and it was apprehended that with increasing strength it might reach out and take more — fears that we know now were not groundless. While minister to Spain, Jay was appointed, with Franklin, Jefferson, Adams, and Laurens, commissioner for a general peace. Their instructions rested on the mistaken theory that France would aid in procuring for us the best possible terms. In June, 1782, Jay joined Franklin, then minister to France, in Paris, and promptly but cautiously entered upon an investigation which disclosed that France had other interests to serve than those of the United States. Possessed of the situation, he boldly entered upon negotiations with England's representative without even consulting his only colleague in Paris, whom he regarded as necessarily embarrassed by his position as minister to France, and his instructions. With firmness, and yet with great tact, he conducted the negotiations alone until joined by Adams, who enthusiastically approved of his action, and so advised Mr. Franklin, who, after consultation, agreed that the negotiations should be concluded without consulting the French court. The result of these most interesting negotiations with England was a treaty by which the United States gained more than Congress had ever ventured to propose. And Jay's part in this great triumph of diplomacy is well summed up in a letter written by his fellow commissioner John Adams to Jonathan Jackson, «a man and his office were never better united than Mr. Jay and the commission for peace. Had he been detained at Madrid, as I was in Holland, and all left to Franklin, as was wished, all would have been lost.» When he returned New York gave him the freedom of the city in a gold box, and he found that he had been appointed by Congress secretary of foreign affairs. This office he filled with his usual ability, settling international questions, and advocating the building of a navy, and the organization of a federal government under a constitution. His papers in the ‹Federalist› evidence both his activity and forcefulness in this direction, and his influence contributed in no small degree in bringing New York to the support of the Federal Constitution.

It is said that after the first election of Washington to the presidency he offered Jay the choice of any office in the government, and that he chose that of chief justice of the Supreme Court of the United States, which he justly regarded as the most exalted position next to the presidency; but be that as it may, Washington appointed him to that position, and in his letter to Jay, advising him of the nomination, said, «I not only acted in conformity with my best judgment, but I trust I did a grateful thing to the good citizens of these United States.» The opportunity to contribute largely toward the development of the law in this country did not come to him, however. Had it, his success in other fields and his well poised mind assure us that Washington's judgment would have been triumphantly vindicated. Only a few causes came before the court during his incumbency, and the record of those, with a single exception, are preserved only in the minutes of the clerk, but his every step was in the right direction, whether taken while holding a circuit or sitting in banc with associates, and had effect in shaping the foreign policy of the United States as well as in establishing the dignity and independence of the Federal judiciary. He continued to hold the office until he resigned in 1795; but in the meantime and in 1792 the Federalists supported him unsuccessfully as against Governor Clinton for the governorship of New York, and in 1794 President Washington urged him to go to Great Britain as special envoy to settle differences growing out of the failure of that country to keep the obligations of the Treaty of 1784; differences which had aroused a strong war spirit all over the land. It was easy to foresee, as Jay forsaw, that the outcome of the situation would in all probability be unpopular with the people, but he did not hesitate to meet the responsibility that Washington believed he could meet better than any other man, partially because of the reputation he had established in England while negotiating the Treaty of Peace of 1784. A treaty

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JOHN JAY,

CHIEF JUSTICE OF THE UNITED STATES SUPREME COURT, 1789-1795.

resulted, known on this side of the ocean as «Jay's Treaty,» which settled the eastern boundary of Maine, recovered for illegal captures by British cruisers $10,000,000, secured the surrender of the Western forts still garrisoned by the British, and contained an article about the West India trade. With the exception of the latter article the treaty was approved by the President and ratified by the Senate. But many were not satisfied, and they denounced him with tongue and pen, and even burned him in effigy in Boston, Philadelphia and at his own home, New York. How different was the homecoming from that after the negotiation of the other treaty, when the freedom of the city was presented to him in a gold box, and each one seemed to vie with every other in extending a welcome. In a letter to a friend, Jay said at that time, «Calumny is seldom durable, it will in time yield to truth»; and he bore himself at that time as one having full confidence that he had acted both wisely and skilfully, and expected the people to realize it in time.

He found on his return that he had been elected governor of New York — before the public had knowledge of the terms of the treaty, of course. Before the close of that term, and in April 1799 he was re-elected by a majority so large as to constitute a personal triumph. During this term the statute was passed providing for the gradual emancipation of slaves within the State, then numbering about 22,000. The six years of his incumbency of the office of governor were crowded with interesting legislative and executive events in which he performed his part with that staunch devotion to the public interests which ever characterized his efforts throughout his career as a servant of the public, as is well illustrated by his refusal to be a party to the scheme of certain leaders of the Federalists to secure the electoral vote of New York for the ensuing election. The unexpected result of the spring elections of 1800 assured the Republicans of a substantial working majority on joint ballot, and hence of the Presidential electors under the law as it then stood. It was generally conceded that New York would determine the choice of the next President. Although the Federalists had, in March prior to the elections, defeated the attempt of the Republicans to redistrict the State, and had insisted that it was necessary that the State should act as a unit in the choice of Presidential electors. the leaders changed their position after the election had gone against them, and insisted that the electors should be chosen by districts. Alexander Hamilton wrote Governor Jay on 7 May advising that he call an extra session of the Legislature to enact such a statute before July first, the end of the legislative year. Philip Schuyler also wrote a letter strongly urging that such a course furnished the only means of saving the «nation from more disasters.» But Jay, although a staunch Federalist, who had received the votes of New Jersey and Delaware, five votes from Connecticut and one from Rhode Island for the Presidency in the preceding electoral college, refused to take such action, and endorsed on Hamilton's letter these words: «Proposing a measure for party purposes which I think it would not become me to adopt.» He refused a renomination for the office of governor on the ground that he now intended to retire from public life, and his purpose was unshaken by President Adams announcing to him his nomination and confirmation a second time as chief justice of the United States.

For 28 years he had been a good and faithful public servant. To him indeed had public office been a public trust, in which he had toiled faithfully and intelligently, having only in view his duty and the public good, unmoved by desire for great emolument or popularity. Naturally conservative he carefully examined every situation before acting, but when he had determined the proper course to take he acted promptly and boldly, and without regard to the effect of his course upon himself. His perfect self poise had its effect upon associates and subordinates, and the value he placed upon it may be inferred from his letter of instructions to William Carmichael in which he said, «Command yourself under every circumstance; on the one hand avoid being suspected of servility, and on the other let your temper be always even and your attention unremitted.» This great patriot gave to the public service the day of his vigorous manhood, the best years of his life, covering the period of the struggle for independence and the formation of our complex system of government, the years when his country most needed the faithful service of her sons. He set aside every personal interest, laboring with fidelity and unselfish effort, and showing himself willing to «spend and be spent» for his country. Having borne his portion of travail at the birth, and done his part in the nurture of the early infancy of this great nation, he retired at last to his farm at Bedford, Westchester County, where he lived a restful life, indulging his agricultural, philanthropic and religious tastes, and enjoying the confidence, esteem and affection of the people until he went to his last rest at the age of 84 years, leaving behind him

" A name that shall live through all coming time,
Unbounded by country, by language, or clime."

Consult: ‹Correspondence and Public Papers of John Jay› edited by H. C. Johnston (1890–3); William Jay, ‹Life of John Jay› (1833); Whitelocke, ‹Life and Times of John Jay› (1887); Pellew, ‹John Jay› (1890).

ALTON B. PARKER,
Late Chief Judge of the Court of Appeals of the State of New York.

Jay, John, American diplomatist: b. New York, 23 June 1817; d. there 5 May 1894. He was the son of William Jay (q.v.) He was graduated from Columbia in 1836, studied law in New York, was admitted to the bar in 1839, became a prominent opponent of slavery, was secretary of the Irish relief committee in 1847, and was counsel for several fugitive slaves. He organized the meetings at the Broadway Tabernacle, New York, in 1854, and took a leading part in the organization of the Republican party at Syracuse 27 Sept. 1855. From 1869 until his resignation in 1875 he was United States minister to Australia, in 1877 was appointed chairman of the so-called Jay commission for the investigation of the New York customs-house administration, and in 1883 was appointed the Republican member of the New York State civil service commission. He was long corresponding secretary of the New York Historical Society, and published several pamphlets, among them: ‹The Dignity of the Abolition Cause› (1839); and ‹The American Church and the American Slave-trade› (1860).

Jay, William, English Congregational clergyman and writer: b. Tisbury, Wiltshire, 8 May 1769; d. Bath, 27 Dec. 1853. After studying for the Congregational ministry, he officiated at Hope chapel, near Bristol, and became pastor in 1789 of Argyle chapel, Bath, where he remained till 1852. As a preacher he not only enjoyed a high celebrity in his own denomination, but won the applause of critics like John Foster, Sheridan, and Beckford. His published sermons are esteemed as well for their catholic spirit as their practical earnestness and simplicity of style. They have passed through many editions, and besides them he wrote 'Essay on Marriage'; 'Lectures on Female Scripture Characters' (1854); 'Morning and Evening Exercises' (1854). His autobiography, in the form of letters, appeared in 1854.

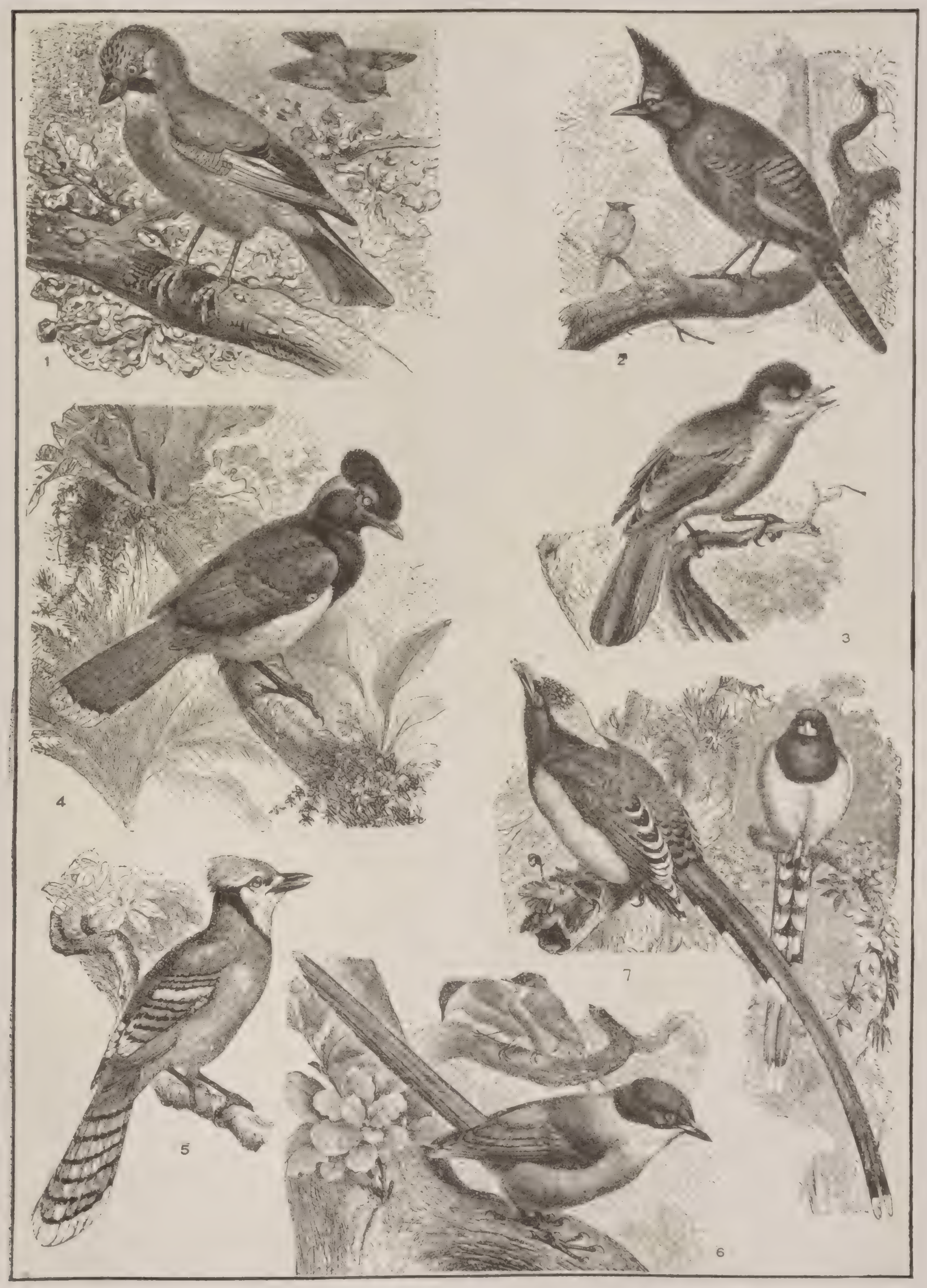
Jay, William, American jurist: b. New York, 16 June 1789; d. Bedford, N. Y., 14 Oct. 1858. He was the son of John Jay, statesman and jurist (q.v.). Graduated from Yale in 1808, he studied law with J. B. Henry at Albany, was obliged by defective eyesight to withdraw from the profession, and became interested in various philanthropic movements, including the anti-slavery cause. He was a founder of the American Bible Society (1816), which he greatly promoted and long defended against High Church attacks led by Bishop Hobart. In 1818–21 he was judge of common pleas in New York, and in 1835–7 corresponding foreign secretary of the American Anti-Slavery Society, in the drafting of whose constitution he had assisted. He wrote much on anti-slavery, and was recognized as a leader of the more conservative of the Abolitionists. Among his publications were: 'The Life and Writings of John Jay' (1833); 'An Inquiry into the Character and Tendency of the American Colonization and American Anti-Slavery Societies' (1834): 'A View of the Action of the Federal Government in Behalf of Slavery' (1837); 'War and Peace' (1848).

Jayhawker, a name originating in Kansas during the slavery and anti-slavery warfare; applied to a few Free State men who organized a system of retaliation against pro-slavery outrages. Gov. Lane of Kansas, in 1861, declared that «the people of Kansas were neither thieves, plunderers, nor *jayhawkers.*»

Jays, a group of birds forming with the magpies a sub-family (*Garrulinæ*) of the *Corvidæ,* or crow family. They are readily distinguished from the true crows (*Corvinæ*) by their relatively short wings, long conspicuous tails, and usually showy plumage, in which blue colors are prominent. They are generally smaller than the crows, have weaker bills, and feet better adapted to the more completely arboreal life which they lead. Jays are found throughout the greater part of the world, but America leads in number and variety of species. North America has four genera and ten species with many additional local varieties. A familiar representative is the bluejay (*Cyanocitta cristata*), which is numerous throughout the eastern half of the United States and Canada. It is about one foot long, of which the tail is nearly half; the head conspicuously crested; purplish-blue above with a slight tinge of the same color on the generally gray underparts; the wings and tail are a nearly saturated blue in the males, duller in the females, cross-barred with black and with white markings especially conspicuous on the end of the tail; a rich black collar encircles the neck. The bluejay eats all kinds of nuts, fruits, large insects, and at times the eggs and young of other birds; it seldom leaves the trees in search of food, and when on the ground hops instead of walking like the crow. Except in Canada it is resident, and it breeds throughout its entire range. The nest, a large structure of twigs, grass, leaves, etc., is built in trees, bushes, or old buildings. Five is the usual number of eggs. Like the magpie this jay is known to collect and hoard various glittering or brightly colored objects, but is chiefly noteworthy on account of the variety and quality of its notes which range from the harshest cries to full flute-like tones. On the Pacific Coast this species is replaced by the darker and duller Steller's jay (*C. stelleri*). The Canada jay, or whiskey jack (*Perisoreus canadensis*) is, as its name indicates, a northern bird, found within the United States only along the northern border, and occasionally breeding in northern Maine. This is a dull-colored gray bird, without a crest, and with soft, lax plumage. It is well known to hunters and lumbermen whose camps it haunts with great boldness; and in manners and voice resembles the bluejay. It nests very early in the spring. Related species are the Oregon jay (*P. obscurus*) and the Siberian jay (*P. infaustus*) of boreal Eurasia. Several species of crestless deep-blue «Florida» jays (*Aphelocoma*) inhabit Florida and the west and the southwest. The brilliant green jay (*Xanthura luxuriosa*) is an example of the gorgeous tropical jays which just enter the United States in Texas. Consult the works: Wilson, Audubon, Nuttall and American ornithologists generally; for western species in particular, Coues, 'Birds of the Northwest' (1874), and 'Birds of the Colorado Valley' (1878).

Jay's Treaty, 1794. The Articles of Confederation provided that the States might nullify at will any provisions of whatever commercial treaty Congress might negotiate; of course therefore no nation with much commerce to be disturbed by our competition would make such treaties with us. Our chief commerce was with Great Britain; and that country would make no commercial treaty whatever with us, even for years after the Constitution had given Congress power to enforce its treaties. There were two main reasons for this: first, that Great Britain had valuable commercial monopolies (especially in the West Indies) for which she thought we could return no equivalent; second, she was angry over the *sequelæ* of the peace of 1783. She had agreed to surrender the border forts on the Great Lakes, the St. Lawrence, and Lake Champlain, and carry off no negroes, on condition that Congress «recommend» to the States to restore confiscated Tory property, and agree to confiscate no more. Congress did so twice emphatically, but the States paid no attention to it; the British government, though it knew very well how much the recommendation meant, made this an excuse to retain the forts and refuse payment for 3,000 negroes carried off; this in turn hardened the States to refuse compliance with the treaty, and the forts being

THE JAY FAMILY.



1. European Jay (Garrulus glandarius).
2. Mexican Long-crested Jay (Cyanocitta diademata).
3. Canada Jay (Perisoreus canadensis).
4. Blue-capped Jay (Cyanocorax chrysops).
5. American Bluejay (Cyanocitta cristata).
6. Spanish Jay (Cyanopica cooki).
7. Red-billed Jay (Cissa erythrorhyncha).

made a basis for Indian outrages winked at by the British commandants enraged the country still more. The Republicans, who sympathized with the new French Republic and hated Great Britain, held the House; the Federalists, whose sympathies were exactly opposite, the Senate by a small majority. On 16 Dec. 1793, Jefferson made a famous report on a House resolution, recommending retaliatory duties; and after an acrid debate the Republicans pushed through a non-intercourse resolution, only defeated even in the Senate by Vice-President Adams' casting vote. But Washington threw his weight into the scale of peace, and nominated Chief Justice John Jay as envoy extraordinary to negotiate a commercial treaty. With Lord Granville he drew up one on 19 Nov. 1794, which removed the chief American grievance by surrendering the forts, but refused compensation for the negroes and referred all other claims to commissioners; and as to commerce, allowed direct but not coasting trade between the United States and the British East and West Indies (the latter in vessels of not over 70 tons), but denied the United States the right to export sugar, molasses, coffee, cocoa, or cotton to Europe — in other words, to become an intermediary for the British colonies to evade the British commercial monopoly; and limited even this provision to two years after peace with the powers then at war with Great Britain. There were also clauses which impliedly recognized British right of search and impressment, and power to make anything contraband. The treaty was ratified by the Senate in secret session (8 June 1795), but when published excited an uproar of public indignation; Jay was burned in effigy, and even Washington vilified incredibly. The Virginia legislature and the Federal House practically passed votes of censure; but the people gradually came to recognize that it was the best thing to be had, hard as were the terms; the commercial bodies in the States openly commended it; Hamilton wrote his «Camillus» letters in its favor; and after a bitter struggle for many weeks in the House to refuse compliance with the Senate action, the treaty won by 51 to 48.

Jean Paul. See Richter, Jean Paul Friedrich.

Jeanne d'Arc, zhän därk. See Joan of Arc.

Jeannette, jĕn-nĕt′, Pa., borough in Westmoreland County; on the Pennsylvania railroad; about 22 miles southeast of Pittsburg. The natural gas which supplies the borough has contributed somewhat to its development. It is situated in a fertile agricultural region, which is also a coal mining section. The government is vested in a burgess, who holds office three years, and a council. Pop. (1890) 3,296; (1900) 5,865.

Jeannette Expedition, an enterprise, projected 1879 by James Gordon Bennett of the New York *Herald*, who sent out an Arctic expedition from San Francisco in the steamer Jeannette, under command of Lieut. De Long, U. S. N. The Jeannette was early caught in the icepack, drifted for nearly two years, and never escaped from its grip. After the wreck of the Jeannette the crew embarked in two cutters and a whaleboat. Lieut. Danenhower and a portion of the Jeannette's crew reached New York in May 1882. The bodies of De Long and his men were finally discovered in the snow, with evidences that all had perished from cold and hunger. See Polar Research.

Jebb, Sir **Richard Claverhouse,** English Greek scholar: b. Dundee, Scotland, 27 Aug. 1841; d. 9 Dec. 1905. He was educated at the Charterhouse, London, and Cambridge University, and in 1869 became public orator there. In 1875 he was called to fill the Greek chair in Glasgow University, which he resigned in 1889, on being appointed Greek professor at Cambridge. He several times visited the United States, and in 1874 married the widow of a general in the United States army. He was lecturer at Johns Hopkins University, Baltimore, in 1892. His best known works are: ‹The Attic Orators› (1876); ‹Modern Greece› (1880); a ‹Life of Richard Bentley› (1882); ‹Homer: an Introduction to the Iliad and Odyssey› (1886); ‹Lectures on Greek Poetry› (1893); ‹Humanism in Education› (1899); and an addition of Sophocles, with notes and translation. After 1891 he represented Cambridge University in Parliament. He was knighted in 1900.

Jefferson, jĕf′ėr-sŏn, **Charles Edward,** American Congregational clergyman: b. Cambridge, Ohio, 29 Aug. 1860. He was graduated from Ohio Wesleyan University (Delaware, Ohio) in 1882, from the School of Theology of Boston University in 1887, was ordained to the Congregational ministry in 1887, and became pastor of the Broadway Tabernacle, New York. Among his writings are: ‹Quiet Talks with Earnest People in My Study›; and ‹The Broadway Tabernacle of the Past and Future› (1901).

Jefferson, Joseph, American actor: b. Philadelphia 20 Feb. 1829; d. Palm Beach, Fla., 23 April 1905. He was privately educated and was early upon the stage, among his first public appearances being that as a miniature of T. D. Rice in one of the latter's «Jim Crow» entertainments at Washington, D. C. In 1843 he became a member of a band of strolling players that gave primitive entertainments through Mississippi and Texas, and followed the United States army into Mexico. On his return to the United States he appeared at the Arch Street Theatre, Philadelphia, directed the performances at Peale's museum in that city, became known as an excellent stock actor, and in 1851 played Marroll in ‹A New Way to Pay Old Debts› to the Sir Charles Overreach of Junius Brutus Booth. His prominence began with his creation of Asa Trenchard in ‹Our American Cousin,› which eliminated from the stage the traditional caricature of Yankee character. He then appeared in the parts he afterwards made famous: Newman Noggs in ‹Nicholas Nickleby›; Caleb Plummer in ‹The Cricket on the Hearth›: Dr. Pangloss in ‹The Heir at Law›; Dr. Ollapod in ‹The Poor Gentleman›; Mr. Golightly in ‹Lend Me Five Shillings›; Salem Scudder in ‹The Octoroon›; Bob Acres in ‹The Rivals›; and, above all, Rip Van Winkle in the play of that name. Dissatisfied with his own dramatization of Irving's sketch, in which he had appeared at Washington in 1860, Jefferson had the play re-written by Dion Boucicault, and in Boucicault's version, with slight changes, afterward acted. The drama ran for 170 nights at the Adelphi, London, in 1865, and in the United States was so successful that for years Jefferson appeared there in nothing else. Jefferson's Rip established itself as one of the classic creations of the stage, and outside of Shakespeare probably no character ever attained so wide and permanent a recognition among the American public. In the later years of his life he played but a few weeks annually in a repertoire of favorite parts. He also made a considerable reputation as an artist by his impressionist landscapes in oils. His acting method was distinguished by ease, verisimilitude, and perfection of finish. In the plays used by him he, for artistic purposes, introduced several admirable changes and additions. He published an interesting ‹Autobiography› (1890); and a ‹Reply to Ignatius Donnelly on the Shakespeare-Bacon Argument.› Consult the ‹Autobiography,› and Carroll, ‹Twelve Americans› (1883).

Jefferson, Thomas, American statesman, third President of the United States: b. Shadwell, Albemarle County, Va., 13 April 1743; d. Monticello, Albemarle County, Va., 4 July 1826; student at William and Mary College, Williamsburg, Va., 1760–2; student of law 1762–7; member of House of Burgesses 1769–74; member of Virginia Conventions 1774 and 1775; of the Continental Congress 1775–6; of Virginia Legislature 1776–9; governor of Virginia 1779–81; member of Congress 1783–4; minister to France 1784–9; secretary of state 1790–3; Vice President 1797–1801; President 1801–9; in retirement at Monticello 1809–26.

Early Life.— Thomas Jefferson was the son of Peter Jefferson, a planter of Albemarle County, Va. His mother was Jane Randolph, daughter of Isham Randolph, who was a descendant of William Randolph of Turkey Island, the progenitor of that family so well known in Virginia history. Jefferson's birthplace was Shadwell, about four miles from the city of Charlottesville. At this homestead he resided until it was destroyed by fire in 1770; thereupon Jefferson selected a low mountain about two miles from Charlottesville, where he built that now famous mansion, «Monticello.» Albemarle County, Va., has the proud distinction of being the section in which Jefferson was born, reared, lived, died and lies buried. Jefferson's early education, as was usually the case with Virginia planters, was entrusted first to a private tutor, from whom he learned Latin, Greek, French, and mathematics. At 14 his father died, and after two years in a school conducted by the Rev. James Maury, he entered in 1760 William and Mary College, at that time the best institution of learning in America. The student Jefferson is described as tall and raw-boned, with reddish hair and grayish hazel eyes. He was not then regarded as handsome, though in after years he was considered as probably the most attractive in appearance of the great Virginia statesmen. As a youth he was noted for his intelligence, and while at college, he was in constant association with such men of culture as George Wythe (q.v.), the eminent lawyer; Professor William Small, the profound scholar, and Governor Francis Fauquier (q.v.), the gay and accomplished gentleman. With these gentlemen, many years his senior, he was accustomed to discuss the deepest questions of philosophy and government. In Williamsburg, Jefferson was one of the leaders in all social functions, and always attended the balls given in the Apollo Room of the Raleigh Tavern. Probably his first year at college was spent among too many festivities, but during his second year he is said to have been a most diligent student, often devoting 15 hours a day to his books. After two years of college work, he commenced the study of law under George Wythe, but did not apply for admission to practice before the general court of Virginia till 1767. Jefferson was now 24 years of age; he had a large farm of 1,900 acres (soon increased to 5,000 acres) to which he gave his personal supervision. Though he devoted much time to this farm, he succeeded so well as a lawyer that his profession soon paid him $3,000 annually.

A Revolutionist.— In 1769 he was returned by Albemarle County a member of the House of Burgesses, an honor which his father had had before him. This was Jefferson's beginning as a statesman. He had stood in 1765 in the hallway of the House of Burgesses when Patrick Henry (q.v.) offered his famous Resolutions against the Stamp Act, and from Patrick Henry he imbibed the spirit of revolution. Just as soon as he became a member of the Burgesses, he joined the party of resistance to England. He was by nature a bold and fearless thinker, and when a mere boy he had had engraved on a seal as his motto, «Resistance to tyrants is obedience to God,» a principle to which he held throughout his long and eventful life. Jefferson was present when the House of Burgesses passed the resolutions of 1769. He was one of those who signed the agreement not to import goods from England. He was also a member of the House of Burgesses when, in 1773, it established a Committee of Correspondence between Virginia and the other colonies. Some think that the resolutions for such a committee were drawn by Jefferson, though they were offered in the house by his kinsman, Dabney Carr (q.v.). Of this committee Jefferson was a member. He served again in the House of Burgesses in 1774, and was one of those who voted for the resolution appointing a day of fasting and prayer because of the oppressive measures which England had passed against the city of Boston. When the governor dissolved the assembly, Jefferson met with those discontented members who called for a general congress of the colonies and asked the freeholders of Virginia for a convention to consider the state of the colony. To this convention Jefferson was returned by the people of Albemarle. The convention of 1774 was the first extra-legal assembly to meet in Virginia. Jefferson was unable to be present, having been taken ill on his way to Williamsburg. However, his influence was felt through a document called «The Summary View of the Rights of British America,» which was intended to be a series of instructions to the Virginia delegates to the First Continental Congress. The instrument marked him as a revolutionist, and as an advocate of independence from England, for in it he distinctly claimed that the colonies had a right to govern themselves without interference from the English Parliament. His views were too radical for the Virginia convention to give them its official stamp.

Jefferson was also elected a member of the

THOMAS JEFFERSON,
Third President of the United States.

convention of 1775, which met at St. John's Church, Richmond, and when Patrick Henry by his eloquence carried the colony into open rebellion against the mother country, Jefferson was appointed a member of the committee to devise a plan for organizing the militia of the colony. Shortly after this he became a member of the Second Continental Congress. When he entered that body, he was 32 years of age, being one of the youngest three members. Here he was placed on such important committees as those which drafted a paper to explain the rebellious attitude of Massachusetts at Lexington and Concord, and to reply to Lord North's «Conciliatory Policy.» On each committee he showed such a strong republican tendency that his suggestions were not accepted. The members of the Continental Congress of 1775 were not far-sighted enough to see that independence was the only course. Finally, in the spring of 1776, there came to the Virginia members of Congress instructions from the Virginia convention of 1776 that the united colonies should be declared free and independent States; and accordingly Richard Henry Lee, called the American Cicero, moved that a Declaration of Independence should be adopted. In accordance with the motion, a committee was appointed and the members were elected by ballot. Jefferson's facility for writing was so well known to the Congress that he received the highest number of votes and was named as chairman of the committee over such men as John Adams, Benjamin Franklin, Roger Sherman and Robert R. Livingston. To him as chairman fell the task of drafting that immortal document which stands in the history of the world as the most revolutionary political paper ever written. On 4 July 1776, the instrument, practically as offered by Jefferson, was unanimously adopted and to it were placed the signatures of all the members of Congress then present, except one. The principles set forth in that document mean a government by and for the people, and show that Jefferson was far ahead of his day; for it is only at the dawn of the 20th century that we are beginning to comprehend the great and universal truths that Jefferson made known to the world. (See DECLARATION OF INDEPENDENCE.) Jefferson retired from Congress in 1776, and, on returning to his native State, entered the Virginia legislature with the hope of revising and modifying her laws so that they might accord with republican government. For three years he served in the House of Delegates. During this time he succeeded in breaking down the laws of primogeniture and entail, in practically disestablishing the English Church, and in passing one of the best laws that the world has ever seen for public education providing an ideal system from the primary school to the university. Through his influence the legislature appointed a committee to revise thoroughly the laws of Virginia. The committee was composed of Edmund Pendleton, George Wythe and Jefferson. After two years, the revision, chiefly done by Jefferson, was submitted to the General Assembly, but it was not adopted *in toto*. Finally, however, in 1785, while Jefferson was in France, his faithful friend and political follower, James Madison, secured the passage of nearly all of Jefferson's work. It was at this time that the legislature approved the famous Statute for Religious Freedom, by which the complete separation of Church and State was accomplished, except the taking away of the *glebe* lands, a thing which was done in 1802. Jefferson wished even more radical changes in Virginia, such as the equalizing of representation on population instead of having two representatives from each county. He also desired that the suffrage should not be restricted to land owners, but that it should be extended to all men who might be subject to military duty. He likewise advocated more local self-government in the counties and towns of the State. He even went so far as to advocate the emancipation and the deportation of the slaves from Virginia. These measures were too radical for the Virginia Assembly, and were rejected. It is interesting to note, however, that all of them have since been accomplished save the deportation of the negroes.

Governor of Virginia.— Jefferson was governor of Virginia from June 1779 to June 1781. These were trying times; Virginia was invaded by British troops under Cornwallis, and Jefferson lacked money and resources with which to defend properly the State. His administration has often been criticised, some claiming that he was a mere doctrinaire and not a practical man; but close scrutiny shows that he did all that then lay in his power.

In Congress and at the French Court.— In 1783 Jefferson entered the Congress of the United States. To this body he proposed in 1784 a plan for the government of the Northwest Territory which Virginia so generously gave to the Union. One clause of this plan provided for the prohibition of slavery in that territory after 1800, and for this reason the plan was not adopted. In 1787, however, Congress enacted a bill for the government of the Northwest much like the original draft of Jefferson. From him Congress had the plan of our present decimal monetary system. In 1784 Jefferson was sent to France to join Benjamin Franklin and John Adams in negotiating commercial matters with foreign countries, and in 1785 he succeeded Franklin as our minister plenipotentiary to the French court. Through his efforts many unjust impositions on American commerce were removed by the French government.

Secretary of State.— In October 1789 he returned to America, and the following year became secretary of state in Washington's cabinet, in which position he opposed Hamilton (q.v.), who favored the exercise of extensive powers by Congress. Jefferson believed in a real federal relation between the States, and in a restricting of the congressional powers to purely constitutional authorizations. The final line of cleavage came when Congress passed a bill to establish a national bank. Hamilton submitted to Washington a paper asserting that such a step was legal, while Jefferson made a vigorous written protest showing that the bill was unconstitutional. Washington approved the measure, thus accepting Hamilton's views as correct. The Bank Bill, along with similar congressional acts, caused the establishment of two distinct parties — the Federalist or Loose Construction Party, headed by Hamilton, and the Anti-Federalist or Strict Construction Party, with Jefferson as its leader. Jefferson's followers were usually called the Democratic-

Republicans. (See BANKS AND BANKING, AMERICAN.)

In December 1793 Jefferson resigned from the cabinet and returned to Monticello, where he remained for four years, studying farming. His estate at this time contained 10,647 acres of land, worked by 154 slaves, and stocked with 34 horses, 5 mules, and 249 cattle. Among the negroes he had a sort of industrial (manual-training) school, and taught them to be cabinet-makers, bricklayers, masons and smiths.

Vice President.— From his retirement at Monticello, Jefferson was called to become Vice President in 1797, a position which he held till 1801. During these four years, he bitterly opposed the so-called monarchical tendencies of the Federal party as seen in the Alien and Sedition Acts (q.v.), and he boldly asserted the compact theory of State sovereignty in the Kentucky Resolutions of 1799. The Kentucky Resolutions and Virginia Resolutions of 1798–9 (the latter framed by Madison after a copy of the Kentucky Resolutions sent him by Jefferson), made the platform, so to speak, of the Democratic-Republican party which elected Jefferson as President in 1801.

President.— From 4 March 1801 to 4 March 1809 Jefferson was President. He was the first President to be inaugurated in Washington City. He believed in rotation in office, and in pursuance of this idea, removed a number of Federalists from their positions. His great act, however, was the purchase of the Louisiana Territory from France for the sum of $15,000,000. This vast territory was acquired for two reasons: (1) In order that the United States might have control of the Mississippi River, and the port of New Orleans; and (2) that the United States might not be hampered by European countries in the development of a republican form of government. As secretary of state in Washington's cabinet, Jefferson had practically asserted what was afterward known as the Monroe Doctrine, when he claimed that the United States should see that no European countries, other than those already holding possessions, secure a foothold in America. In 1801 Jefferson viewed with alarm the transfer of the Louisiana Territory from Spain to France, for he feared that, with France added to Spain, England and Russia, in control of colonies in America, republican government would have a hard struggle. Jefferson was accused of inconsistency for having sanctioned the Louisiana Purchase (q.v.), for if he had applied the strict construction principle of the Constitution here as in such acts of Congress as the establishment of the national bank, this Territory could not have been purchased, there being no provision in the Constitution allowing territorial expansion. But Jefferson's political sagacity kept him from refusing this great opportunity, and his wish of expansion caused him to advocate earnestly the purchase of Florida from Spain. It was 13 years later before his desire was accomplished. The second administration of Jefferson was not so successful as the first. It opened with a war against the Tripolitan pirates who were plundering American commerce. The outcome of this war was to increase our influence among the nations of the world. The last years of the second term were marked with difficult complications arising out of the Napoleonic wars. Napoleon tried to prevent the United States from trading with England, and England retaliated by attempting to cut off all commercial relations between the United States and France. Many American vessels were seized by both England and France. Adding to this indignity, England claimed the right to search American vessels for English seamen, and an English war vessel actually fired on an American man-of-war, killing three of the crew and wounding 18. Jefferson tried to meet the restrictions on American commerce by the Non-Importation Bill and the Embargo Act. To enforce the measures all of the New England ships would have been shut up in American harbors. The New England merchants preferred to run the risk of losing their ships to keeping them without traffic; therefore they began to abuse the President and his policy. The result was that Congress felt forced to repeal the Embargo Act. Jefferson always claimed that had the embargo been enforced the United States would have gained its rights without the second war with England in 1812. (See EMBARGO IN THE UNITED STATES.)

Private Citizen.— On 4 March 1809, Jefferson retired from the White House, and spent the remaining 17 years of his life at Monticello. In these latter days he was known as the «Sage of Monticello,» and to his home came people of prominence from all parts of the world to consult with him on great questions of politics and economics. Often his housekeeper had to provide beds for 50 guests. The demands which were made on his hospitality were so great that he died a bankrupt. During this period of his life he did all that he could to encourage better methods in agriculture, to reform the government of Virginia, and to develop in it a better system of education. The crowning event of his life was the establishment of the University of Virginia (q.v.) in 1819. He died on 4 July 1826, just 50 years from the day that has made him famous in all history, and by a singular coincidence his old rival and political antagonist, John Adams, passed away on the same day. Jefferson asked that three things be inscribed on his tomb: «Author of the Declaration of Independence; of the Statute for Religious Liberty in Virginia, and Founder of the University of Virginia,»— three acts which have made him famous.

Jefferson's Principles.— Jefferson stands in history for: (1) Republican government and the sovereignty of the people; (2) Opposition to privileged orders of nobility and the entail system; (3) Universal education and local circulating libraries; (4) Separation of Church and State; (5) Freedom of thought and speech; (6) Local self-government; (7) Economy in government and small public debt; (8) A policy of peace; (9) Political equality and universal suffrage; (10) Strict construction of the Constitution and the sovereignty of the States; (11) Well-trained militia and small standing army; (12) Metallic money, either gold or silver, as a standard, and no paper legal tender; (13) Opposition to bounties and monopolies; (14) Emancipation and deportation of slaves; (15) Expansion of the United States to include Louisiana, Florida, Cuba, and Canada; (16) Maintenance of Indian reservations; (17) Judiciary beyond the control of the legislative or executive branches of government; (18) Small navy; (19) Opposition to nepotism; (20) Rotation in office; (21) Opposition to all secession movements, North or South. This review will show that Jefferson probably gave to the world more broad principles of government than any other man. Wherever republican forms of government exist there the name of Jefferson will always be uttered with reverence and respect.

Bibliography.— Ford's ‘Writings of Jefferson’ (1892–9); Randall's ‘Life of Jefferson’ (1888); Morse's ‘Life of Jefferson’ (1883); Forman's ‘Life and Writings of Jefferson’ (1900).

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Jefferson-Burr Imbroglio, ĭm-brō'lyō, a disputed Presidential election which resulted from a defective clause in the Constitution and caused its amendment in 1800. By its original provisions, the person who received the highest number of electoral votes should be President, the next highest Vice-President. Each set of electors had informally agreed that to save the pride of the leading candidates (Jefferson and Burr, Adams and Pinckney) each pair should have equal votes, and with one exception never reflected that this meant a tie; one Rhode Island Federalist elector cast his second vote for John Jay instead of Pinckney, and there is an unproven charge that Burr intrigued for an extra vote over Jefferson. They, however, received 73 each, and the Federalist House had to choose between the two Democratic candidates. Rules were adopted for the balloting, among the chief being that the Senate should be admitted, that the balloting should be in secret session, and that the House should not adjourn till a choice was made. The Federalists in caucus decided to vote for Burr; perhaps partly to spite the Democrats — Jefferson being their great national leader and the great Federalist terror, and the man the Democrats had intended to vote for as President — and partly because Burr as a New York man would consult Northern commercial interests, which the Virginian Jefferson might antagonize. They were right in this; Burr would not have laid the Embargo. Their solid vote would have elected Burr by one (nine out of 16 States); but they could not hold their members, three of whom bolted and voted for Jefferson to satisfy public feeling in their districts. Thus Jefferson had eight States, Burr six, and Vermont and Maryland were divided. But the Burr electors in the last two secretly agreed with Bayard of Delaware, who had also voted for Burr, that if there were likely to be bad blood and danger from prolonged balloting, they would stop it by voting for Jefferson. The casting vote thus lay with Bayard, who justly commanded confidence; but as the agreement was not known, the situation seemed much more perilous than it was. The balloting lasted a week without change. Some of the Federalists plotted to have it last till John Adams' term expired, and then let the others fight it out, or leave it by special act to Chief Justice John Marshall (Federalist), as a sort of regent trustee. The Democrats countered by resolving either to have Jefferson and Burr jointly (one of them certainly being President) call a special session, or to seize the capital by a militia force, call a convention, and revise the Constitution. Finally, after 34 ballots, the confederate electors decided that if Jefferson would give a guarantee for the civil service, he should have the election after one more ballot; he gave the guarantee, and was elected on the 36th ballot by 10 to 6 (States). Burr became Vice-President; that the attempt to put him at the head was mainly due to real fear for commerce is made probable by the fact that every New England State except the one (Vermont) which had no commerce, voted for him to the last. This affair resulted in the passage of the Twelfth Amendment (see Constitution of the United States), which obliged the electors to specify their choice for the offices on distinct ballots, and enlarged the range of choice to three candidates in case of tie.

Jefferson, Texas, city, county-seat of Marion County; on the Cypress Bayou, and on the Missouri, K. & T. and the Texas & P. R.R.'s; about 20 miles from the eastern boundary of the State and 142 miles east of Dallas. It was settled in 1850 and incorporated in 1866. It is situated in an agricultural and stock-raising region with rich iron ore deposits in the vicinity. Some of the principal industrial establishments are furnaces, machine-shops, foundries, saw-mills, cottonseed-oil mills, and large storage houses. The shipments are chiefly articles manufactured in the city, vegetables, grain, cotton, live stock, and fruit. The principal buildings are a government building, the city and county buildings. An iron bridge across the Bayou and good roads assist in making Jefferson the trade centre for a large part of Marion and Cass counties. Pop. (1900) 2,850.

Jefferson, Wis., city and county-seat of Jefferson County, at the junction of the Rock and Crawfish rivers, 50 miles west of Milwaukee; and on the Chicago & Northwestern railroad. It was settled in 1837 and is governed by a mayor and a council elected every two years under a charter of 1893. It has pork-packing plants, flour-mills, tanneries, brick and tile works, carriage and wagon factories and other industries. The city owns and operates the waterworks and the electric-lighting plant. Pop. (1900) 2,584.

Jefferson City, Mo., city, capital of the State, and county-seat of Cole County; on the Missouri River, and the Chicago & A., and the Missouri P. R.R.'s; 125 miles west of Saint Louis. It is the farming and manufacturing trade centre for Cole and adjacent counties; has manufactories of flour, shoes, clothing, beer, brooms, bricks, farming implements, carriages and wagons, and iron foundries. It is the seat of Jefferson City College, the general western offices of the Standard Life Insurance Company, Lincoln Institute, State Capitol building, State penitentiary, State armory, governor's mansion, Supreme Court building, United States courthouse, and the Carnegie Public Library. It has gas and electric light plants, 2 national banks, daily, weekly, and monthly periodicals, and an assessed property valuation exceeding $800,000. Jefferson City was settled in 1826 and was first incorporated in 1839. A mayor and council elected every two years administer the affairs of the city. Pop. (1890) 6,742; (1900) 9,664.

Jefferson River, Montana, a stream about 200 miles long, formed by the union of the Beaver Head and Wisdom (or Big Hole) rivers in Madison County. It unites with the Madison and Gallatin to form the Missouri.

Jeffersonton, Engagement at. Early in October 1863 the Army of the Potomac, under command of Gen. Meade, lay around Culpeper Court House, with the advance of two corps on the Rapidan. Gen. Lee, who was south of the Rapidan, determined to flank Meade's position, seize the Orange and Alexandria Railroad north of the Rappahannock, and intercept his retreat upon Washington. Informed of the movement, Meade withdrew his army to the north side of the Rappahannock, 11 October, his rear-guard of cavalry having a sharp engagement with the Confederate cavalry at Brandy Station. Believing that the Confederate army was moving upon Culpeper, Meade turned about and on the 12th, threw three infantry corps and a cavalry division south of the Rappahannock, with instructions to push forward and find and strike Lee, if at Culpeper. When they reached Brandy Station the Confederate army was nowhere in that neighborhood. At this time Gen. Gregg's division of Union cavalry was guarding the upper fords of the Rappahannock and Hazel rivers; on the morning of the 12th Col. Gregg's brigade crossed the Rappahannock near Sulphur Springs; his pickets at Jeffersonton being driven in, he marched for that place, found it in possession of the enemy, drove them from the town, and occupied it. That morning Fitzhugh Lee's cavalry division, leading the Confederate advance from near Madison Court House, crossed Hazel River at Starks' Ford and pressed on toward the Rappahannock. The 11th Virginia cavalry drove Gregg's skirmishers into Jeffersonton and attacked the two regiments in the town, but was driven out after losing several men. The 7th and 12th Virginia were now sent to the left and right, encircling the town, a combined attack was made, and Gregg was utterly routed and driven across the Rappahannock, with a loss of about 400 men, most of them captured. The Confederate loss was about 40 killed and wounded. When Meade heard of the engagement, and that Lee was crossing the Rappahannock at Warrenton Springs, he hastily recrossed the river, withdrew to Auburn and Catlett's Station and, on the 14th, to Centreville, Lee following closely and attacking his rear at Auburn and Bristoe Station during the day. Consult: ‹Official Records,› Vol. XXIX.; Walker, ‹History of the Second Army Corps.›

E. A. Carman.

Jef'fersonville, Ind., city and county-seat of Clark County; on the Ohio River, and the Baltimore & O. S. W., the Pittsburg, C. C. & St. L. and several other railroads; 50 miles southwest of Evansville. It is opposite Louisville, Ky., with which it is connected by railroad bridges. It contains the Southern State penitentiary, high school, public library, prison library, United States quartermaster's supply depot, and has waterworks, gas and electric lights, street railways, large car works, 2 national banks, daily, weekly, and monthly periodicals, and an assessed property valuation of about $1,700,000. Being at the head of the Ohio falls excellent water power is obtained here and the city has numerous industries, among them extensive works for freight and passenger cars and for building river steamboats. The mayor and council are elected biennially; the police commissioners are appointed by the governor of the State. Pop. (1890) 10,666; (1900) 10,774.

Jeffrey, jĕf'rĭ, **Francis,** Lord, Scottish judge and critic: b. Edinburgh 23 Oct. 1773; d. Craigbrook Castle, near Edinburgh, 26 Jan. 1850. He was educated at the University of Glasgow, and Queen's College, Oxford, and was admitted to the Scottish bar in 1794. He assisted in establishing the ‹Edinburgh Review› in 1802 with Sydney Smith, Lord Brougham, and others, and after two numbers had been issued became its editor, a position which he held till June 1829. In 1831 he was made lord-advocate, and sat for several years as member of Parliament for Edinburgh. He was made a lord of session in 1834, and continued during a period of 16 years to be one of the ablest and most popular judges of the supreme court in Scotland. Consult: Cockburn, ‹The Life of Lord Jeffrey› (1852); Gates, ‹Three Studies in Literature› (1899).

Jeffreys, jĕf'rĭz, **George,** Lord, English judge: b. Acton, near Wrexham, Wales, 1648; d. London 19 April 1689. He was called to the bar in 1668, and soon after was chosen recorder of London. He was appointed, successively, a Welsh judge and chief justice of Chester, created a baronet in 1680, and became chief justice of King's Bench in 1683. He was one of the advisers and promoters of the arbitrary measures of James II.; and for his sanguinary and inhuman proceedings against the adherents of Monmouth on the famous ‹Bloody Assize,› was rewarded with the post of lord high chancellor (1685). After the abdication of King James the chancellor, who had disguised himself as a seaman, was detected by a mob and carried before the lord mayor, who sent him to the lords in council, by whom he was committed to the Tower, where he died. Consult: Woolrych, ‹Memoirs of the Life of Judge Jeffreys› (1827); Campbell, ‹Lives of the Lord Chancellors,› Vol. IV. (1849–57); Macaulay, ‹History of England,› Vols. I. and II. (1856); Irving, ‹Life of Judge Jeffreys› (1898).

Jeffries, jĕf'rĭz, **John,** American physician: b. Boston, Mass., 5 Feb. 1744; d. there 16 Sept. 1819. He was graduated at Harvard in 1763, studied medicine at London and Aberdeen, and returning to Boston in 1769 he entered upon a lucrative practice, which continued until the evacuation of the town by the British troops, whom he accompanied to Halifax. After serving as surgeon-general of the troops in Halifax, he was appointed in 1779 surgeon-major of the forces in America. In the succeeding year he established himself in London in the practice of his profession, but also occupied himself much with scientific studies, and in the prosecution of his experiments in atmospheric temperature undertook 7 Jan. 1785, a remarkable voyage in a balloon from Dover cliffs across the British channel, landing in the forest of Guiennes in France. This was the first successful attempt at aërostation on an extended scale, and Jeffries in consequence received many attentions from the learned societies of Paris. In 1789 he returned to Boston, where he practised his profession until the close of his life. He announced a course of lectures on anatomy in Boston in 1789, but so great was the prejudice against the practice of dissecting, that on the evening of the second lecture a mob broke into his anatomical room. The course thus interrupted was never resumed, and the single lecture delivered by Jeffries is said to have been the first public one on anatomy given in New England.

Jehovah, jẹ-hō′vạ, the most sacred name applied to God among the Jews, though the Hebrew word in the English Bible is generally translated by Lord (in small capitals). The case is similar with the Greek version (the Septuagint), which renders this word by *Kyrios,* and with the Latin Vulgate, which translates it by *Dominus,* both these words signifying Lord. The proper form of the name is now generally believed to be *Yahveh* or *Yahweh.* Why there should be any doubt about the matter is explained by the fact that in Hebrew only the consonants were written, giving the form *Yhvh,* and the name itself was never uttered, the Jews in reading substituting another divine name, usually *Adonai.* The exact meaning of the word is doubtful, but as a form of the Hebrew verb «to be» some explain it as, He who is, was, and will be, or the Eternal and Unchangeable, and it seems certainly to imply existence. The awe which the Hebrews cherished for this name led them to avoid pronouncing it, as they still do. The monotheistic conception of the Jehovah of the Israelites differs from all other theological conceptions of that age. No image of him was allowed. He was the invisible protector and king of Israel, worshipped by obedience to his commandments, and an observance of the ceremonies established by the law. As is well known, in some parts of the Pentateuch *Elohim* is used almost exclusively, in others *Jehovah,* and this has led many to imply a corresponding difference of authorship. Others deny that this is at all a necessary deduction, maintaining that either name might be used by the same writer according to the conception of the Most High that was in his mind at the moment, Elohim being the abstract expression for absolute Deity, apart from the special notions of eternity, unity, holiness, etc.

Jehovist, jẹ-hō′vĭst, sometimes called Jahwist, a hypothetic author of the Pentateuch, who used the word Jehovah, or Jahweh, as the name of God instead of Elohim, which term denotes the Supreme Being in other passages of the sacred canon. To the writer who employs the latter designation is applied the term Elohist. According to the theories of many modern Biblical critics the present Pentateuch is a compilation from two original records, one made by an Elohist, the other by a Jehovist. The Jehovist history is supposed to be the older of the two (by some critics it is dated 950 B.C.), and to have consisted of an account of Jehovists dealings with the chosen people up to the conquest of Palestine west of the Jordan. It is a religious history of the attainment of the Promised Land. In this history was emphasized the supremacy of Jehovah as the one God, creator of the world, and the national God and Father of the chosen people, in whose affairs He interposes as He appeared to their early forefathers in the shape of a man or an angel. In the Elohist record, which is supposed to cover the same period and to have been written 700 B.C., there is a more modern interpretation of history attempted. The anthropomorphic suggestions of deity are softened, Elohim interposes merely by a voice, speaking to his people in words of encouragement or rebuke. Through the narrative of the hypothetical Elohist there runs also a tone of sadness, there are anticipations of coming disaster and disappointment.

The Jehovistic or Jahwistic editor who combined these two histories is supposed to have lived in the 7th century B.C., while in the 4th century B.C. a third post-exilic writer added to these combined elements the legal codes which swelled the Pentateuch into the Hexateuch.

Jehu, jē′hū, general of the army of Joram, king of Israel. The prophet Elisha sent one of the school of the prophets to annoint him king over Israel, and in a sudden revolution Joram was slain and Jehu reigned in his stead. He was the first of a new, the fifth, dynasty, and reigned 843–815 B.C. On his accession he massacred all the family of Ahab, including his wretched wife Jezebel, and put the priests of Baal to the sword. In order to obtain possession of the kingdom of Judah he slew Ahaziah the king, and 42 of his family. But his reign was not a prosperous or successful one, and by an invasion of the Assyrians he lost all the territory east of the Jordan. His name has been found on the black obelisk discovered by Layard at Nineveh, and now in the British Museum. This obelisk was set up by Shalmaneser II., and the inscription refers to the tribute paid by Jehu to the Assyrian monarch.

Jejeeb′hoy, Sir **Jamsetjee,** Parsee merchant and philanthropist: b. Bombay 15 July 1783; d. there 15 April 1859. By his energy and business talents he succeeded in achieving for himself the position of the first native merchant in India, and realizing a fortune of nearly a million sterling. The munificence displayed by him toward all benevolent and public objects, without regard to class or creed, was of the most princely kind, his donations from first to last being estimated at about $1,500,000. Among benevolent institutions founded by him are the great hospital at Bombay which bears his name, the establishment in the same city for the education of poor Parsee children, and the *dhurumsallas,* or places of refuge for travelers in various parts of the country. He also constructed the causeway uniting the islands of Bombay and Salsette, the waterworks at Poonah, the bridges at Earla, Parta, and Bartha, and other public works. He was knighted in 1842, and in 1857 made a baronet. A statue was subsequently erected in honor of him in the town-hall of Bombay.

Jejunum, jẹ-joo′nŭm (Latin, *jejunus,* empty), the second portion of the small intestine, succeeding the duodenum, and so named from its generally being found empty after death. The duodenum extends to about 12 inches in length, and the jejunum forms two fifths of the remaining portion of the small intestine. See Intestine.

Jekyll, jē′kĭl, **Gertrude,** English horticulturist: b. London 29 Nov. 1843. She holds the gold medal of the Royal Horticultural Society and has published: 'Wood and Garden' (1899); 'Home and Garden' (1900); 'Wall and Water Gardens' (1901); 'Lilies for English Gardens' (1901); 'Roses for English Gardens' (1902).

Jelliffe, Smith Ely, American physician: b. Brooklyn, N. Y., 27 Oct. 1866. He was graduated from the Brooklyn Polytechnic Institute in 1886, and in 1889 the degree of M.D. was conferred upon him at Columbia University. He is instructor in Materia Medica in Columbia University and has done much original work in botany, pharmacognosy, therapeutics, and nervous and mental diseases. He has published numerous writings on those subjects. Some of his more important works being 'The Flora of Long Island'; a text-book of botany; a text-book of pharmacognosy; and a text-book of nervous and mental diseases; as well as translations from French and German writers on nervous and mental diseases. He is editor of the 'Medical News,' and managing editor of the 'Journal of Nervous and Mental Diseases,' and is also medical editor of the 'Encyclopedia Americana.'

Jelly includes every translucent juice so far thickened as to coagulate when cold into a trembling mass; as the juices of acid or mucilaginous fruit, currants, etc., which, by the addition of one part of sugar to two parts of juice, and, by boiling, have obtained a proper consistence.

1. *Animal Jelly.*— The soft parts, such as the muscles, skin, cartilage or integuments of animals, when boiled in water, yield a solution which on cooling solidifies to a tremulous jelly. Seventy pounds of bones, when treated with 1 pound of water in the form of steam, at a pressure of 4 pounds to the square inch, and simultaneously digested in 5 gallons of water, will yield about 20 gallons of a strong jelly.

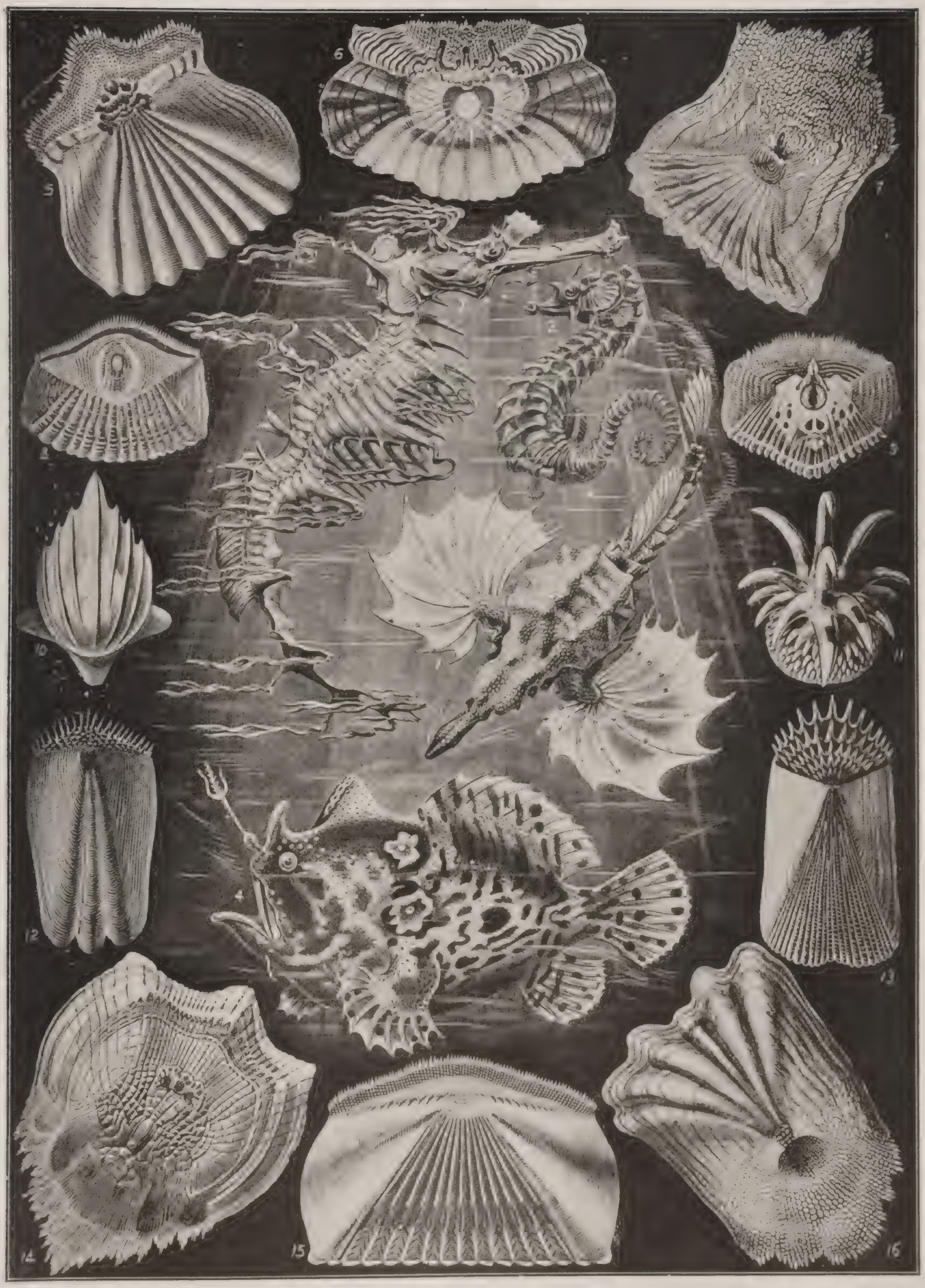
Animal jelly seems to be nearly identical in composition with the tissues which yield it, so that we are unable to trace any chemical change, except, perhaps, the assimilation of water during the process of its manufacture. The following analysis shows the average percentage of carbon, hydrogen, and nitrogen in animal jelly:

	Carbon	Hydrogen	Nitrogen
(1)	49.0	7.0	19.4
(2)	50.0	6.5	17.5

2. *Vegetable Jelly.*— When the juice of fruits is heated with sugar, the liquid forms a stiff jelly on cooling. It appears from the researches of Frémy and others that unripe fruits contain a compound of carbon, hydrogen, and oxygen, called *pectose;* as the fruit ripens, this substance is transformed into *pectin,* the change being brought about chiefly by the influence of a peculiar ferment called *pectase,* which is contained in the fruits. As pectin is soluble in water, the expressed juice of ripe fruits contains a large quantity of this substance, which on heating to a temperature of about 105° F. is converted into one or more substances which have not as yet been completely studied, but which have the property of gelatinizing on cooling. The principal of these substances are *pectosic* and *metapectic* acids. This latter acid, when boiled along with another strong acid, whether mineral or organic, is decomposed, one of the products being pectin sugar, a substance which is closely allied to glucose, so that in all probability there is produced in the very process of manufacturing jellies more or less of this sugar, which certainly is not cane-sugar, and which might, therefore, be by some regarded as an adulteration. The processes which, in the living plant, result in the transformation of pectose into pectin may be imitated on a small scale by heating the juice of unripe fruit with the pulp, which contains the ferment pectase, or with a dilute acid which induces the same change as this substance. Alkalies also produce a similar effect. The exact composition of these various pectous substances yet remains a matter of doubt.

Jel'lyfish, the medusa-stage of *Hydrozoa* (q.v.), but more especially the common name of *Scyphozoa* (formerly *Discomedusa*), the second class of the phylum *Cœlenterata* (q.v.). A familiar example is the common large jellyfish of the coast of New England, *Aurelia flavidula.* It sometimes reaches the diameter of 10 inches; its umbrella-shaped body is convex and smooth above, and from the under sides hang down four thick oral lobes which unite to form a square mouth-opening also giving off four tentacles. The margin of the umbrella or disk is fringed and bears eight eyes which are covered by a lobe. Just under the surface are seen the water-vascular canals, branching out from four primary canals radiating from the stomach. When in motion, the disk contracts and expands rhythmically, on the average from 12 to 15 times a minute.

The *Aurelia* spawns late in the summer, the females having yellowish ovaries, while the sperm glands of the males are roseate in hue. The eggs are fertilized in the sea, and the ciliated pear-shaped larva by October sinks to the bottom, attaching itself to rocks or shells, finally assuming a hydra-like shape, with often as many as 24 long slender tentacles. This is the *Scyphistoma* stage in which it remains about 18 months. From this it passes into the *Strobila* stage in which the body divides into a series of cup-shaped disks, each of which is scalloped on the upturned edge. These disks separate one after the other in March, and swim away as miniature jellyfishes called *Ephyræ.* The *Ephyra* is at first about a fifth of an inch in diameter, and becomes a fully formed *Aurelia* in April, reaching maturity in August. Another but less common jellyfish on the coast of New England and in the North Atlantic is the great *Cyanea arctica,* or «blue jelly,» which is nearly two feet in diameter, sometimes from three to five, and with very long string-like tentacles, sometimes extending from 20 to 100 feet, which are filled with stinging or lasso-cells (*trichocysts*), so that the animal is poisonous to fishermen and bathers. While these forms undergo a metamorphosis, in fact, an alternation of generation; other kinds, as *Pelagia,* etc., are known to develop directly from the egg, and even the aurelia under exceptional circumstances does not pass through the scyphistoma stage. The jellyfishes are divided into a number of groups. They are most numerous in the tropical seas, comprising forms of great beauty. Consult: Romanes, 'Jellyfish, Starfish and Sea Urchins' (1885); Packard, 'Zoology' (1897); Arnold, 'The Sea Beach at Ebb-tide' (1902).



SCALES AND ARMOR OF TELEOST FISH

1. Flying Gurnard (Pegasus chiropterus). 2. Seahorse (Hippocampus antiquorum). 3. Seaweed fish (Phyllopteryx eques). 4. Tentacle fish (Antennarius tridens). 5—16. Characteristic forms of scales among teleost fishes; 5, 6, 7, Sparidæ (sea-breams); 8—9, Percidæ (perches); 10, Centriscidæ (snipefish); 11, Siluridæ (catfish); 12, Fistularidæ (flutemouths); 13, Pleuronectidæ (soles); 14, Labridæ (wrasses); 15, Pristipomidæ (fossil); 16, Sparidæ (Cantharus)

Jena, yä′nä, Germany, town 12 miles east of Weimar, on the left bank of the Saale. It consists of the town proper and of four suburbs, and is a dull antiquated place. It contains a famous university which was opened in 1558, and attained its highest prosperity toward the end of the 18th century, when it numbered Schiller, Humboldt, Fichte, Schelling, and Griesbach among its teachers, and was attended by above 1,000 students. In 1844 the number had dwindled down to 411; but in 1902 it had about 800. It has 98 professors and instructors, who teach the different branches of law, medicine, philosophy, and theology; and possesses an anatomical theatre, botanical garden, observatory, good physical and chemical cabinets, and a library of 200,000 volumes. Pop. 15,499.

Jenckes, jĕnks, **Joseph,** American inventor: b. Hammersmith, London, England; d. Lynn, Mass., 16 March 1683. About 1645 he came to the Massachusetts Bay colony, and in that year settled at Lynn, where he established the first iron-foundry in the colonies. He was also an inventor, and in 1646 obtained on an improved water-wheel the first recorded patent in America. He secured a patent also for an improved grass-scythe, and originated other improvements and inventions in machinery and tools. In 1654, under contract with the Boston selectmen, he built the first fire-engine in this country. In 1652 at the Lynn iron-works he cut the dies for the Massachusetts coinage, the first executed in America. Among these coins were the so-called «pine-tree» shillings, deriving their name from that emblem on the obverse side.

Jenkin, jĕng′kĭn, **Henrietta Camilla Jackson,** English novelist: b. Jamaica about 1807; d. Edinburgh 8 Feb. 1885. In 1832 she was married to Charles Jenkin, an English naval officer. Her novels were lively studies of character and popular in their day, among the best being: ‹Cousin Stella› (1859), a portrayal of West-Indian life and manners; ‹Who Breaks, Pays› (1861), in which the flirt is admirably pictured; ‹Skirmishing› (1862); ‹Two French Marriages,› issued in New York as ‹A Psyche of To-day› (1868); ‹Within an Ace› (1869).

Jenkins, jĕng′kĭnz, **Charles Jones,** American jurist and statesman: b. Beaufort County, S. C., 6 Jan. 1805; d. Summerville, Ga., 14 June 1883. He was graduated from Union College, Schenectady, N. Y., in 1824, and after the study of law began practice in Augusta, Ga. He was a member of the Georgia legislature in 1830 and after a short service as attorney-general of the State was a member of the legislature 1836–50, and a leader of his party there. He was State senator 1856–60, and was a judge of the Georgia supreme court 1860–5. He became provisional governor of his State in 1865, holding office till 1868, and presided over the Constitutional Convention of 1877. Consult: Jones, ‹Life of C. C. Jenkins› (1884).

Jenkins, John Edward, English political and social writer: b. Bangalore, India, 28 July 1838. He was educated at McGill University, Canada, and the University of Pennsylvania, and sat in Parliament for Dundee 1874–80. He became famous by the publication of his ‹Ginx's Baby, his Birth and Misfortunes› (1870), a clever satire aimed at the clumsy handling of the problem of English pauperism. Among later works of his which have circulated widely are: ‹Lord Bantam› (1871); ‹Little Hodge› (1872); ‹Jobson's Enemies› (1879–82); ‹A Paladin of Finance› (1882).

Jenkins, John Stilwell, American biographer: b. Albany, N. Y., 15 Feb. 1818; d. Weedsport, N. Y., 20 Sept. 1852. He was a lawyer by profession, and at one period edited the Cayuga ‹Times.› Among his works are: ‹Generals of the Last War with Great Britain› (1841); an abridgment of Hammond's ‹Political History of New York› (1846); ‹Alice Howard› (1846); ‹Life of Silas Wright› (1847); ‹History of the Mexican War› (1848); ‹Heroines of History› (1853).

Jenkins, Thornton Alexander, American naval commander: b. Orange County, Va., 11 Dec. 1811; d. 9 Aug. 1893. Entering the United States navy as a midshipman in 1828, he served therein during the war with Mexico. Appointed to investigate European lighthouse systems he framed the law passed in 1852 under which the existing lighthouse board is managed. He saw active service during the Civil War and was chief of the bureau of navigation 1865–9. From 1869 to 1871 he was naval secretary of the lighthouse board and commanded the East India squadron 1871–3. In 1870 he was appointed rear admiral and retired from active service in 1873.

Jenkins Ferry, Battle of. During the winter of 1863–4 the Union forces of Generals Steele and Blunt held the line of the Arkansas River, with headquarters at Little Rock; the Confederates, under Gen. Sterling Price, held that of the Washita, with headquarters at Camden, which was strongly fortified. On 23 March 1864 Steele started from Little Rock southward with about 8,000 men to co-operate with Gen. Banks' expedition up Red River, the objective point of both being Shreveport, La. Gen. Thayer, with 5,000 men, left Fort Smith on the 21st to join Steele at Arkadelphia, and Col. Powell Clayton, with a small cavalry force, marched from Pine Bluff in the direction of Camden, which was Steele's first objective. Steele reached Arkadelphia on the 28th, was joined near Elkins' Ferry, on the Little Missouri, by Thayer, and, after several severe skirmishes, in which the Confederates were defeated, flanked Price out of Camden, 15 April, and occupied it. Here he was fully informed that Banks had been defeated on Red River and was retreating, and his own position became very precarious. Gen. E. Kirby Smith, who had been opposing Banks, marched rapidly with three divisions of infantry — 8,000 men and 14 guns — to join Price and crush Steele. Steele was too strongly entrenched at Camden to be attacked, but he was greatly harassed and nearly surrounded by the gathering Confederates, his forage-trains, with their guard, were cut off and captured, and, the loss of a large supply-train at Marks' Mills, 25 April, with nearly an entire brigade and a battery, determined him to fall back to the Arkansas River. He left Camden on the night of the 26th, crossed the Washita, and had hardly begun his movement northward when Smith and Price pressed him vigorously and kept up a running fight, which was particularly sharp on the 29th, when Steele reached Jenkins' Ferry, on the Saline River. The river was swollen, and Steele had crossed only part of his army when his rear brigade, commanded by Gen. S. A. Rice, was fiercely attacked by Price, and yielded some ground. But the brigade rallied, and, supported by a part of Engelmann's that had not yet crossed the river, engaged in a sanguinary fight lasting the greater part of the day. Three times the Confederates charged and were repulsed, and the Union line advancing, the Confederates fell back and did not renew the fight. Steele now crossed the river without further molestation, and moved leisurely to Little Rock, which was reached 2 May, and Thayer's division was sent back to Fort Smith. Price was so badly defeated that he made no effort to follow Steele north of Saline River. The Union loss at Jenkins Ferry was 63 killed, 413 wounded, and 45 missing. The Confederates report a loss of 86 killed, 356 wounded, and 1 missing. The Union loss during the entire campaign (23 March–2 May) was 102 killed, 601 wounded, and 1,072 missing, a total of 1,775. Consult ‹Official Records,› Vol. XXXIV.; The Century Company's ‹Battles and Leaders of the Civil War,› Vol. IV.

E. A. CARMAN.

Jenks, Edward, English publicist: b. Clapham, Surrey, 20 Feb. 1861. He was educated at Dulwich College and Cambridge University, and was dean of the faculty of law in the University of Melbourne 1889–92, and Queen Victoria professor of law in University College, Liverpool, 1892–6. He is now reader in English law at Oxford, and widely known as a writer on English law, his published works comprising: ‹Constitutional Experiments of the Commonwealth› (1891); ‹The Doctrine of Consideration in English Law› (1893); ‹The Government of Victoria (Australia)› (1893); ‹History of the Australasian Colonies› (2d ed. 1896); ‹Outlines of English Local Government› (1895); ‹Law and Politics in Middle Ages› (1897); ‹A Short History of Politics› (2d ed. 1900); ‹Edward I.› (1902); ‹Parliamentary England 1660–1832› (1903).

Jenks, Jeremiah Whipple, American political economist: b. St. Clair, Mich., 2 Sept. 1856. He was graduated from the University of Michigan in 1878, and subsequently studied in Germany, at the University of Halle. He then studied law and was admitted to the Michigan bar. In 1886 he became professor of Greek, Latin, and German in Mount Morris College, Ill.; in 1886–9 was professor of political science and English literature at Knox College, Galesburg, Ill.; in 1889–91 professor of political economy and social science at Indiana University; and in 1891 became professor of political economy and politics at Cornell University. In 1899–1901 he was expert agent for the United States Industrial Commission on investigation of trusts and industrial combinations, and was also expert for the Department of Labor on the same subject. In 1902 he was commissioner of the United States War Department to the Philippines and other Oriental nations to investigate the condition of labor and other economic subjects. In 1903 he went to Mexico to consult with the minister of finance in regard to a change of the financial system. He has written: ‹Henry C. Carey als Nationalökonom› (1885); ‹The Trust Problem› (1900); ‹Trusts and Industrial Combinations› (1900); a part of the report of the Industrial Commission; and ‹Report on Certain Economic Questions in the English and Dutch Colonies in the Orient› (1902); besides many magazine articles. He is recognized as one of the foremost authorities on the trust question, and his writings are marked by scholarly and accurate investigation, combined with unusual simplicity and clearness of statement.

Jenks, Tudor, American editor and author: b. Brooklyn, N. Y., 7 May 1857. He was graduated from Yale in 1878, from the Columbia Law School in 1880, studied art in Paris in 1880–1, practised law in New York in 1881–7, and in 1887 became a member of the staff of the ‹St. Nicholas Magazine.› His writings include many magazine contributions in prose and verse, and ‹The Century World's Fair Book› (1893); ‹Imaginations, or Truthless Tales› (1894); ‹The Boys' Book of Explorations› (1900), and ‹Galopoff, the Talking Pony› (1901).

Jenner, jĕn′ẽr, **Edward,** English physician, discoverer of vaccination as a preventive of the smallpox: b. Berkeley, Gloucestershire, 17 May 1749; d. there 26 Jan. 1823. Having adopted the medical profession, he visited London to attend the lectures of the celebrated anatomist John Hunter, in whose family he resided for two years. Returning to the country, he settled at Berkeley, to practise the various branches of his profession. His investigations concerning the cowpox were commenced about 1776, when his attention was excited by the circumstance of finding that some individuals to whom he attempted to communicate the smallpox by inoculation were not susceptible of the disease; and on inquiry he found that all such patients, though they had never had the smallpox, had undergone the casual cowpox, a disease common among the farmers and dairy-servants in Gloucestershire, who had some idea of its preventive effect. Other medical men were aware of the prevalence of this opinion, but treated it as a popular prejudice; and Jenner seems to have been the first who ascertained its correctness, and endeavored to derive from it some practical advantage. He discovered that the *variolæ vaccinæ,* or cowpox, as the complaint has been since termed, could be propagated from one human subject to another by inoculation, rendering all who passed through it secure from the smallpox. In 1798 he published a short treatise — ‹An Inquiry into the Cause and Effects of the Variolæ Vaccinæ› — and in July 1798, Cline, surgeon to St. Thomas's Hospital, introduced vaccination into that institution. The practice was adopted in the army and navy, and in the country generally, and soon spread to other countries, and honors and rewards were conferred on the author of the discovery. In 1802 a parliamentary grant was made to him of the sum of £10,000, and five years later a second grant of £20,000. Besides the treatise already mentioned, and ‹Further Observations on the Variolæ Vaccinæ or Cow-Pox,› Jenner also published various letters and papers on the same subject, as well as on others. A famous paper of his on the cuckoo appeared in the ‹Philosophical Transactions› in 1788. Consult: Baron, ‹Life of Jenner›; Creighton, ‹Jenner and Vaccination› (1889); Crookshanks, ‹History and Pathology of Vaccination› (1890). The last-named work contains reprints of the 'Inquiry,' the 'Further Observations,' and other papers by Jenner. See VACCINATION.

Jenner, Katherine Lee Rawlings, English novelist: b. Hayle, Cornwall. She was married to Henry Jenner, and has published: 'A Western Wildflower' (1882); 'In London Town' (1884); 'Katharine Blythe' (1886); 'An Imperfect Gentleman' (1888); 'Love or Money' (1891); 'When Fortune Frowns' (1895); 'In the Alsatian Mountains.'

Jenner, SIR **William,** English physician: b. Chatham 1815; d. London 12 Dec. 1898. He was educated at University College, London, became in 1848 professor of pathological anatomy, and in 1857 of clinical medicine in that institution, and in 1861 physician to the queen. In 1862 he was appointed professor of the principles and practice of medicine in University College; in 1868 was created a baronet, and in 1872 a K.C.B., in recognition of his services during the severe illness of the Prince of Wales, now Edward VII. In 1881 he was elected president of the College of Physicians. He wrote various papers on specific diseases, and was the earliest to establish the difference in kind between typhus and typhoid fevers.

Jennings, jĕn'ĭngz, **Samuel,** American colonial Quaker preacher: d. 1708. In 1680 he came from Buckinghamshire, England, to Burlington, N. J., and was governor of West Jersey in 1683. Becoming entangled in religious controversy he opposed the Quaker schismatic, George Keith, and in London in 1694, supported the action of the American Friends in regard to Keith. On returning to America he often made preaching tours through the various colonies, and after the recall of the English governor, Lord Cornbury, aided in restoring public order in the affairs of West Jersey.

Jennings, Sarah, DUCHESS OF MARLBOROUGH. See MARLBOROUGH, DUKE OF.

Jephson, jĕf'sȯn, **Arthur Jermy Mounteney,** English writer of travels. He commanded a detachment under the explorer, Stanley, in the Emin Pasha relief expedition, was queen's messenger 1895–1901, and has been king's messenger from the latter date. He has published: 'Emin Pasha and the Rebellion at the Equator'; 'Stories Told in an African Forest'; 'The Story of a Billiard Ball' (1897).

Jephthah, jĕf'thạ, in Jewish history one of the judges of Israel (Judges xi., xii.). He was a son of Gilead, and was driven from home by his brothers, but when the Ammonites made war against Israel was summoned to defend his countrymen. Jephthah after trying conciliatory measures without success, put himself at the head of the Israelites, and defeated the enemy. He had made a vow that if he was victorious he would sacrifice to God as a burnt-offering whatever should first come to meet him from his house. He was met by his daughter, his only child, whom he accordingly sacrificed to the Lord (Judges xi. 29, 40). The way in which the vow was kept has given rise to much controversy, some authors maintaining that Jephthah put his daughter to death; others that he devoted her to perpetual virginity; others that he actually sacrificed her as a burnt-offering, and that, though prohibited by law of Moses, these human sacrifices occasionally took place.

Jep'son, Edgar, English novelist: b. London 28 Nov. 1864. He was educated at Oxford and has published: 'Sibyl Falcon' (1895); 'The Passion for Romance' (1896); 'The Keepers of the People' (1898); 'On the Edge of the Empire' (1900); 'Lady Noggs, Peeress' (1904).

Jerboas, jĕr-bō'ạz or jĕr'bō-ạz, small rodents of the family *Dipodidæ,* found in the sandy plains of Africa, Russia and southern Asia, and represented by a few species in North America. Their most prominent peculiarity is the great length of the hind legs, especially in the metatarsal portion, so that they look like miniature kangaroos. They walk ordinarily on their two hind feet, but when alarmed escape danger by long leaps. They are fawn-colored, as a rule, with long slender tails, large ears, big eyes, and nocturnal habits. They dwell in underground burrows and tunnels, many of which, more or less connected, are likely to be found together. Their food is mainly vegetable, but they also eat insects, eggs, etc.; they hibernate in cold climates, do not store food, and are the prey of foxes, jackals, wildcats, serpents, and Arab children. The most familiar species of jerboa is the Egyptian form (*Dipus ægypticus*), found in North Africa in arid places. The jumping-hare of South Africa (*Pedetes capensis*), and its ally, the jumping-mouse of North America (*Zapus hudsonius*), are also well-known examples of the family. The latter is a reddish "mouse," white underneath, which abounds all over the temperate parts of the country, and is easily recognized by its bounding gait. It is one of the longest and soundest of winter sleepers, preparing for its dormancy a warm ball-like nest of grass lodged in a bush or among strong weeds. Gerbils (q.v.) of Africa and India are often confused with jerboas, but are a group of true mice. Consult Lydekker, 'Royal Natural History,' Vol. III. (1895).

Jeremiah, jĕr-ẹ-mī'ạ, the second of the four major prophets of the Old Testament, the son of Hilkiah, of the priests that were in Anathoth, a town about three miles from Jerusalem. He flourished during the darkest period of the kingdom of Judah, under Josiah, Jehoiakim, Jeconiah, and Zedekiah, having been called to the prophetic office in his youth, in the 13th year of the reign of Josiah 626 B.C. He continued in it till the 11th year of Zedekiah, when Jerusalem was taken by Nebuchadnezzar (588 B.C.). His task was to deliver messages and warnings to a corrupt people and to foretell the destruction of the nation. In Judah were two political parties — the one favoring an Egyptian alliance, the other a Chaldæan. Jeremiah repudiated both at first, but was driven over to the latter and unpopular party. He became the leader of this minority in contending with three features of popular infatuation — religious apostasy; neglect of justice; and false patriotism, which led the people frequently to break faith with Babylon, by bursting into revolt. He characterized Nebuchadnezzar as the servant of God, and prophesied the approaching burning of the temple. A cry for his life arose from the priests and prophets, and he escaped with difficulty. At last Jerusalem with its temple and palace was consumed with fire. Jeremiah was favorably treated by the Babylonian conqueror, and offered a home at Babylon, but preferred to stay among the people left in Judah. One section of this party thought they saw in Egypt a safe place of refuge from the power of Nebuchadnezzar, and led the people together with Jeremiah to Tahpanhes, where, according to Christian tradition, the prophet was stoned to death by his countrymen, who were incensed by his rebukes. According to the Rabbinical tradition, however, he and Baruch made their escape on the conquest of Egypt by Nebuchadnezzar.

Jeremiah, Lamentations of, the title given by the Septuagint translators, by the Vulgate and English Bible, to a book of songs and dirges which is placed next to the book of the prophecy of Jeremiah. The book is divided into five chapters each of which contains a complete composition. In I., II. and IV. the death of the Jewish nation is bewailed with the utmost abandonment of grief. The form of each elegy is poetry of the most strictly artificial kind. The metre is that of the Kinah (q.v.), the metre employed in dirges from immemorial time in the east. As if to run down the whole gamut of sorrow each verse begins with a different letter of the Hebrew alphabet, arranged, generally, in the usual order.

The whole work may be thus briefly analyzed. Elegy 1: Lamentation over the city after the people have been swept off into captivity. Help is asked from Jehovah. Elegy 2: The destruction of the city mourned over. Jehovah again called upon as alone able to save. Elegy 3: Sufferings of «Jehovah's servant,» a personification of the whole pious multitude, described. Elegy 4: Contrast between former gladness and the present misery, which is attributed to national transgression. Elegy 5: A final appeal for help in prayer to Jehovah.

The date and authorship of the Lamentations are matters of dispute. Few modern critics attribute them to Jeremiah. They show traces, however, of that prophet's language and sentiment, but internal evidence is not conclusive. Some think that they are referred to in 2 Chronicles xxxv. 25. Consult: ‹Commentaries› of Payne Smith; Cheyne; Plumptre; and Löhr, ‹Die Klagelieder Jeremias› (1894).

Jeremiah, The Prophecy of, a book of the Old Testament containing the utterances of that prophet. The writings of Jeremiah, or certain of them, were taken down by his pupil and friend Baruch. They must therefore have been originally spoken without being previously written out, although it is possible that the scribe or secretary took them down at his master's dictation. The roll of Baruch contained all that Jeremiah had spoken for 23 years; probably, therefore, many of the prophecies may have been sketched merely as outlines. The substance of these impassioned appeals is imbued with firm belief in God's unfailing covenant with Israel and with David. Although Jeremiah is not so often quoted by New Testament writers as is Isaiah, yet there is abundant evidence in their writings that they read him, and he is not only a prophet of denunciation and warning but also of Messianic hope and promise. He shows, moreover, an intimate acquaintance with Deuteronomy, the utterances of his prophetic predecessors, and the book of Psalms.

The books seems naturally to be divided into five parts, the first of which contains six discourses, each of the last three introduced by the formula of sanction, «The word which came to Jeremiah from the Lord.» Each of these discourses includes sketches, outlines or skeletons of different prophecies each by a distinct formula of sanction. Take for instance, the first discourse (1 ch. to 20 ch.), the first sketch would be in the first chapter, verses 4 to 10, introduced by the formula, «The word of the Lord came unto me saying.» There are at least four of these brief sketches in the first chapter.

The second part of the book consists of 15 prophecies, which are fuller and completer than those of the first part, each with its formula of sanction. They include poems, appeals, allegorical object-lessons, historic narratives, and one letter. The third part is a connected narrative in classic Hebrew, different in style from that of the first 20 chapters. The fourth part contains poetic invectives against Egypt, Philistia, Moab, Ammon, Edom, Damascus, Hazor, Elam and Babylon. The fifth part is a supplementary, adding details to the description of Jerusalem's downfall.

Jerfalcon, jĕr′fâ″kn, or **Gyrfalcon,** a large and bold falcon of the Scandinavian mountains (*Falco gyrfalco*), represented by closely allied species or varieties in Iceland, Greenland and the Hudson Bay region, whose plumage is prevailingly white, with more or less blackish markings, especially about the face. It is one of the largest, strongest and most impetuous of its race; and has always been highly prized by falconers, among whom, by ancient laws, its use was restricted to men of ducal and princely rank. The bird is a rare winter wanderer to the United States from arctic Canada, where it breeds, and survives the winter mainly by killing ptarmigan.

Jericho, jĕr′ĭ-kō, a once important city of ancient Palestine, near the foot of the mountains, on the west side of the Jordan plain, northeast of Jerusalem. Its name means «city of palms.» The site is marked by mounds of sun-dried bricks, and called Tel es-Sultan; gardens and a fine spring are found there. The palms and balsams for which Jericho was formerly famed have disappeared. At the conquest of Palestine by Joshua, Jericho was the key to the country and was miraculously captured, destroyed by fire, and its rebuilding forbidden under a curse. It is now a poor village, much visited by tourists. It has two hotels, a Russian monastery and church.

Jerked Beef, beef cut into strips of about an inch thick, and dried in the sun. This method of preserving meat has been largely adopted in South America and Australia. Cut from the animals when in good condition these strips of flesh dry in the sun before decomposition commences, and will keep for any length of time. In the United States, jerked beef is common in the southwest, where the Indians prepared buffalo, deer and bear meat by cutting in strips and curing in the sun.

Jeroboam (jĕr-ō-bō′am) **I.,** the first king of Israel, the northern kingdom. Having conspired against Solomon, he was obliged to escape to Egypt, where he remained until the monarch's death. He then returned to lead an insurrection against Rehoboam, which ended in the formation of the kingdom of Israel, composed of the 10 revolted tribes. These tribes worshipped at Bethel and Dan, instead of going to Jerusalem. Jeroboam reigned from about 937 B.C. to 915 B.C.

Jeroboam II., king of Israel. He was the son of Joash. He reigned from about 782 B.C. to 741 B.C. His reign was evidently an active one. He was a skilful warrior, and regained territory which had been captured by the king of Aram in previous reigns. It was during Jeroboam's time that Hosea and Amos announced their prophecies.

Jerome, jĕ-rom′ or jĕr′ōm, **Saint** (Eusebius Hieronymus Sophronius), a father of the Latin Church: b. Stridon, between Styria and Hungary, about 331. His parents educated him with care in literary studies and he read the Greek and Roman classics at Rome under the famous grammarian Donatus. He did not escape uncontaminated by the licentiousness of the capital; but soon became inclined to the Christian faith. The catacombs and tombs of the martyrs first excited his devotion. His travels on the Rhine and in Gaul made him acquainted with several Christian preachers, and he was eventually baptized. After a long residence at Aquileia he went in 373 to Antioch in Syria, where he passed through a spiritual crisis and renounced pagan learning, and in 374 retired to the deserts of Chalcis. There he spent four years as a hermit in the severest mortifications and laborious studies. He left his solitude again to be ordained priest at Antioch, but soon after went to Constantinople to enjoy the instruction of Gregory Nazianzus. In Rome, where he became literary secretary to Pope Damasus, he made his appearance as a teacher. His exposition of the Holy Scriptures found favor with the Roman ladies. Marcella and Paula, rich patricians, are celebrated for the learned and ingenious theological epistles he wrote them, and for their rare monastic piety. Paula accompanied him to Palestine in 386, where he founded a convent at Bethlehem; here he remained till his death in 420. His writings show his active participation in the controversies of his day, and his letters give a very vivid idea of the condition of society at Rome. They are full of satiric strictness on the corrupt clergy, and are often as biting as Juvenal or Martial. Many of them are profoundly touching and full of fervent piety; others are lampoons traversed with vehement invective with the spirit of Plautinian ribaldry. His Biblical labors are highly valuable; his Latin version of the Old Testament from the original language is a marvellous achievement, and it may be said that ecclesiastical Latin, originated with Jerome's Vulgate. His principal claim to the gratitude of the Church is that he was the founder of Latin monasticism. Consult Largent, ‘Saint Jerome’ Sanders, ‘Etudes sur Saint Jerome’ (1903).

Jerome, Jerome Klapka, English humorist: b. Walsall 2 May 1861. He was at first a clerk in a railway office, afterward actor, schoolmaster, and journalist by turns. After many discouragements he succeeded in making a popular hit with his book, ‘On the Stage — and Off’ (1885), largely autobiographical; and his ‘Idle Thoughts of an Idle Fellow’ (1889) and ‘Three Men in a Boat’ (1889) made him famous in America as well as at home. He edited the ‘Idler’ with Robert Barr (q.v.) (1892–7); ‘To-Day’ (1892–7); and has published several successful comedies: ‘Sunset’ (1888); ‘New Lamps for Old’ (1890); ‘Miss Hobbs’ (1900); etc.; and also ‘John Ingerfield and Other Stories’ (1894); ‘Sketches in Lavender’ (1897); ‘Observations of Henry’ (1901); ‘Paul Kelver’ (1902); etc.

Jerome, William Travers, American lawyer and politician: b. New York, 18 Apr. 1859. He entered Amherst College, but failing heart compelled him to leave. He graduated from the Columbia Law School in 1884. In 1888 he was appointed assistant district attorney, in which position he saw much of the political corruption prevailing in the city. In 1890 he was active in the Municipal League, which opposed Tammany; in 1893 was assistant counsel of the Lexow Committee, in 1894 a member of the committee of 70, and manager of the campaign which resulted in the election of Mayor Strong. In the same year the mayor appointed him judge of the court of special sessions. In 1901 he was active in the Fusion campaign against Tammany; and in 1902 was elected district attorney of New York County; immediately after his election he established headquarters in the East Side of New York, in order to be within easy reach of the people who most needed his assistance; in this official position he has done very effective work in the breaking down of the system of protection of vice and maladministration of justice. In 1905 he was again elected district attorney on an independent ticket by 16,255 plurality.

Jerome of Prague, Bohemian religious reformer: b. Prague about 1370; d. there 30 May 1416. He was educated at the universities of Prague, Paris, Oxford, Cologne, and Heidelberg; and was in faith and sufferings the companion of the famous John Huss, whom he excelled in learning and eloquence, and to whom he was inferior only in moderation and prudence. His reputation for learning was so great that he was employed by Ladislaus II. of Poland to organize the University of Cracow; and Sigismund of Hungary caused Jerome to preach before him in Buda. He took a zealous part at Prague in the contest of his friend Huss against the authorities, and not unfrequently proceeded to violence, causing the monks who opposed him to be arrested, and even had one thrown into the Moldau. He publicly burned in 1411 the bull of the crusade against Ladislaus of Naples, and the papal indulgences. When Huss was imprisoned in Constance he could not remain inactive, and hastened to his defense. But attempting to return to Prague the Duke of Sulzbach caused him to be arrested in Hirschau and carried in chains to Constance. After an imprisonment of half a year he consented on 11 Sept. 1415 to recant the heresies with which he and Huss were charged. But this recantation did not deliver him, and after languishing a year, he solemnly retracted his recantation. On 30 May he was burned at the command of the council, and his ashes thrown into the Rhine.

Jerrold, jĕr′ôld, **Douglas William**, English dramatist and humorist: b. London 3 Jan. 1803; d. Kilburn Priory, near London, 8 June 1857. He was a midshipman in the navy 1813–15, and then quitting the service, was bound apprentice to a printer in London. By hard study he made himself master of Latin and Italian, besides acquiring an extensive knowledge of general literature, and at first attempted dramatic criticism. The bent of his genius, however, lay mainly in the direction of dramatic writing. Numberless pieces were produced by him before he was 20, but the first which won decided popularity was ‹Black-eyed Susan,› represented for 300 successive nights at the Surrey Theatre in 1829. Among Jerrold's subsequent dramas were the ‹Rent-day›; ‹Nell Gwynne›; ‹The Housekeeper›; Prisoner of War›; ‹Bubbles of a Day› and ‹Time Works Wonders,› the last named one of the most successful comedies on the English stage. He founded and conducted successively the ‹Illuminated Magazine› and ‹Douglas Jerrold's Shilling Magazine,› also acting as a most important member of the literary staff of ‹Punch.› To this he contributed ‹Mrs. Caudle's Curtain Lectures›; ‹Punch's Letters to his Son›; the ‹Story of a Feather.› He wrote several novels, among which are ‹The Mad Mode of Money›; and ‹Chronicles of Clovernook› (1846). A selection of his essays edited by his grandson, Walter Jerrold, appeared in 1903. Though a powerful master of satire, he never allowed his wit, whether as an author or in private life, to be tinged with malevolence. Consult: W. B. Jerrold, ‹Life and Remains of Douglas Jerrold› (1859).

Jerrold, Walter Copeland, English author and journalist: b. Liverpool 3 May 1865. Since 1890 he has been connected with the editorial staff of the London ‹Observer,› and beside editing several reprints from the works of his grandfather, Douglas Jerrold (q.v.); Thackeray's prose works, etc., has published: ‹Michael Faraday: Man of Science› (1891); ‹Gladstone: England's Great Commoner› (1893); ‹Oliver Wendell Holmes› (1893); ‹The Triumphs of the Printing Press› (1896); etc.

Jerrold, William Blanchard, English journalist and miscellaneous writer, son of Douglas Jerrold (q.v.): b. London 23 Dec. 1826; d. there 10 March 1884. He edited Lloyd's newspaper for a long period and published: ‹Cool as a Cucumber,› a novel (1851); ‹Swedish Sketches› (1852); ‹Life of Douglas Jerrold› (1858); ‹At Home in Paris› (1866); ‹Up and Down in the World› (1866); ‹Paris for the English› (3d ed. 1868); ‹The Cockaynes in Paris› (1871); ‹The Best of all Good Company› (1871); ‹Life of Napoleon III.› (1874–84).

Jersey Cattle. See Dairy Cattle.

Jersey (jėr'zĭ) **City,** N. J., the most important suburb of New York since the annexation of Brooklyn, the second largest city in New Jersey, and seat of Hudson County. It occupies about five miles of the Hudson River frontage opposite lower New York: Paulus Hook, its starting point, is exactly opposite the Battery. It lies on a peninsula between the Hudson and New York Bay on one side, and the Hackensack and Newark Bay on the other; and is limited on the south by Bayonne, which takes up the lower end of the peninsula, and on the north by Hoboken. It has several ferry lines to different portions of New York, some of them operated by the great railroads which have their terminals here — all the roads from the south and west: the Pennsylvania, Erie, Baltimore & Ohio, Lehigh Valley, Delaware, Lackawanna & Western, New York, Susquehanna & Western, Central of New Jersey, and the West Shore line of the New York Central. The Morris Canal ends here. Jersey City is also the terminal of several of the most important steamship lines between New York and Europe. Its area is 12,228 acres, or 19.1 square miles.

The city lies on a flat meadow about a mile wide from the river back to a sharp bluff; the business section occupies the former, the residence district the latter, with some very handsome streets of costly dwellings — though Grand Street in the business section is a notably beautiful residence street. The municipal improvements are of a high and thorough grade: paving (nearly all the streets are paved, largely with granite and asphalt), sewerage, water supply, etc. The trolley service extends to all the neighboring section of New Jersey. The parks are few and very small, less than in almost any other large American city; but along the ridge in the western part extends the magnificent Hudson County Boulevard, 19 miles long (the entire length of that county from Bayonne up, and five miles of Bergen County), 100 feet wide, and with a noble view of the river and upper New York, as well as the country west. The city hall with the soldiers' monument, the public library, and the Fourth Regiment armory, are among the conspicuous buildings. The intellectual facilities of the city are good, aside from its proximity to New York. It has 27 public schools, besides 10 Roman Catholic parochial schools, and for higher education a public high school, Hasbrouck Institute (1856), St. Peter's (Roman Catholic) College (1878), St. Aloysius Academy, and the German-American School. There is a public library with over 100,000 volumes; and a historical museum rich in colonial documents. The hospitals are the City, St. Francis, and Christ; there are several homes and asylums, and some convents.

The immense commercial and shipping interests of the city, though second only to those of New York, have no separate statistics, the customs report being included in that of the latter city. Its position on the great river, with Newark Bay in the rear and the entrance of Kill van Kull on the south, give it a most favorable commercial position, which has been improved by properly equipped wharves. The Pennsylvania and Erie roads have large grain elevators here. Among the leading industries are those of slaughtering and meat-packing: Jersey City is the meat depot of New York, and has two huge abattoirs, one on the river front and the other on the Hackensack meadows in the northwest. Its slaughter-house products in 1900 amounted to $5,708,763. Its other manufactures are enormous, the total amounting to $77,225,116 in 1900. They are exceedingly varied, no one having a great predominance except the tobacco manufacture, over $6,000,000 a year; other important branches are iron and steel goods, locomotives, boilers, and heating apparatus; bridges, ships, and windmills; planing-mill products, cars, carriages, boxes, and cooperage; brass, copper, and zinc goods, electrical and scientific apparatus; pottery and glass; lead-pencils, and famous crucibles used in all chemical laboratories and smelting works; watches, jewelry, and musical instruments; sugar, and confectionery; mineral waters and patent medicines; soap and candles (a natural annex to the abattoirs), and perfumes; compressed gas; chemicals, paints, and roofing materials; paper, and window-shades; rubber goods; silk thread and goods; oakum; fireworks; printing and writing inks, and varnish; and hundreds of others. There are four national banks, and several State and private banks, with loan and trust companies.

The city has a two-year mayor and a council with only one chamber, called the board of aldermen; most of the other officials are appointed by the mayor, only the city clerk being appointed by the aldermen, and the street and water board elected. The assessed valuation in 1902 was $100,550,026; the total public debt, excluding the water debt, $16,205,325; the sinking fund is above $3,000,000. The expenditures are about $8,000,000 a year. The largest single item is $460,000 for schools.

The population in 1850 was 6,856; 1860, 29,226; 1870, 82,546; 1880, 120,722; 1890, 163,003; 1900, 206,433; 1905, 232,699. Of these 3,704 were colored, 58,224 foreign-born, 19,314 Irish, 18,820 German, 4,642 English, 3,832 Italian.

The site of the city was used only as farming land till into the 19th century despite its remarkable position. In 1802 the entire population was 13 in one house with outbuildings; this was on Paulus Hook, the point opposite the Battery, named after the Dutchman Michael Pauw, who formerly owned it. Here in the Revolution the American fortifications had been taken by the British, and retaken and destroyed in a most brilliant action by «Light Horse Harry» Lee. In 1804 the «associates of the Jersey Company» bought the land, and laid it out in streets, incorporating it as a village with a board of selectmen. In 1820 it was incorporated as the «City of Jersey,» still with a board of selectmen; in 1838 it was reincorporated as Jersey City, with a mayor and aldermen. Repeated annexations have brought it to its present territory: Van Vorst in 1851, Hudson City and Bergen in 1869, Greenville in 1873. It obtained a new charter in 1889. Consult: McLean, ‹History of Jersey City› (1895); Eaton, ‹Jersey City and its Historic Sites› (1899).

Jersey, Island of, the largest and most important of the Channel Islands, lying in the English Channel, and belonging to Great Britain. It is 12 miles long and from 4 to 7 miles wide, and has an area of 45 square miles. The distance to the coast of France is about 12 miles. The interior is mostly table-land and is well-wooded. The principal town is Saint Helier. The island is famous for a breed of cattle. Pop. (1901) 52,796.

Jersey Prison Ship, a notorious, unseaworthy ship, lying in New York harbor from 1776 to 1783, and used by the British as a prison for captured American sailors. Over 11,000 are said to have died of cold, starvation, and inhuman treatment.

Jer'seyville, Ill., city and county-seat of Jersey County, on the Chicago & A. and the Chicago, P. & St. L. R.R.'s., 66 miles southwest of Springfield. It was settled in 1839, incorporated in 1867, and adopted a new city charter in 1897. It has a public library and court-house, and being the centre of a rich agricultural district, has an established trade in produce, fruit, grain and live-stock. The waterworks are owned by the city. Pop. (1900) 3,517.

Jerusalem (Greek *Hierousalem.* Old Hebrew pronunciation, *Yurushalem.* Tel-el-Amarna tablets, *Uru-sa-lim*; Assyrian monuments, *Ur-sa-li-im-mu.* Meaning certainly «city of Salim»; meaning of *Salim* disputed — probably an Assyrian god; usually assumed as Hebrew «peace,» but the name antedates Hebrew. The Greek and Latin *Hierosolyma* is a corruption, from the erroneous supposition that the first syllable is Greek *hieros,* sacred. Hadrian renamed it *Ælia Capitolina,* and its official name was long *Ælia,* even Arabicized into *Iliya;* the Greeks called it *Kapitolias.* Arabic name, *Beit el-Makdis,* or simply *el-Mukaddas,* modern vernacular *el-Kuds,* «the sanctuary,» or *el-Kuds esh-sherif*).

The «Holy City» is 33 miles from its port of Jaffa on the Mediterranean, 15 from the Dead Sea, 18 from the Jordan, 19 from David's first capital, Hebron, and 34 or 35 from the old kingdom of Samaria: the pregnant Hebrew history was transacted in the space of a county. It is 126 miles from Damascus. The position of the dome of the Church of the Holy Sepulchre is lat. 31° 46′ 45″ N., lon. 35° 13′ 25″ E. The city lies in the midst of an infertile, ill-watered district, once (under good government) made prosperous by irrigation, now blighted by Turkish possession. The rainfall is about 23 inches. The climate is hot and irregular — rising to 112° and not sinking below 25°, with an annual mean of 62° — but not malarious; the city is unsanitary and plague-stricken, but from dirt, lack of sewerage, bad water, and unhygienic habits. The only natural water-supply (the drainage sinking in the soft limestone) is from the Virgin's Spring (Gihon), an intermittent natural siphon on a dolomite floor, in a rocky cave 12 feet deep in the face of the eastern ridge; this was carried by a rock and masonry conduit to the rock and masonry Pool of Siloam, 52 x 18, and thence to another, the Old Pool; a shaft within the walls led down to a rock channel communicating with the spring. At present the water-supply is from rain-tanks or «pools,» in and out of the walls. The remaining one of three old aqueducts, which carries water when in repair, was built by Pilate. There is little trade except that of local shops for supplying tourists; and the manufacture is chiefly of souvenirs, as olive-wood and mother-of-pearl articles. Indeed, as a commercial location it never possessed any merits, and its greatness was due to original political situation, and partly to its very defects. It is connected with Jaffa (west), Bethlehem and Hebron (south), and Jericho (north) by carriage-roads; and in 1892 a narrow-gauge railroad to Jaffa, with a circuitous course of 54 miles, was opened by a French company.

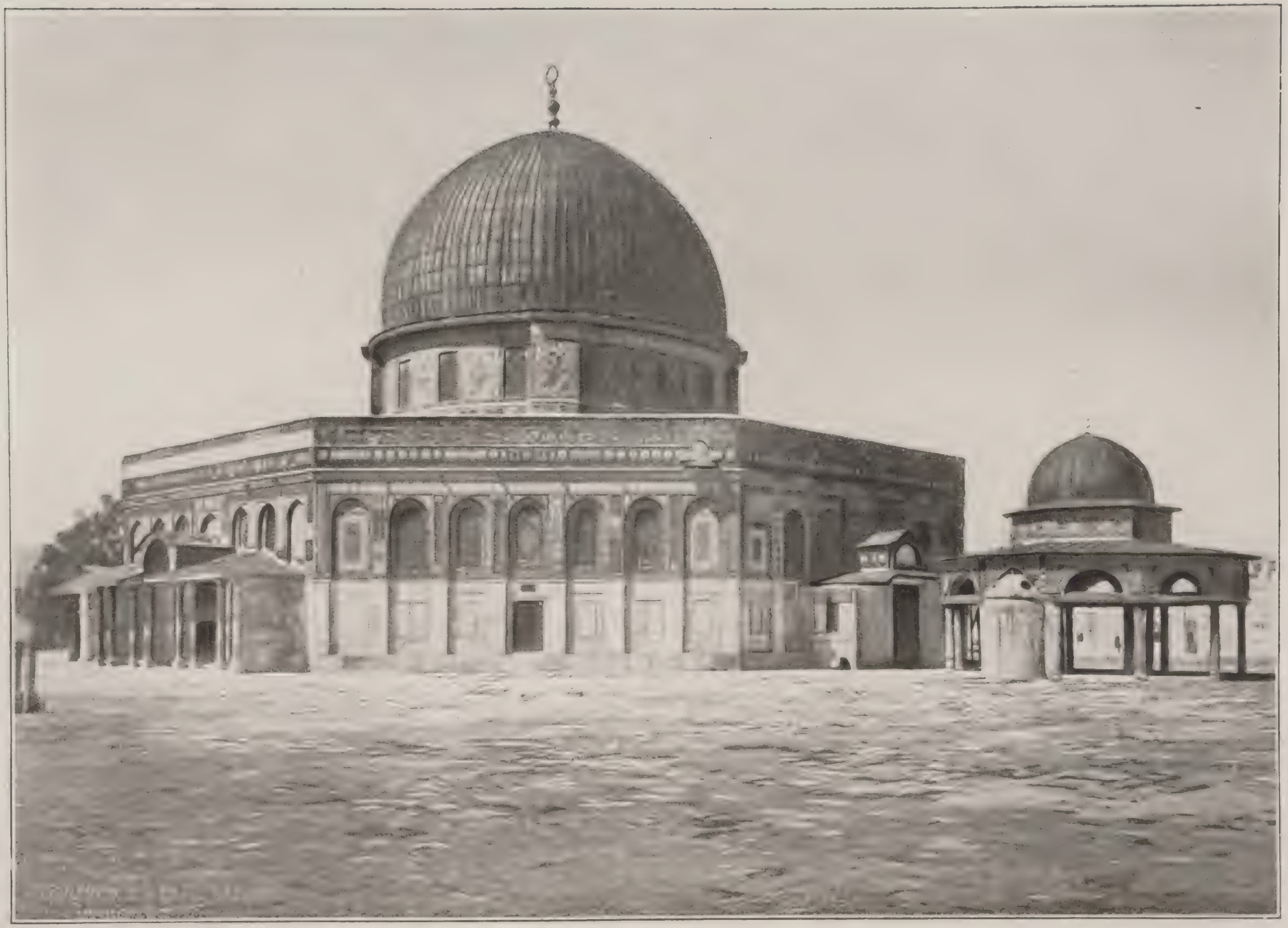
Jerusalem lies on several hills, rising from a steep plateau (see below), and the floor and slopes of a valley between the two main divisions. The modern city, much less extensive than the old in its best estate, is a rough quadrangle surrounded by a very irregular wall, built in the 16th century by Solyman I., on the lines of the Crusaders' fortifications. It has nominally eight gates, two on each side; the

Jaffa and Abd-ul-Hamid on the west (the latter very recent), the Zion and Dung on the south, the Golden (closed up) and St. Stephen's on the east, and the Damascus and Herod's on the north. The city is unevenly divided, by the main street running from the Damascus gate south to near the Zion gate, and that running east from the Jaffa gate to the Haram-esh-sherif, into four «quarters» in which the great religious divisions are segregated: the Mohammedan, much the largest, on the northeast, adjoining the original holy places; the Christian next, on the northwest, where is the Church of the Holy Sepulchre; the Armenian on the southwest; the Jewish on the southeast. The streets are crooked, narrow, ill-made, and dirty, and the city has few except historical attractions; the stream of tourists, however, has developed civilized conveniences such as hotels, banks, mercantile establishments, etc. Several Jewish colonies have been settled in the environs; and since 1858 a quarter has grown up outside the walls on the northwest, approached by the Jaffa Gate, and containing consulates, Christian churches, schools, charitable institutions, etc., but not more sanitary than the old. The city is the capital of an independent sanjak, or Turkish administrative district, immediately subject to the government at Constantinople, and has an executive and a town council with representation of the great religious divisions. It is the seat of Roman Catholic, Greek Catholic, and Armenian patriarchs; the smaller Eastern churches have resident bishops; and till 1887 a joint Protestant bishopric was supported by England and Prussia, with alternate bishops, but on the death of the then incumbent Prussia withdrew from the arrangement, and England continues it alone. The population of the city at the last returns was as follows: Jews, 41,000; Mohammedans, 10,000; Christians, 12,800 — made up of 6,000 Orthodox Greeks, 4,000 Roman Catholics, 1,400 Protestants, 800 Armenians 200 Uniat Greeks, and small bodies of Syrians, Copts., etc. Total, over 60,000.

The intense historical interest is centred on memorials of the time or localities of David and Solomon, and of the life and death of Christ. Of the former, the supreme interest is in the Haram-esh-Sherif, the site of the temple, and palace of Solomon and of the later temples. It is a walled area about 527 x 330 yards, with an elevated platform in the centre reached by steps; in the centre is the beautiful Kubbet es-Sakhra, or Dome of the Rock — a wooden octagon with sides of 66 feet 7 inches, decorated on the outside with marble and porcelain tiles, each of the four sides which face the cardinal points having a square gate surmounted by a vaulted arch. Just east of this is the Chain Dome, or David's Place of Judgment. Other domes of interest are near; but the next most notable structure in the Haram is the mosque El Aksa, at the south end. Within it are also a beautiful 15th-century fountain, a pulpit of the same date, a modern mosque called the Throne of Solomon, and the fortress of Antonia. Of the Christian monuments, the most noteworthy is the Church of the Holy Sepulchre, in the Christian quarter, originally built by Constantine the Great over the supposed place of the Ascension; after long oscillation of views, and for a time a general abandonment of the site as the true one, opinion is again favoring its authenticity. Most of the present structure, however, dates only from the 19th century. There is a rotunda, with a dome 65 feet in diameter, above a small Chapel of the Sepulchre; a number of church buildings, said to include the site of Golgotha or Calvary; and 22 chapels. The Via Dolorosa, along which Jesus is said to have carried the cross to Calvary, follows the present street Tarik Bab Sitti Maryam from St. Stephen's Gate. Several modern churches and other institutions are also worth visiting; but the thronging Scriptural associations — besides those mentioned above, the Mount of Olives, the Pool of Bethesda, the Vale of Hinnom, etc.— overshadow all else.

Topography and History.—About a mile north of Jerusalem, the main north and south watershed ridge of Palestine turns to the west; while a spur called Olivet, having three pinnacles, runs first southeast 1½ miles, and then south 1¼ miles. The space between the two is occupied by a plateau sloping southeastward, and separated on each side from the bounding ridges by a ravine 300 to 400 feet deep, with steep and often precipitous sides. The eastern ravine, separating it from Olivet, is the «brook» Kedron or Kidron (Cedron), which was always a dry bed; the western is the Wady el-Rabābi (probably the vale of Hinnom), which after skirting it on the west, turns east along the southern scarp of the plateau and joins the Kedron. Through this plateau from north to south runs a broader and much less deep and precipitous valley, the Tyropœon («cheese-makers' place») 100 to 150 feet deep, thus dividing it into two uneven sections: the east ridge is continuous, and its northern part was the first occupied; the western part, the «new city,» is divided by a lateral branch of the Tyropœon into two summits, a north and a south, connected by a narrow saddle separating also Tyropœon from el-Rabābi. The general height may be stated as about 2,500 feet; the eastern ridge is 2,440 feet at the north, and descends southward; the western north summit is 2,490 feet, south summit 2,520. The accumulation of 3,000 years' rubbish, however, has greatly modified the contours of the hills and ravines, obliterating some minor ones altogether. The average depth over the rock levels is 30 to 40 feet, and in the valleys 70, in one case reaching 120.

This plateau, surrounded on three sides by steeply scarped bluffs and crested with hills, was a natural fortress; but it had two defects — it commanded nothing in particular, and its water-supply (one spring intermitting for hours or even a day or two, and that at the foot of a bluff) was very scanty. Probably at the first, as many times since, army after army marched around it, and left it untouched as of too little military significance. We first hear of it on the Tel el-Amarna tablets (about 1400 B.C.), when it is seemingly a little hill fort with a small garrison, possibly with a village also, and the capital of the «land of Jerusalem,» apparently a small territory along the watershed. The king, Abd-Khiba, is a vassal of the king of Egypt, and begging assistance against the Khabiri (Hebrews?). Later it is a minor «Jebusite» citadel: Hebron, Bethlehem, Bethel, Gibeah, Jericho, are all more important. But when David undertook to form a consolidated Hebrew kingdom, Jerusalem had the transcendent merit that it lay on the border between Judah and the northern tribes, not historically identified with either; it



THE MOSQUE OF OMAR, JERUSALEM.

was also fairly on the central line of communication, and convenient for action against the Philistines and the desert tribes at once. He made terms with the Jebusites and occupied the hill-fort of Zion on Ophel, near the only available water-supply. Possibly a village grew up on the eastern slope of the hill; but it was small, for the whole levy of Palestine was but 30,000 men (2 Sam. vi. 1), and other places held the trade. Solomon greatly increased the size of the town, and built a stone temple for Yahweh and a great palace. Under Rehoboam the place was captured by Shishak of Egypt; under Amaziah by Jehoash, and its walls partly leveled. During the palmy times of the northern kingdom it was held of small account except by the Judahites: it was only one of many places of pilgrimage down to Hezekiah's time, and the northern prophets ignore it and speak of Bethel, Gilgal, and Beersheba. With the fall of its northern neighbor, for the moment its importance and wealth increased; especially it became the one undefiled shrine, never mixed with rites of the native religions, the centre of Jewish religious life, the one place where sacrifice might be offered. In the later days of the monarchy the town spread beyond the east ridge into the Tyropœon; a second town and a trading quarter grew up. For a long time after its destruction by Nebuchadnezzar in 586 the history is scant and dubious. It suffered heavily under the Persian empire; under Artaxerxes Ochus the temple *may* have been destroyed. Alexander's sacrificing in the temple is mythical; and in 320, Appian says, Ptolemy Soter destroyed the city. Then there was a time of peace and prosperity, culminating in the high-priesthood of Simon II. (219–199 B.C.); after a series of struggles between the Ptolemies and the Seleucids, in which the former took and garrisoned the place and the Jews helped drive out the garrison, the Seleucids obtained Palestine by treaty in 197. When Antiochus Epiphanes undertook to Hellenize Palestine in 169, he took the city, destroyed the walls, plundered the temple, and erected an altar to Zeus in place of that to Yahweh. Judas Maccabæus rebuilt the temple and the walls; again razed by the Greeks, they were again rebuilt by Jonathan. Under the Hasmonæan dynasty it extended to the western ridge; there was a new palace and royal quarter of great splendor; the city became the metropolis of the Jewish world, and the one great pilgrim shrine. Then it became tributary to Rome, but at least still a kingdom governed by its own sovereigns; such it was when Jesus was born; but it shortly after became a province governed by a Roman procurator. The Roman system and Jewish feeling were incompatible, aside from any actual misgovernment; and a grand national revolt took place, which in 66 A.D. gained possession of Jerusalem. Vespasian was appointed to repress it; and in 70 A.D. his son Titus, after one of the most frightful sieges in history, with unimaginable horrors, took it, burned the temple, and leveled the city to the ground. Josephus says the city's population was 1,000,000, and Tacitus (probably from Josephus) 600,000; both are absurd, and Josephus' figures are always Oriental. From 30,000 to a maximum 45,000 may be estimated. It remained a ruin for many years. In 131 Hadrian visited the site and ordered it rebuilt; apprehending a restoration of pagan worship, the Jews broke out in rebellion under Bar-Cochba; and Hadrian, not caring to set up a new centre of Jewish propaganda, made it a Roman colony called Ælia Capitolina, and forbade Jews to enter it on pain of death. Thence till the time of Constantine nothing is known of it; except as a Jewish shrine it was nothing. When the empire became Christian, Constantine's mother, Helena, induced him to cherish the seat of Christ's ministry and death; and he built the Church of the Holy Sepulchre (see above). Pilgrims flocked to Jerusalem from all parts, and it became the shrine of Christendom. Captured by Khosru of Persia in 614, it was retaken by Heraclius in 628; but in 637 was taken by the Moslems under the caliph Omar. The line of Arabian caliphs of different dynasties was succeeded by the Seljuk Turks. The Christians were oppressed, the sacred places defiled; to crown all, the overland caravan trade was cut off. Religious feeling and mercantile interest together roused Europe to the crusades, and Jerusalem was taken by Godfrey of Bouillon in 1099, becoming the capital of a Christian monarchy. This maintained a precarious existence till 1187, when the great Saladin put an end to it.

Among the many excellent works on the subject see, for topography and ancient history, the article Jerusalem in the ‹Encyclopædia Biblica,› by W. R. and G. A. Smith and Col. Conder; also for topography, Col. Conder in Hastings' ‹Dictionary of the Bible.› See also Warren and Conder's ‹Jerusalem› (1884, Palestine Exploration Fund), containing a large portfolio of plates; Wilson's ‹Ordnance Survey of Jerusalem› (1868), the basis of all modern work; De Vogue's ‹Temple de Jérusalem› (1864); Le Strange's ‹Palestine under the Moslems› (1890, Palestine Exploration Fund), the only book based on Arabic writers; Besant and Palmer's ‹Jerusalem, the City of Herod and Saladin› (4th ed. 1899); and the ‹Quarterly Statement› of the Palestine Exploration Fund.

Jerusalem Oak. See GOOSEFOOT.

Jerusalem Plank Road, Engagement near. After the battle of Cold Harbor (q.v.), 1–3 June 1864, Gen. Grant crossed to the south of James River, made unsuccessful assaults upon the Petersburg intrenchments, 15–18 June, and then determined to invest the city partially by a line of works toward the South Side Railroad, and by the evening of the 21st the Fifth corps rested its left on the Jerusalem Plank Road. The Second corps, followed by the Sixth, was moved across the road with the intention of seizing the Weldon Railroad at a point near Globe Tavern next day, and with the expectation of seizing also the South Side Railroad, and cutting Lee's communication with Lynchburg. At night the Sixth corps was in rear of the left of the Second. The orders for the 22d were that the Fifth corps should hold fast its position in front of the Confederate intrenchments, while the Second and Sixth swung to the right, and forward on its left, each division intrenching as it came into line. In the movement the corps commanders at first were directed to keep up connection, then they were ordered to move without regard to each other, each taking care of his own flanks. The Second and Sixth corps moved chiefly through densely wooded thickets; the Second on the right and near the Confederate works; the Sixth at right angles to the Second toward the Weldon Railroad. Gibbon's division of the Second corps had swung in on the left of the Fifth and intrenched, Mott's division was intrenching, and Barlow's division, on the left, was not yet in position, when the last named was attacked. Gen. A. P. Hill had been sent down the Weldon Railroad to oppose Meade's attempt upon it. He had the three divisions of Wilcox, Mahone, and Bushrod Johnson. Leaving Wilcox to oppose the Sixth corps, which had not come up on the left of the Second, Hill, about 3 P.M., passed Mahone and Johnson through the opening between the two corps and struck Barlow in flank and rear, driving him back in confusion to the position from which he had advanced in the morning, and taking many prisoners. Mott's division, on Barlow's right, fell back precipitately, and then Hill struck Gibbon's left brigade in front, flank and rear, causing it to give way and abandon a battery of four guns. So sudden and unexpected was this attack upon Gibbon that the greater part of several regiments were captured with their colors. Gibbon made an unsuccessful effort to recover the lost portion of his line. Hill returned to his intrenchments, leaving some force on the railroad, and toward evening the Second corps was thrown forward; but it was not until next morning that it occupied the ground from which it had been driven, the Sixth corps, forming on its left, thrown back facing the Weldon Railroad, and about a mile from it. The Union loss on the 22d, confined almost entirely to the Second corps, was nearly 2,000, of whom about 1,700 were prisoners. The Confederate loss is unknown. Consult: 'Official Records,' Vol. XL.; Humphreys, 'The Virginia Campaign of 1864–65'; Walker, 'History of the Second Army Corps.'

E. A. Carman.

Jervis, jėr'vĭs, **John Bloomfield,** American civil engineer: b. Huntington, N. Y., 14 Dec. 1795; d. 12 Jan. 1885. He was employed as axeman on the route of the Erie Canal in 1817; in 1819 became a resident engineer of the middle portion of the canal; was chief engineer of the Delaware and Hudson Canal and Railroad Company, 1825–30; and chief engineer of the Croton Aqueduct, 1836–43. In later life he was consulting and chief engineer of the Cochituate water works, Boston, and of several important railways. He built the Croton dam, the High Bridge at New York, and other notable structures. The town of Port Jervis (q.v.), N. Y., was named for him. He published: 'Railway Property'; 'Construction and Management of Railways'; 'Labor and Capital.'

Jesse, jĕs'ĕ, in the Bible stands at the head of the house of David, who was his son. While Saul was persecuting David he took refuge in the land of the Moabites, where Ruth the Moabitess, his grandmother, had lived. In the genealogy of Jesus Christ as given in the Gospels of SS. Matthew and Luke he is mentioned as one of the ancestors, as Christ in the New Testament is hailed «Son of David.» This fact has suggested some of the most interesting creations of mediæval art, and what is called a «Jesse window» is a stained glass church window in which Jesse is depicted as the root of a tree which bears as its fruit David and other heroes and saints of the Old Testament, with the infant Jesus in the arms of his mother on the highest branch.

Jesse, Richard Henry, American college president: b. Epping Forest, Lancaster County, Va., 1 March 1853. He was graduated from the University of Virginia in 1875, was dean of the academic department of the University of Louisiana from 1878 till its union with Tulane University in 1884, in which institution he was professor of Latin till 1891. Since January 1891 he has been president of the University of Missouri.

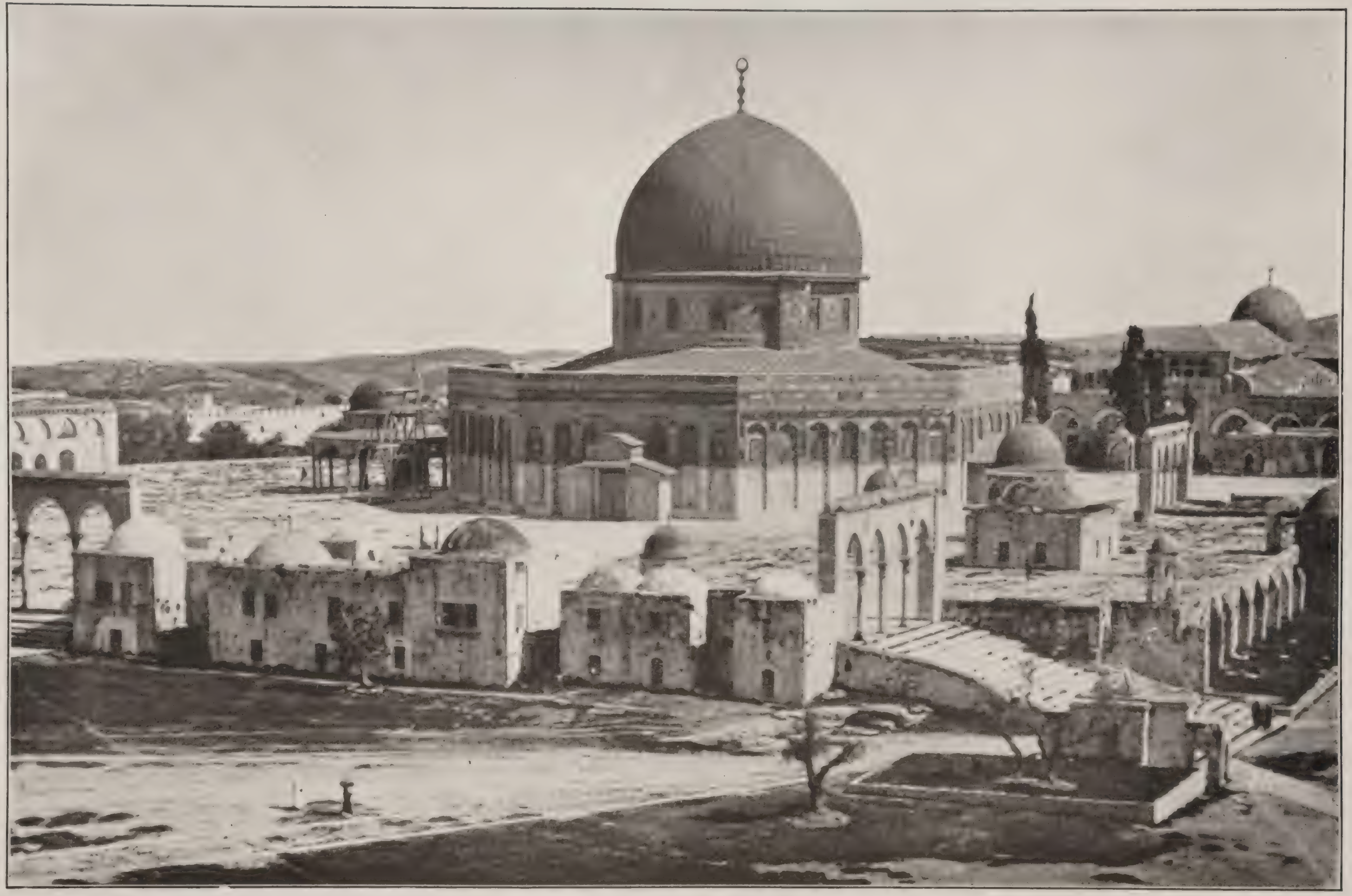
Jes'sop, Augustus, English Anglican clergyman and author: b. 20 Dec. 1824. He was educated at Cambridge and after taking orders in the English church was curate of Papworth St. Agnes, Cambridgeshire, 1848–54; head master of Helston Grammar School, Cornwall, 1855–9; and head master of King Edward VI.'s School, Norwich, 1859–79. He has been rector of Scarning, Norfolk, from 1879, and is an honorary canon of Norwich Cathedral. As a writer he became widely known by his 'Arcady for Better for Worse' (1881), studies of agricultural life in Norfolk; and among other works of his are: 'Studies by a Recluse'; 'Trials of a Country Parson'; 'The Coming of the Friars' (1885); 'John Donne.'

Jest Book, a compilation of witty sayings and practical jokes. The oldest known English jest book is 'A Hundred Mery Talys' (about 1525). The best known collection is 'Joe Miller's Jest Book, or the Wit's Vade Mecum' (1739).

Jesuit (jĕz'ū-ĭt) **Relations and Allied Documents, The,** a series of 72 volumes on the travels and explorations of the Jesuit Missionaries in New France (1610–1791). The original French, Latin, and Italian texts, with English translations and notes; illustrated by portraits, maps, and facsimiles, and edited by Reuben Gold Thwaites. A republication of great magnitude and importance. The very great value of the work is that of original materials of the most interesting character for the history of North America from 1611, the date of the first landing of Jesuit missionaries on the shores of Nova Scotia. The reproduction of documents takes them in chronological order. The execution of the work by translators, editors, and printers (at Cleveland, Ohio) is every way admirable; and its completion will make a monumental addition to American historical libraries.

Jesuits, a religious order of the Catholic Church whose members, like those of similar societies, solemnly bind themselves to aspire to perfection by leading a life of chastity, by renouncing the possession of all personal property, and by obedience to lawful superiors in all that does not contravene the law of God. A certain number of them add a special vow of obedience to the Pope. They are called the Society or Company of Jesus, the latter designation expressing more correctly the military idea of the founder, which was to establish, as it were, a new battalion in the spiritual army of the Catholic Church. There are no female Jesuits, nor are there crypto or secret Jesuits. Romances are mostly responsible for such myths. Nor does the Society form, as is sometimes fancied, a sort of sect within the Church. R. W. Thompson, ex-secretary of the United

JERUSALEM.



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SITE OF SOLOMON'S TEMPLE, FROM THE NORTHWEST.

States navy, in his 'Footprints of the Jesuits' asserts that they are such, and independent of the pope, and in one instance he accuses them of being idolaters. As a matter of fact the Society of Jesus has always inculcated ardent devotion to the pope, the most uncompromising orthodoxy and an intense Catholic spirit. The descriptions of Jesuits as crafty, unscrupulous men constantly engaged in dark plots against all who stand in their way, are inventions of their enemies and have no foundation in fact. Finally they are not monks, as they are sometimes described. Technically they are classed among churchmen as clerics, living according to a rule and are properly regular clerics.

The special object of the Society beside the personal sanctification of its members is to propagate the Christian faith chiefly by teaching and preaching. Their teaching is restricted mainly to the higher studies, and includes literature, mathematics, science, philosophy, theology, and the cognate branches. Their preaching addresses itself to all classes, but, by predilection, and at stated periods in a Jesuit's life, by express injunction, it concerns itself with catechizing the ignorant, and instructing the inmates of hospitals and penal institutions, while it addresses itself also to more cultured and spiritual audiences. One special and characteristic feature of its ministry is known as the «Spiritual Exercises» or «Retreats» which it may be regarded as having introduced, or revived in the modern church, and are now a universal ascetic practice with the clergy and religious communities as well as with a considerable number of the laity. A «Retreat» is a withdrawal from worldly occupations for a more or less protracted period in order to scrutinize the state of the soul and to take means to amend one's life, or to strive for higher Christian perfection. The method of these «Exercises» is laid down in a small manual written by the founder of the Society. The book itself, which is at first sight fragmentary, and only suggestive in its character, is not easily understood or explained except by those who are trained to interpret it.

The Society was founded by Ignatius Loyola, a Spanish nobleman, who after being disabled in fighting for his country, betook himself to the solitude of a cave near the little town of Manresa, Spain, where he passed some months in prayer and severe bodily austerities. Later, desirous of working more effectively for the salvation of his fellow men, he determined to become a priest, and for that purpose studied in the universities of Alcala and Salamanca, and finally in Paris, where he gathered about him six companions, among whom were Francis Xavier, the future Apostle of Japan, Peter Faber, whom, with Ignatius and Xavier, the Church was to honor subsequently as a saint, and also Salmeron and Laynez, who were conspicuous luminaries at the Council of Trent which was then about to be convened against the doctrines of Luther, Calvin, and others who had just then arisen.

On 15 Aug. 1534 these seven men organized themselves into a society, and pronounced their vows in the crypt of a little chapel in what is now Rue Antoinette, a short distance below the crest of the hill of Montmartre in Paris. It was only six years afterward that Pope Paul III. gave them and the others who had joined them meantime his solemn approval.

The peculiarities of their organization were the occasion of much antagonism at the very outset on the part of some of the most eminent men of the Catholic Church. The Inquisition strongly suspected its purposes and doctrines. The name of the «Society of Jesus» was objectionable to Pope Sixtus V. Unlike other orders they were to be dispensed from reciting the divine office in common, and were to wear no distinctive habit. The length of probation and the general structure of the Society were unusual. The members were first the professed who were relatively few. In them the governing power resided, and they were distinguished by a special vow of obedience to the pope. Then came the spiritual coadjutors, or priests, who did not take the special vow of obedience to the pope. Preparing for either category were the students or scholastics, and lastly there were lay brothers who were to devote themselves to domestic duties. Those who applied for admission were to pass two years of noviceship, and not one as in other religious orders, and were then admitted to what are called simple vows which could be easily dispensed with by proper authority if the subject were subsequently found unfit. Following the noviceship, two years were given to a review of the classical studies; then came three years of philosophy, mathematics, and the physical sciences; five years of college teaching and four years of theology, to end only with another year of seclusion and prayer, after which the candidate was permitted to take the solemn vows which bound him irrevocably to the order as a spiritual coadjutor or professed. The probation of the lay brothers was protracted to ten years. The Jesuit renounces by vow all ecclesiastical dignities, and accepts them only in unusual circumstances and by express command of the pope, under pain of sin in case of refusal. As the establishment of the Society of Jesus coincided with the Protestant Reformation the efforts of the first Jesuits were naturally directed to combat that movement. Under the guidance of Canisius so much success attended their work in Germany and other northern nations, that, according to Macaulay, Protestantism was effectually checked. In England where Elizabeth had inaugurated a movement against her Catholic subjects, and previous to that under Henry VIII. the Jesuits stopped at no danger to go to the rescue of their brethren in the faith; and what they did there was repeated in other parts of the world. «In spite of oceans and deserts, of hunger and pestilence, of spies and penal laws, of dungeons and racks, of gibbets and quartering blocks, the Jesuits were to be found under every disguise, in every country; scholars, physicians, merchants, servingmen, in the hostile court of Sweden, in the old manor houses of Cheshire, among the hovels of Connaught arguing, instructing, consoling, animating the courage of the timid, holding up the crucifix before the eyes of the dying.»

Such is the testimony of Macaulay, a Protestant historian. Though many died as martyrs on the scaffolds and in the prisons of England and elsewhere, yet their skill in evading detection as well as their courage in living in the midst of their enemies and their great success in winning converts well explain the hatred with which they were regarded in Protestant countries from the very beginning, while it gives us the historical origin of the tradition of cunning and deceit which has always been associated with the name of Jesuit.

Under James I. they were accused of complicity in an alleged attempt to blow up both houses of Parliament, and though clearly proven to be innocent of the charge, Father Garnet, who was said to have been cognizant of the plot, was executed, and the accusation is still believed. Guy Fawkes' Day commemorates the event and perpetuates the calumny. It is probably in connection with this occurrence that the supposed Jesuit doctrine of «the end justifying the means» was first accredited to them and the accusation made that «it was their office,» as Macaulay assures his readers, «to plot against the thrones and lives of apostate kings, to spread evil rumors, to raise tumults, to inflame civil wars and to arm the hands of the assassin.» The first one who is accused of formulating the doctrine of the end justifying the means is Father Wagemann of Innsbruck 1762. Even the murders of Henry III. and Henry IV. of France were ascribed to them, and under Charles II. of England six Jesuits were accused by Titus Oates of conspiracy and put to death. These and other charges have been repeatedly disproved, yet writers of romance, and even writers of history, never fail to find readers credulous enough to accept them as true.

While the Jesuits were propagating the faith in Europe they were sending missionaries to every part of the world to preach the Gospel to heathen nations. Greatest of all these apostles was St. Frances Xavier whom all Protestant writers unite in glorifying and whom the pagans almost worshipped as a deity. His name is still mentioned with enthusiasm among the pagans in Japan and the Occident. The conversions which he effected and the miracles he wrought almost defy belief. It is a testimony to the solidity of his teaching that although Catholicity was apparently obliterated in Japan by a series of bloody persecutions, the French missionaries who entered the country in 1860 found 30,000 Japanese Christians there. In spite of the absence of priests, the doctrines and practices received from Francis Xavier which meant death to profess openly had been handed down from father to son for a period of nearly 300 years. One blot on the reputation of the Society in this field was the shameful apostasy of one of their superiors; but he atoned for his sin by a subsequent martyrdom.

In America the French Jesuits undertook the task of evangelizing the Indians, and at one time had 3,000 civilized and christianized Hurons under their control. In what is now New York, Father Jogues was cruelly tortured and slain on the banks of the Mohawk in 1646. In 1649 Garnier, Daniel and others were shot to death; and at the same time De Brébeuf and Lallemant were burned at the stake while their flesh was slashed with knives and their hearts cut out and eaten by the Indians of Lake Superior. Others died from want and exposure. It was Jogues who discovered Lake George to which he gave the name of Lac du St. Sacrement. Later on Le Moyne came upon the salt springs near Syracuse. Marquette discovered the Mississippi which he named the River of the Immaculate Conception. He explored it as far as the mouth of the Arkansas, and returning home was the first white man with his companions to travel over the territory of what is now the city of Chicago. Wisconsin has erected a statue to his honor. Other Jesuits reached the Pacific coast and established the missions of California which they handed over to the famous Franciscan Junipero Serra when the Society was suppressed. English Jesuits had come over with Lord Baltimore; and before that five Spanish members of the order had been slain by the Indians on the banks of the Rappahannock. The «Relations» of the French Missions have been recently published by an American publishing house and form 72 volumes of missionary and scientific information which the 'Atlantic Monthly' considers the most precious material that could be desired for the history of this country. Similar records have been kept by the Jesuits of other nationalities. Marquette's diary and maps of the discovery of the Mississippi decided the controversy between France and England about the possessions of the western territory.

The missions of South America conducted by the Spanish and Portuguese Jesuits were remarkable in their character and extent. Father Anchieta, a native of Brazil, was particularly distinguished for his missionary success as well as his gift of miraculous powers. Peter Claver devoted himself to the thousands of negro slaves who were brought to the port of Cartagena. Other Jesuits traveled through Chile and Peru. Seventy of them on their way thither were said to be killed by Calvinists who intercepted them at sea. But their most famous work was what are known as the 'Reductions' or Christian Commonwealths of Paraguay. The description of these missions forms one of the most brilliant chapters of Chateaubriand's 'Génie du Christianisme;' but a recent work entitled 'A Vanished Arcadia' by Cunningham-Graham gives a more reliable and scholarly account of what was accomplished there. Voltaire says: 'When in 1768 the missions of Paraguay left the hands of the Jesuits, they had arrived at perhaps the highest degree of civilization to which it is possible to conduct a young people.»

«For nearly two hundred years they controlled a district as large as France,» writes Cunningham-Graham, «where they had established 32 towns in which there were 160,000 Indians whom they had converted and civilized, teaching them agriculture, the mechanical arts, commerce, and even forming among them a small army of defense. The annual income of the country was about 1,000,000 reales. The missionaries were finally expelled by Charles III. and the country fell back into its primitive condition of a tangled wilderness.»

The reasons of their expulsions were first the jealousy of the Spaniards at being excluded from the territory, secondly the anger of the colonists at being prevented from enslaving the Indians, and thirdly the ungrounded suspicion that there were gold mines in the missions. An impression in the royal mind that the Jesuits had reflected on the circumstances of his birth made him an easy instrument in the hands of the enemies of the Society. «Curious as it may appear,» writes Cunningham-Graham, «the bitterest opponents of the Jesuits were Catholics, and Protestants have often been their apologists. Buffon, Raynal, and Montesquieu with Voltaire, Robertson, and Southey have written favorably of the internal government of the mission and the effect it produced. When the Spanish general was sent to dispossess them, he set about it with more preparation than Cortes or Pizarro made for the conquest of Mexico or Peru. But there was no resistance, and all the wealth the fathers had was the poor clothes on their backs.» The destruction of these missions was probably a part of the prearranged plan for the annihilation of the whole Society.

The missions of Japan which Francis Xavier had inaugurated continued after his death in spite of the fierce persecutions in which many Jesuits perished. He had been unable to reach China and died on a lonely island off the coast. Ricci, Verbiest, Schall and others carried out his project and became the advisers of the emperor as well as his astronomers, mathematicians and mechanicians. The great bronze astronomical instruments carried off by Germany on the occasion of the recent invasion of that country by the allied powers of Europe were the work of the Jesuits of the 17th century. As soon as the mission was started, great numbers of Jesuits came from Europe, half of them generally dying on the passage. In 1661 they possessed 151 churches and 38 residences there, and had written as many as 131 works on religion, 103 on mathematics, and 55 on physical and moral sciences.

Numberless other missions were established elsewhere; de Nobili for instance lived like a Brahman in India to reach that particular caste, and was almost suspected of apostasy for doing so. He is said to have made 100,000 converts. Jesuits overran the whole Indian peninsula and crossed the Himalayas into Tibet. Africa had long before been penetrated, and one of the first members of the Society was Patriarch of Ethiopia. The present explorers of the Dark Continent find remnants of former missions far in the interior. They had gone from Mexico to the Philippines in the earliest days; they had entered Tartary and Lebanon, and when their own efforts were thwarted they induced others to take their places. Thus De Rhodes, a Jesuit expelled from Japan, founded the Société des Missions Etrangères, a body of secular priests who have given a great number of saints and martyrs to the Catholic Church.

While the Jesuits were engaged in missionary work among the uncivilized peoples of the world they erected splendid churches all over Europe, and furnished such orators to the pulpit as Bourdaloue in France, Vieyra in Portugal, and Segneri in Italy. The ‹Book of Spiritual Exercises,» according to St. Francis de Sales, «has converted as many souls as it has letters.» But their apostolic work was not restricted to preaching, and we hear of a single French Jesuit who during his 40 years of ministry had established as many as 146 hospitals for the poor. They founded orphan and Magdalen asylums. They were the confessors of kings and princes and delegates of the Holy See, but they extricated themselves from these honorable charges as soon as it was possible to do so. At the time of the suppression they controlled and directed the majority of the ecclesiastical seminaries of Europe.

The success of the Society in the work of education forms a great chapter in its history. Their method is found in what is known as the ‹Ratio Studiorum› or Plan of Studies. It is a complete system of pedagogy and covers the whole field from the lowest class of grammar up to philosophy and theology. The plan was first conceived by Ignatius himself, and subsequently elaborated by one of his successors, Claudius Aquaviva. Compayré, one of the chief pedagogists of the present time, denounces it as a mere system of memorizing. Bacon says of it: «never has anything more perfect been invented.» Their colleges at one time covered all Europe, and in the single school of Louis le Grand they had as many as 3,000 students. Kings assisted at its public academic exercises. Among their scholars they can claim some of the greatest men of modern times, as for instance Popes Gregory XIII., Benedict XIV., Pius VII., St. Francis de Sales, Bossuet, Fleury, Flechier, Montesquieu, Malesherbes, Tasso, Galileo, Corneille, Descartes, Molière, Mezzofanti, Muratori, Buffon, Gresset, Canova, Tilly, Wallenstein, Condé, the emperors Maximilian, Ferdinand and others. Even Voltaire was one of their pupils. The disturbed conditions of modern times prevent a similar brilliant showing, but many of the most distinguished Catholic churchmen of to-day have studied in their schools, and notably Leo XIII. who was trained by them from his college classes to the end of his theological course.

Within their own ranks they have furnished great scholars in all branches of philosophy, theology, history, philology, literature, and science. It is sufficient to name such men as Suarez, De Lugo, Bellarmine, Toletus, Lessius, á Lapide, and to note that the treatises of Jesuit writers form the text-books in all the theological seminaries of the Catholic Church to-day. They have written in almost every language and on every conceivable subject, and the mere catalogue of their writers, though not yet complete, already fills more than seven large quarto volumes. Their missionary enterprises were never disjoined from scientific investigation.

Their history is marked by ceaseless activity in launching new schemes for the spread of the Catholic faith, and by absolute fearlessness in opposing error regardless of any consequences to themselves. These two characteristics may explain why even by some Catholics they are regarded as a disturbing element in the church. One of their most noted disputes with churchmen was with the Dominicans on grace, during which the Jesuit doctrine of grace was formulated. The contest lasted for nine years, and although great theological learning was adduced on both sides a truce was imposed by the Pope without any decision being arrived at. Of far greater consequence was their war with the Jansenists. It was chiefly on this occasion that the Society was accused of laxity in their moral code and that their great antagonist Pascal won fame by his ‹Lettres Provinciales,› which like the famous ‹Monita Secreta› of former times purported to be the private instruction of superiors to members of the order. After this contest their expulsion from France was an easy task, as the Jansenists wielded great political influence and were backed by the irreligious element which was growing rapidly there.

They have been expelled over and over again from almost every Catholic country in Europe, always, however, coming back again to renew their work when the storm had subsided; and this fact has been adduced as a proof that there is something iniquitous in the very nature of the organization. Worse still in 1773 the entire order was suppressed by a brief of Pope Clement XIV. and all their goods confiscated. They then numbered 24,000 members and had establishments in all parts of the world and flourishing missions, all of which were immediately destroyed, but not one Jesuit uttered a word of complaint or protest. What is remarkable is that while Catholic popes expelled them they were protected by the schismatic Catherine of Russia, and the Protestant Frederick of Prussia, the friend of Voltaire. This very protection was urged as a reproach against them and as a proof of their guilt.

With the exception of the disastrous financial speculation of Lavalette, which was the sin of an individual and not imputable to the entire Society, as commercial transactions were absolutely prohibited by the statutes, the Society is proved to be guiltless both in its partial suppressions and in its total abolition. This is clear from the very brief of Clement XIV. which dealt the blow. In that document all the charges are enumerated, but not one is pronounced to be true. The Society was suppressed as a political necessity and for nothing else. The encyclopædists of France regarded it as their most redoubtable opponent and had vowed its destruction. «Destroy the Jesuits,» said Voltaire, «and we shall make an end of the beastly Church.» In this work the Bourbon kings had to be enlisted. Madame de Pompadour, the king's mistress, whom the Jesuits had refused to absolve, influenced Louis XV.; the Spanish and Portuguese ministers wrought on the fears of their sovereigns by forged documents containing threats and plans of assassination, and when all was ready the monarchs gave the pope a choice of suppression of the Society or schism. The pope yielded, and is said by Pius VI. and Pius VII. to have lost his mind in consequence. The vindication of the Society came immediately. The very pope who suppressed them approved of their corporate existence in Russia. Pius VI. who succeeded him in the following year readmitted them into Italy, and Pius VII. on the fall of Napoleon re-established the Society in all its integrity on 7 Aug. 1814.

Since its rehabilitation the Society has continued to increase in spite of constantly increasing difficulties. In the beginning of 1902 it counted 15,231 members, of whom 6,743 were priests, and 4,542 scholastics in preparation for the priesthood. The general of the Society is Louis Martin, a Spaniard, who was elected in 1893. In the United States they number about 1,800, with colleges and churches in the principal cities and with flourishing missions among the Indians of the Rocky Mountains and Alaska. In Cuba and the Philippines their schools have achieved remarkable success, and the great meteorological observatories of Havana and Manila were established and are at present controlled by them. The chief houses for studies for the American members of the order are at Woodstock, Md., St. Louis, Mo., and Montreal, P. Q.

In some countries of Europe the same hostility still pursues them. In the revolutions of 1830 and 1848 their houses were closed and the members driven out of the country. In the Kulturkampf inaugurated by Bismarck they were the first victims, and all the efforts of the Centre party have hitherto failed to secure their re-entrance into Germany. Similarly they were the first to be struck in the present religious persecution in France. On the other hand they have been the recipients of countless marks of esteem and affection on the part of Leo XIII., and he has placed the stamp of his approval on the Society by adding very many new names to its already long list of canonized saints and martyrs.

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T. J. CAMPBELL, S. J.

Jes'up, Morris Ketchum, American banker: b. Westport, Conn., 21 June 1830. He was engaged in banking in New York 1852–84, but retired from business in the latter year. In 1881 he became president of the New York City Mission and Tract Society, for which he subsequently erected the DeWitt Memorial Church in Rivington Street, in memory of Rev. T. DeWitt, his father-in-law. He was made president of the Five Points House of Industry in 1872; was a founder of the Young Men's Christian Association, of which he was president in 1872. He was also elected president of the Metropolitan Museum of Natural History in 1881, and of the New York Chamber of Commerce in 1899. To the Metropolitan Museum of Art he has given a collection of native woods valued at $100,000; to the Woman's Hospital in New York city, $100,000; and to Yale University and Williams College, large sums likewise.

Jesup North Pacific Expedition, The, an American organization for archæological research, supported by Morris K. Jesup (q.v.), and conducted under the auspices and direction of the American Museum of Natural History. The work began in 1897 in British Columbia. In that year Prof. Harlan I. Smith began to dig in the Thompson River district. In successive years he worked a little farther east, and also around Puget Sound, and down the west coast of Washington. Results of these explorations have been compared and conclusions drawn as to the class of people who inhabited these regions in prehistoric times. Very interesting differences were found among them. Some were more highly developed than others. In particular, one small section east of the city of Vancouver was found to reveal traces of a people much more highly developed than any others of the section, and interesting in many ways to the archæologist. Some of the regions explored revealed the remains of coast tribes; others of interior tribes. At some points these characteristics merged, producing a different type. New discoveries of one season explained things not understood in previous explorations. So to gather up missing links and further elucidate the whole region, especially that interesting little people near Vancouver, it was necessary to take up some new territory and thoroughly explore it. Prof. Smith, therefore, went into the Yakima Valley in northern Washington in 1903. On the map this section does not look far from the Thompson River district in British Columbia. And when one reflects how very similar are the white people now inhabiting the two sections and how near the two districts are, it is interesting to find that the prehistoric peoples inhabiting them differed at least as much as the Spanish and the Germans, according to Prof. Smith's conclusions. Not only their culture, but their skulls were different, as known by the skeletons brought back by the expedition. These ancient tribes seemed to have lived, each in its little nook of coast or river valley, for unnumbered ages, never going to see what was on the other side of the mountain; developing each its own little morsel of civilization in its own little way, its life and culture and development modified by the little corner of the earth's surface in which it sat down, seemingly to stay forever. Sometimes shell heaps are found miles in length, and with tree stumps six feet in diameter standing on nine feet of these layers, of which each is only an inch or two in thickness. It took a good many generations of Indians to pile up those successive layers with the shells from their shell-fish dinners. A stump of Douglas fir, over six feet in diameter, stood on a shell heap eight feet below the surface which contained human remains. The tree indicated an age for the top layers of more than 500 years. The material brought back included carved and sculptured pipes, stone mortars, pestles, and sinkers, bone implements used on spears, deer antlers used as handles, stone adzes differing from those found anywhere else, bone needles, shell ornaments, and the like. The expedition also found many paintings and sculptures on rock walls, which were photographed.

Jesus Christ, the founder of the Christian religion. Four documents dating from the second half of the 1st century, the «Gospels,» give some account of the life of Jesus, chiefly confined to his brief public work and death. Beyond what they give little is known as to his history. Some of the most important facts are referred to in other writings of the New Testament, especially in the letters of Paul; secular history contains mere references to him; a number of later writings, the so-called «Apocryphal Gospels,» purport to give additional information, but they are fictitious and worthless; and beyond a very few sayings which were probably rightly attributed to Jesus, called «Agrapha,» tradition has preserved nothing of value which was not embodied in the Gospels. These narratives vary, but are rarely inconsistent: usually they may best be regarded as complementary, and the picture of the life and work of Jesus which may be drawn from them has been accepted as trustworthy throughout Christendom in all centuries, and while on many points confirmation from other sources cannot be expected, the investigations of impartial scholars have rather confirmed its accuracy than invalidated it.

Birth and Parentage.—According to the Gospels, Jesus was born in the family of a carpenter named Joseph, living in Nazareth (q.v.), a small town in southern Galilee. Descent from the line of kings of Judah which began with David is positively claimed for Joseph, and, as some understand the genealogical tables, for Mary, his wife, as well, but during the centuries of national disaster the descendants of David seem to have sunk into poverty and inconspicuousness. While Nazareth was the family home, the birthplace of Jesus was Bethlehem (q.v.), the village of Judea in which David himself was born, a fact which is explained by mention of a census said to have been made under Roman authority while Quirinius was Roman representative in Judea, and to have required that all citizens should be enrolled at the original home of the family. Though no other record of this enrollment has yet been discovered, late discoveries make the fact seem more plausible than it was formerly regarded by some scholars.

The Gospels represent Jesus as born of a virgin, conception having been due to special divine power. The date of his birth cannot be given with certainty as to day, month or even year. Since it must have somewhat preceded the death of Herod (April 4 B.C.), it probably occurred sometime in the year 5 B.C. (possibly 6). It is reported that Mary, in a village strange to her, and at the time overcrowded with visitors, could find no place to lay her new born babe but in a manger. But at the presentation in the Temple for the offering of the sacrifices which Jewish ritual prescribed after childbirth, the infant was joyously hailed by Simeon and Anna, aged saints profoundly possessed by the common Messianic expectation of the nation at that time, and, as shepherds from not far away had come in the night of his birth in obedience to a vision of angels, so, later, the Magi (q.v.) from afar guided by a star sought the child to offer him obeisance and rich gifts. This visit of the Magi, however, made Herod aware of the birth of a child who might grow up to be a dangerous rival of the dynasty which he hoped to found, and it is handed down to us that unable to trace it he ordered the slaughter of all the infants of the village up to the age of two years. But his parents, divinely warned, had taken the child to a safe refuge in Egypt, where they remained till the death of Herod, presumably only a short time. If they returned in the expectation of bringing him up in the ancient home of his line, they were deterred by fear of Archelaus who had succeeded his father as ruler in Judea, and consequently they turned aside to Nazareth where they were secure under the milder rule of Antipas.

Early Manhood.—Of the life of Jesus up to manhood nothing is known, except the mere mention of his visit to Jerusalem when 12 years old. It can be supposed only that he was subjected to the natural influences of a religious Jewish family of the time, of synagogue and of school, of a village at once quiet and yet close to the thronging traffic on one of the great thoroughfares of that age, and finally of the work of a carpenter, for such he is said to have been, till 30 years of age. It was about this time, possibly in the year 26 (or 27) that John the Baptist (q.v.) began his public career, and at once aroused great religious and patriotic fervor in the nation.

The careers of neither John nor Jesus are intelligible without an understanding of the expectant attitude of the Jewish people in the 1st century. The ancient prophets of the nation had centuries earlier foretold a renaissance of the Hebrew kingdom under a descendant of David, through the generations this hope smouldered in the hearts of the people, only fanned to a brighter flame by blasts of persecution and national disaster, and the whole influence of the sect of the Pharisees (q.v.), popular and powerful out of proportion to their numbers, increased its intensity under Herod and his successors. The people were ready to be fired by the proclamation so strikingly made by the gaunt desert-dweller that the fulfilment of the national hopes and dreams was near: «The kingdom of heaven is at hand.» The preaching of John was, however, no less moral and religious than patriotic. His message was «Repent»; let the nation prepare by penitence to meet the king coming in his kingdom. This prophetic voice set the country in a blaze. Throngs gathered to listen to the new preaching and by a striking symbol, a plunge in the rushing Jordan, to pledge themselves to the new movement. After a time Jesus joined the crowds which attended the ministry of John. It is impossible to say what connection may have existed between John and Jesus. Not only were their families related, but there may have been constant intimacy. John, however, based his later testimony as to Jesus, not at all on his own knowledge of him, but entirely on the divine revelation which was his commission. Jesus offered himself for baptism, insisting that the reluctant preacher should perform the rite, and thus pledged himself to the Coming Kingdom. While it is not claimed that the wonders which attended the baptism were known to others than John and Jesus himself, the story of the Gospels is that a heavenly voice asserted the Messiahship of Jesus, and that with the appearance of a dove the Divine Spirit came to him. The conviction of his mission to his nation and the world was no new thought to the carpenter of Nazareth, and it was with this thought in mind that he recognized the significance of the Baptist's public appearance, joined his auditors, and submitted to the ordinance which he administered. Yet it is not surprising, on the other hand, that he felt constrained, when his own conviction was confirmed, to seek the desert of Judea that alone he might adjust himself to the new responsibilities and burdens of the mission which he must undertake. Amid the solitude of the barren rocks and gloomy caves of that desolate region he meditated and struggled. Of this period we know only the striking story, necessarily autobiographic in origin, in which he depicts the struggles which he underwent as due to Satan's influence. Temptations thus forced in upon him to selfish use of his power, to sensational fanaticism and to compromise with evil in order to advance his ends, were successively resisted, and at the end of 40 days he came forth the victor in all these spiritual conflicts, ready to enter actively on his ministry.

The Ministry.—Jesus returned to the Jordan where John was still at work, and aided by his testimony associated with himself a little group who instinctively recognized in him a future leader of the nation. He went from there first to his home district, where he and his companions were guests at a wedding at Cana, a little town which has been hallowed in all the Christian centuries by John's report of the changing of the water into the wine needed for the entertainment of the company in the prolonged merrymaking incident to such an occasion. Then, as it was near the Passover time, Jesus, accompanied by his mother and brothers as well as his few followers, after staying a short time at Capernaum, went on to Jerusalem. How long he remained in or near the capital city must continue a matter of inference from a few doubtful phrases, but it seems most probable that he remained in Judea for some months, perhaps from April to December. The chief events ascribed to this period are the first cleansing of the Temple and the night interview with the influential rabbi, Nicodemus, and while the effect on city or nation was not great, it was presumably at this time that Jesus formed the strong friendships in Judea, to which incidental reference is often made afterward. The closing of this portion of his ministry seems to have been due, on the one side, to the hostile jealousy of the dominant Pharisees which would hinder success in Judea, and, on the other, to the imprisonment of John the Baptist which made it possible for Jesus to work in Galilee without what might have seemed competition, and, indeed, made it advisable for him to take up the work which John had been obliged to drop.

On his return to Galilee Jesus soon recalled his disciples, who, if they had accompanied him throughout his work in Judea, had scattered for a time to their homes, and associated himself with them in a companionship which was thereafter unbroken till his death. He made Capernaum the central point of his ministry, returning thither from each of his repeated tours throughout the many scores of cities and villages which then existed in Galilee. Wherever he went the keynote of his preaching was the same as John's had been, «Repent, for the kingdom of heaven is at hand;» but as time passed his instructions, exhortations and warnings swept throughout the whole scale of human experience and touched every note of religious and moral truth. The keynote of his teaching about God was his love, infinite, untiring, eternal. On the ground of this love he proclaimed pardon to every penitent, even though a harlot or an outlaw. But this certainty and freeness of forgiveness was not allowed to diminish the loftiness and imperativeness of the standard of duty which he held up. Indeed, the high moral tone of his teaching, accompanied as it was by a constant and insistent demand for absolute sincerity, and his disregard for all mere forms, without the spirit in particular, his teaching and practice in reference to fasting, ceremonial purifications and Sabbath keeping, combined to set against him the Pharisees and through their influence the leaders and officials of the nation.

Popularity.— For a long time his popularity was great and throngs gathered to see and hear him, attracted in part by the reports of his miracles. Far and wide the stories were told that diseases yielded to his command, that the fevered, the palsied, the blind, the deaf and dumb, the lepers, the demonized, were restored to soundness, and, later, that on repeated occasions he brought the dead to life. But these great works were distinctly secondary. He was first and foremost the Prophet of Nazareth, the Preacher. As such he spoke with peculiar attractiveness and power. His style was simple and direct, and his discourse was frequently adorned with unequaled parables, illustrations drawn from nature or common life, which, though sometimes veiling the truth from the thoughtless, sometimes added immensely to its clearness and effectiveness. His activity as a preacher at first won him steadily increasing popularity among the people at large, until, about two years after his work began, 5,000 men, whose hunger had been satisfied by his power on the lakeside, determined to make him king. But in this purpose they lacked all real sympathy with the character and aims which Jesus exemplified. The kingdom which centuries before the prophets of the nation had foretold was a kingdom to be sure, but a kingdom which should be based on a right relation of its subjects to God and existing only to serve the divine ends. The Jews as they read these prophecies had seen in them, only something political, worldly and selfish. Now when Jesus in fulfilment of prophecy had come to offer himself to the nation as its promised king, he would be king only as his kingdom might be the expression and instrument of a religious people, deeply, purely, unselfishly religious. So at the very climax of popular favor his clear vision instantly recognized how widely their ideals and purposes differed from his.

The Twelve Apostles.— For some time this condition of affairs had been anticipated, and Jesus had laid his plans and shaped his work accordingly. Since the Jewish people would have no such kingdom as he was about to establish, he had several months previously organized under the name of apostles a group of 12 of his disciples, to whom he would impart himself, and on whom he would so far as possible stamp himself, that they in turn might repeat his activity in their relations to others. Although he retained the name kingdom, what he looked forward to establishing was not a political but a spiritual community or body.

After the choice of the apostles the discourses of Jesus had been largely shaped for their special benefit: after his rejection of the offer of kingship from the unappreciative multitude, who in turn instantly deserted him when they saw that he would refuse to gratify their selfish hopes, his work was mainly for the benefit of the twelve, although he neglected no opportunity which came within his reach of trying to touch the soul of the nation or of individuals. Much of the last year of his life Jesus spent in seclusion. He made a journey, doubtless traveling in leisurely fashion, northwest from Capernaum to Sidon, returning as it appears by a roundabout route through the Decapolis, and another journey northeast to Cæsarea Philippi; some time was spent in Perea to the east of the Jordan; and though he seems more than once to have shown himself conspicuously in Jerusalem or its immediate neighborhood, yet during most of the time which he spent in Judea he secluded himself in an obscure village named Ephraim.

So far as the work of Jesus was concerned, the most significant event of the last year, if not of all the three years of his ministry, was the conversation with the apostles near Cæsarea Philippi as to the opinion of him which generally prevailed and as to their own convictions. While Jesus is reported at least once to have claimed to be the expected Messiah, and while this claim was necessarily implied in much that he had said of himself, and while some of the twelve had very early expressed the opinion that they had found the one of whom Moses and the prophets had spoken, yet this view had never found expression as their matured conviction. Such expression Jesus at last sought. His first question was as to the common sentiment concerning him, and the frank answer was that while he was generally recognized as one far beyond the ordinary, he was not at all recognized as the Promised One. In face of this answer Jesus pressed the further question, "What am I to you?" and the answer of Peter, one speaking for all, was that he was the Christ. This answer assured the ultimate success of his mission, for these followers would win more. But he could not fail at the same time to foresee the irrepressible conflict between himself and the leaders of the nation, and so, relying on their faith in him as the Christ, he immediately began to familiarize them with the fact of his death, though this only confused and offended them, and at the same time to add promises of resurrection which they do not seem to have grasped at all.

The apparent failure of the mission of Jesus which he thus foretold, culminating as it did in his rejection and death, was due alike to what he was, what he taught and what he demanded. He himself was devoted with absolute singlemindedness to his work, sincere, unselfish, loving, beneficent, and pure with such perfect and manifest purity that only a few voices of detraction have ever been out of harmony with the else unanimous recognition and assertion of the sinlessness of his whole life. His teaching, while not in all respects original in matter or form, was in spirit and effectiveness such an advance on the Old Testament which he confirmed or the rabbis with whom he largely agreed that it seemed "a new teaching." He demanded of others the same perfection of sincerity, altruistic self-forgetfulness and supreme devotion to the will of God which he himself practised, and he as sternly denounced hypocrites as he tenderly welcomed penitents. All his teaching came with a unique tone of authority and this was made more significant by the claims which he advanced for himself. He occasionally asserted and constantly implied that he was a special messenger from God and unique representative of him, and from time to time he distinctly claimed divine attributes and powers. Thus he spoke; to confirm this he pointed to his miracles; as such he held himself up as the proper object of supreme and absolutely limitless devotion; the recognition of this supremacy he demanded of all and gladly accepted from his disciples, a self-assertion which in view of his sincerity and simplicity of soul is as significant as in view of his transparent honesty coupled with unsurpassed sensitiveness to evils is the absence of ever confessing a fault. Between such a one with such a message and such demands and the rulers of the nation at the time there was necessarily an irreconcilable antagonism which could end in no way but in his death.

The Messiah.— In the spring of the year 29 (possibly 30), after Jesus had been before the public for three years, the task of implanting the spiritual kingdom in the hearts of the select 12 was so far completed that it would be permanent, and at the same time the conflict with the authorities could not wisely be longer postponed. Accordingly Jesus went up to Jerusalem to the Passover with the throngs which assembled at that time from every part of the country. While he gave repeated proofs that in spirit he was walking in the shadow of the cross which he foresaw at the end of the road, yet this journey, unlike those which had preceded it, was intentionally made, by the sending of 70 messengers before him to proclaim his coming, a significant progress through the country. Reaching the neighborhood of Jerusalem, he stopped for the Sabbath at the neighboring village of Bethany, to which he returned each night till the end, and then on the following day he made a somewhat formal entry into the capital city. It needed only that he should mount a riding ass that those who accompanied him should be reminded of an ancient prophecy, and they, with another throng which came out from Jerusalem to meet him, acclaimed him as the promised and coming king, carpeting the road before him with green branches from the trees at the roadside and with their own clothes thrown before him in the zeal of their loyalty. Thus they led him to the Temple, where the procession dispersed. While informal and at first thought only a failure in its lack of definite result, this «triumphal entry» had deep significance as a public claim of his right to rule the nation as God's appointed representative, and he stopped short of assuming this office only because he desired and demanded first the acceptance of him by the nation. During the days that followed he repeated this claim in various ways; again he drove out of the Temple the huckstering crowds so out of harmony with its proper use, and in prolonged controversy with the representatives of all the parties of the time he bore himself as their Master and proved himself such. All this goaded his enemies at last to action, and through the treachery of Judas Iscariot, one of the inner circle of 12 disciples, almost at once an unlooked-for opportunity presented itself to them.

The Last Supper.— On Thursday evening of Passover week, after special precautions to keep secret the place of their assembling, Jesus sat down at a last supper with his apostles to what he knew would be his last interview with them before his death. While the traitor has gone out to secure his arrest, he pours out his soul to the others in words too tender and profound for their comprehension; he warns them that they will speedily desert him to go alone to his fate; he tells them something of the unique significance of his death in language which contains in germ the later doctrines of the Church, on this point; presenting them bread and wine, he instituted the second of the two rites of the universal church and finally commends them and all future believers in him to God in a prayer of incomparable elevation and pathos. He then went out to a resort familiar to him and his friends, an olive grove named Gethsemane in a valley close to the walls of the city. There the horror of the coming hours, not craven fear of death, but distress at the very thought of the tremendous experience which he must undergo in soul, drew from him a thrice repeated prayer of such intensity that the very blood was forced through the pores of the skin, but on the prayer followed serenity of resignation and purpose which continued unruffled to the end. Then he awakened his disciples who to his disappointment had repeatedly been overcome by sleep and so had left him to his spiritual distress without even the sympathy of his friends, and went to meet the force of Roman soldiers and Temple guards which in needless precaution the officials guided by the traitor brought to seize him. He quietly submitted to arrest, and his followers struck but a single blow in his defense and then scattered in the darkness, two of them, however, John and Peter, following at a distance, the latter only to deny later all discipleship and even acquaintance.

Trial for Blasphemy.— While some details of the four accounts of the trials of Jesus are obscure, if not inconsistent, yet their general course may easily be made out. At the house of the high priest Caiaphas, or of the still more influential Annas, his father-in-law, and an ex-high priest, there was before daylight an informal session of all the Sanhedrin who could be gathered. Unable to find even perjured testimony which was sufficiently consistent to warrant his condemnation, the high priest as president of the great court of the nation put Jesus under oath, and asked him if he claimed to be the Christ. Firmly and positively Jesus answered that he was, whereupon his enemies without even pretense of investigation declared this claim to be blasphemy for which according to Jewish law he must die. But this verdict would be legal only if rendered in the daytime, and so, having been left during the interval to be the object of mockery by the guards, as soon as the day broke, he was formally arraigned and condemned. As, however, the right to inflict the death penalty had been reserved to himself by the Roman procurator, in order to accomplish their purpose they must secure his condemnation of Jesus in addition to their own, and accordingly the Sanhedrin conduct him to Pilate and demand his execution. But Pilate refused to order his execution without investigation, and when they charged him with instigating sedition against the Roman government, the judge instantly recognized their malicious insincerity and the innocence of the prisoner. In his consequent desire to release him Pilate in turn pronounced him innocent; sent him to Antipas, who only made sport of him and returned him; vainly tried to stir up the populace to demand his release according to the custom that a prisoner should be released at Passover time; ordered him scourged in hope that that cruelty would satisfy his enemies; displayed him bloody from the torturing lash and crowned by the soldiers with thorns in cruel jest, fancying that this sight would surely evoke pity; but finally, terrified at the mutterings of the crowd and fearing lest should he persevere charges might be made to the emperor against himself, Pilate ordered the crucifixion of Jesus.

The Crucifixion.— The execution took place at once, scarcely later than the middle of the forenoon. Although so far weakened by the sufferings of the night and morning that the sufferer fainted under the cross which, as was customary, was laid on him to bear to the place of execution, he bore himself throughout with majestic patience and dignity. Under the jeers of his triumphant enemies, in sight of his mother and friends, in the unexplained and portentous darkness which beginning at noon lasted for hours, amid the indescribable physical tortures of the cross, he spoke but to pray forgivingly for those who were the agents of his suffering, and to commend his mother to John, her nephew and his most intimate and beloved disciple. At mid afternoon he uttered a cry to God, «Why hast thou forsaken me?» which can be understood only as expressive of intensest soul agony. As if this agony culminated and ended with the cry, he then spoke calmly of his thirst and took the drink which a sympathetic bystander pressed to his lips, then commended his spirit to God, and with a loud shout expired, it would seem with a literally broken or ruptured heart. Although death seldom came so soon to the crucified, yet the fact is undeniable in the case of Jesus, for when somewhat later the criminals who had been crucified with him received a blow intended to hasten their death, the soldiers recognized that he was already dead, and yet one of them thrust a spear deep into his side, apparently touching the heart, and on Pilate's inquiry the officer in charge certified to his death. By leave of the governor two members of the Sanhedrin, who were secretly disciples, took down the body and hurriedly but reverently buried it at the close of day not far from Calvary, where he had been crucified, in a rockhewn tomb, which later was officially sealed.

Of the facts relating to Jesus during the next few weeks, no less than five (if the last verses of Mark are by another hand, then six) separate accounts are preserved, no two precisely agreeing, but, on the other hand no two being mutually contradictory, and one of these accounts, that of Paul, was written within 25 years of the events narrated. It is told that first women going at the dawn of Sunday entered the open tomb but found not the body of Jesus; that later Peter and John also found it empty; that Peter, then ten of the apostles together, and also two other men miles from Jerusalem, as well as Mary Magdalene, saw Jesus that same day in recognizable human form and talked with him; that these appearances and conversations were repeated at different places and in varying circumstances for about six weeks; that on one occasion he was seen by as many as 500 at the same time, some of whom were at first doubtful as to the facts: and that then these manifestations entirely ceased, except for the experience of Paul. It is certain that the disciples in these few weeks had come to be convinced that Jesus had actually been with them and that consequently they passed out of a state of gloom and despair into joyous and unflinching boldness; that the belief in the physical resurrection of Jesus was an essential part of the creed and preaching of the primitive church; and that the first day of the week became the Christian day of worship. No plausible explanation of these facts, of the empty tomb; of the reports and convictions of the disciples; who claimed to have seen and talked with Jesus in human form, especially of the case of Paul; of the revulsion of feeling on their part; of the consequent foundation of the Christian Church, and of the consecration of the first day of the week, has ever been given except that after his death Jesus, in this as in so much else unlike all other men, entered by resurrection and later ascension upon a new course of life and a new course of activity. Without the resurrection as well as the life and death of Jesus historical Christianity could never have come into existence; by it he became the founder of the Church and the dominating personality of the ages.

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Jesus Christ, Logia of, the sayings of Christ, a title given to certain first century papyri, discovered in the course of excavations at Oxyrrhynchus carried on under the direction of Professors Grenfell and Hunt. The first find of these logia was made in 1897, but in 1903 a second collection was discovered. It has been suggested that these may be remains of the so-called Gospel of St. Thomas. Each of the recently unearthed sayings, like those of 1897, is introduced with the sentence 'Jesus saith.' These sayings are for the most part new, though one of them is in part known to have occurred in the Gospel according to the Hebrews. The new sayings are not so well preserved as the 1897 papyrus, in which the deep blackness of the ink was wonderful. In the later discovered papyri the ends of the lines are lost throughout, but there is this advantage: the introduction to the entire collection of sayings, of which both papyri are probably a part, is given, stating that these were the sayings in the logia which Jesus spoke through Thomas and perhaps another disciple.

The first saying is that one of which a part is already known to have occurred in the Gospel according to the Hebrews. It is one of the most remarkable sayings ascribed to Christ. It says: «Let not him that seeketh cease from his search until he find and when he finds he shall wonder; wondering he shall reach the kingdom and when he reaches the kingdom he shall have rest.»

The kingdom of heaven is also the subject of the second saying, which is much the longest and most important. The kernel of it is that most remarkable and profoundly mystical saying recorded by St. Luke alone: «The Kingdom of God is within you," but the saying in the papyrus appears in quite different surroundings from those attributed to it by St. Luke and extends far into another region. When published the sayings will doubtless be widely discussed by the critics as the logia of 1897 were. They are of enormous interest on account of the variations they disclose from the accepted texts.

One variant which Prof. Hunt quotes as of great value is Luke xi., 52, which reads: "Woe unto you, lawyers; for ye have taken away the key of knowledge, ye entered not in yourselves, and them that were entering in ye hindered." The papyrus, however, reads: "Ye have hidden the key of knowledge, ye entered not in yourselves and to them that were entering in ye did not open."

The recently discovered papyrus contains part of the discourse of Christ closely related to certain passages in the Sermon on the Mount in St. Matthew and to the parallels thereof in St. Luke; and secondly, part of the conversation between Christ and his disciples. The latter presents a striking resemblance to the well known story recorded in the Gospel according to the Egyptians and in the uncanonical gospel used side by side with the canonical gospels by the author of the Second Epistle of Clement, which was written about the middle of the second century. It consists of an answer to the question put in the Gospel according to the Egyptians into the mouth of Salome; in the uncanonical gospel quoted by Clement into the mouth of some unnamed person, but by the recently discovered papyrus into the mouth of the disciples. The question, with some variations of form between the three, was: "When will Christ's kingdom be realized?" The answer as recorded in the Gospel according to the Egyptians was: "When ye shall trample on the garment of shame; when the two shall be one and the male as the female neither male nor female." The papyrus differs somewhat from this, and incidentally shows that the interpretation generally given to "When ye shall trample on the garment of shame" is incorrect. It is usually considered to signify "when ye put off the body; that is, to die." But the papyrus shows that the real point lies in a mystical allusion to Genesis iii., the phrase meaning, "When ye have returned to the state of innocence which existed before the fall."

Jesus College, Cambridge, England, founded by Alcock, bishop of Ely, in 1496. It has 16 foundation fellowships, open without restriction to all his majesty's subjects. Five were of the original foundation, and the others have been added by subsequent benefactors. Six of the fellows are required to be in orders. The mastership and one fellowship are in the absolute appointment of the bishop of Ely. To the other fellowships on a vacancy the master and fellows nominate two candidates, one of whom is elected by the bishop. There are numerous scholarships.

Jesus College, Oxford, England, founded by Queen Elizabeth in 1571 on the petition of Dr. Hugh Price, treasurer of St. David's, Wales, who left lands for the maintenance of a principal, eight fellows, and eight scholars. It was increased by different benefactors until it came to consist of a principal, 19 fellows, and 18 scholars; but by the ordinance of the university commissioners the fellowships have been reduced to 13, a half of which as near as may be are to be filled up by natives of Wales, the other to be under no restriction by reason of birth. A fellowship founded by Charles I. for natives of Guernsey and Jersey has been converted into two scholarships for natives of these islands or persons educated at Elizabeth College, Guernsey, or Victoria College, Jersey. This was the first college founded on Protestant principles.

Jesus Island, Canada, an island in the Saint John River not far from where it joins the Saint Lawrence River; area, about 1,200 square miles.

Jet, a mineral, which is found in compact masses so hard and solid as to be susceptible of being turned on a lathe and manufactured into ornamental articles. It has been worked for centuries in Whitby, England. It is found in thin laminations, which subsequently thicken out to 2 or 3 inches in the upper lias strata in that neighborhood; a lower bed, from which the best quality is obtained, has a thickness of 20 feet, and is known as jet rock. Jet is supposed to have been worked in England as far back as the time of the Romans. Jet rosaries and crosses were common in the Abbey of Whitby when it was a resort of pilgrims. The jet manufactures of Whitby fell away about the time of Queen Elizabeth, and were revived in 1800. It is also manufactured at Scarborough, England.

Jetties are dikes at the mouth of a river or across a harbor bar to increase the riverine or tidal current by narrowing the channel, and thus scour out a deeper bed, to accommodate navigation. Single jetties are solely at the mouths of rivers with strong currents, to deflect these to one side of its natural channel, but in most rivers, and in all harbors they are double, forming an entire artificial channel. Briefly, the physical principles are: The power of water to transport solid matter varies as the square of its velocity, so that increasing the strength of current two fifths will about double its sand-carrying capacity; the velocity increases with increase of slope and decrease of friction; the slope is increased by narrowing the channel, since it forces flood waters inside or outside to rise higher at the entrance, and the friction decreases as the width of the channel; and lastly, if a channel of a given depth and width passes a given quantity of water, then a narrower channel involves either a permanently greater height of water if the bed were rigid, or the scouring of the bed to a depth which, multiplied by the new width, will produce an equal cross-section with the old. The increased slope and the correspondent velocity vanish as the water cuts a deeper basin; but the velocity due to lessened friction does not, nor do the deepened channel, the greater discharge through it, and the greater tidal fluctuation due to the larger basin. The channel is scoured along until the deepening sea establishes an equilibrium of action.

The system is not new. A number of important European rivers were jettied even before the middle of the last century, and others not much later. The Danube at Sulina had been deepened to 21 feet, from 8 feet before; and in 1874 Eads found seven German rivers, including the Oder and Vistula, improved so that with initial channels of 4 to 7 feet, they then had 13 to 23.5. Several of these are still deeper now, the result increasing somewhat for many years under the same conditions. The Neva in Russia has also such works; as also the harbors of Calais and Dunkirk in France. In the United States a very great number have been constructed, both for rivers and harbors; the greatest of all are the jetties at the mouth of the Mississippi, and as the general principles are alike in all, these may be briefly described.

The Mississippi discharges its waters to the Gulf not by one channel, but in the main by three, running through «passes» 12 to 17 miles long from the delta land to the sea, and widely divergent. The largest is the Southwest Pass; next the easternmost, Pass à l'Outre, with two branches. In the middle is the smallest, South Pass, 600 to 800 feet wide, and taking not over a tenth the total discharge, with a shoal at its head only 15 feet deep, and a bar at its mouth only 8 feet; so that, with 30 feet of water through the delta, it was unserviceable for deep-water navigation. Capt. James B. Eads offered to build jetties to deepen the bar at Southwest Pass from its then 13 to 28 feet; but Congress preferred South Pass, as cheaper and simpler, needing work only at the head and foot. Work was begun in June 1875, and within nine months the water was 13 feet on the bar; by 1879 it was 29 feet; it is now over 30.

The west side of the pass had silted up into land 4,000 feet farther out than the east, so that the west side of the two parallel dikes built out to 30 feet depth in the Gulf was about 7,800 feet, while the east was 11,800. First piles were driven in two rows 1,000 feet apart (the piles 12 feet apart) to mark the lines of the projected jetty-walls. Then mattresses were built, of willow branches, or young willows 15 feet long, cut with the leaves on, laid in four courses, each crosswise to the next, and fastened together at top and bottom by pine planking 2½ inches thick, doweled with hickory pins; this compressed the willows to a thickness of about 2 feet, and their brush-ends projected 3 or 4 feet. These mattresses were 100 feet long; for the bottom course they were made 50 feet wide, but steadily narrowed for each of the four courses at first needed to bring them to the surface of the water, the top one being 20 feet wide. Wider ones were used in deep water. These were built on shore, on ways as for launching boats; towed by tugs to the places indicated by the line of piles, and sunk by loading one or two tons of stone on top. Once down, they speedily filled with sediment and became solid. At the sea ends foundations of mattresses 200 to 300 feet broad were laid. For two or three years these stone-laden mattresses gradually sunk in the soft bottom, and new ones were added at the top to bring the surface even. The willows not imbedded in sediment were revetted with stone. Where exposed to storms, they were considerably sloped, and more thoroughly revetted. The sea ends were afterward capped with concrete blocks. The jetties have undergone considerable repairs since then, but have essentially done their work of making the river navigable for large vessels.

One of the difficulties was this: If obstacles were placed in the way of a free flow of water, the river would by so much at least desert this pass and run through the others; so that their heads had to be closed up to a sufficient extent to prevent this. Plans for improving the Southwest Pass in like manner have been prepared by the government engineers, but have not been executed.

At the mouth of the Brazos, west of Galveston, Texas, an ingenious plan was adopted for avoiding interference in the work by flood-tides: A long trestle was built out to deep water above high tide, the mattresses hung under it by ropes, and the stone dropped on them from above to sink them. Instead of being launched from shore and towed, they were carried on a portable railway running on top of the trestle, and let down.

The Columbia River jetty is the most conspicuous example of the single instead of the double dike. It is 42¾ miles in length, the longest in the world. The bar at the mouth of the river, ever shifting and sometimes not over 12 feet deep, had half spoiled this superb river for navigation, and was greatly dreaded. But the river has a mean high-water discharge of 600,000 cubic feet per second, a mean tidal ebb of 1,000,000, with tides of 6.2 feet; and in 1884 a single curved line of brush mattresses with rubble-stone copings was begun, completed in 1894, to turn the current away from spreading itself on both sides and scour out the channel on one. This was finished in 1894; it has formed a permanent channel 30 feet deep, and made the river a highway of the heaviest ocean commerce, with lines to all Pacific lands.

Others are too numerous for more than brief mention. At Yaquina Bay, Oregon, 115 miles south of the Columbia — an estuary 20 miles long discharging into the sea through a narrow, tortuous, shifting channel, and over a sand-bar with 7 feet of water — parallel jetties about half a mile long, one of rubble-stone on a rock bed, one of brush and stone on a sand bed, have doubled the depth of water and made the channel calculable. At Galveston, the single jetty was a relative failure, it needing a double one to converge the tides; and in 1896 the government completed it, with sides of 35,000 and 25,000 feet, costing over $8,000,000, and furnishing 27 feet of water between the island and the mainland. Other notable ones are at the mouth of St. John's River, Florida, beginning at the sides of the river-mouth and converging to 1,000 feet apart at the crest of the bar. Charleston's double one has sides of 15,000 feet each.

Jeune, LADY **Mary Stewart-MacKenzie,** English writer on social topics. She is the wife of Sir Francis Jeune and has long been prominent in efforts to relieve the condition of the poor of London. A volume of essays selected from her contributions to periodicals has been published under the title 'Lesser Questions' (1894).

Jev'ons, William Stanley, English logician and economist: b. Liverpool 1 Sept. 1835; d. Bexhill, near Hastings, 13 Aug. 1882. He was graduated from University College, London. Having obtained an appointment in the Royal Mint, he went to New South Wales in 1854, but afterward returned to England, and in 1866 became professor of logic, philosophy and political economy in Owens College, Manchester, and this post he held until his resignation in 1876 in order to accept the chair of political economy in London University. He retired from this position in 1880 for the purpose of devoting his whole time to literary pursuits. His writings include: 'Pure Logic' (1864) and 'The Substitution of Similars' (1869), in which he sought to popularize symbolic logic through a modification of Boole's mathematical methods; 'Elementary Lessons in Logic' (1870); 'Theory of Political Economy' (1871); 'The Principles of Science' (1874); 'Money and the Mechanism of Exchange' (1875); 'Primer of Logic' (1876); 'Primer of Political Economy' (1878); 'Studies in Deductive Logic' (1880); and 'The State in Relation to Labour' (1882). Among works published posthumously are: 'Methods of Social Reform' (1883); 'Investigations in Currency and Finance' (1884); and 'Pure Logic' (1890). In a pamphlet on the 'Coal Question,' he presented a mass of evidence to show that England's progress would be checked by want of coal; in his work in political economy he attempted to put the chief definitions in the form of mathematical quantitative formulæ, and in this way did important work in revealing the nature and relations of economic facts; he also developed the theory of marginal utility. His 'Life and Letters' edited by his wife were published in 1886.

Jew, The Wandering, a poetical personage of popular traditions, who owes his existence to a story connected with the well-known scene in the history of Christ's passion. As Jesus was on the way to the place of execution, overcome with the weight of the cross, he wished to rest on a stone before the house of a Jew, whom the story calls Ahasuerus, who drove him away with curses. Jesus calmly replied, "Thou shalt wander on the earth till I return." The astonished Jew did not come to himself till the crowd had passed and the streets were empty. Driven by fear and remorse, he has since wandered, according to the command of the Lord, from place to place, and has never yet been able to find a grave. Shelley, Lewis, Croly, and Mrs. Norton in England, Schubart and Schlegel in Germany, and Sue in France, have turned this legend to account. Goethe has sketched Ahasuerus with great spirit and humor as a philosophic cobbler at Jerusalem who opposes Christ with a cold worldly logic which will not look above the things of earth.

Jew of Malta, The, a tragedy written by Marlowe (q.v.) about 1587, first acted 1592, and first published in 1633, edited by Heywood. Shakespeare was largely indebted to Marlowe's play for his 'Merchant of Venice.'

Jewel-weed, Touch-me-not, or **Snap-weed,** popular names for two plants, *Impatiens aurea* and *I. biflora,* of the natural order Geranaceæ, well known in damp shady places throughout the cooler parts of North America, where they form dense masses. They are characterized by sac-like pendulous yellow or orange, more or less spotted flowers, and by their sensitive seed pods which when mature burst with the slightest touch and throw the seeds to a considerable distance. Hence the second and third names above. The first name is probably a survival of their use as antidotes for so-called Rhus poisoning.

Jewell, joo'ĕl, **Marshall,** American statesman: b. Winchester, N. H., 20 Oct. 1825; d. Hartford, Conn., 10 Feb. 1883. He learned the tanning trade in his father's leather belting business; went West, where he was a telegraph operator for three years, and in 1850 returned and re-entered his father's business. In 1868 he was the unsuccessful Republican candidate for governor of Connecticut, but in 1869 he was elected, and re-elected in 1871. During his administration as governor the present militia system was adopted, and the erection of the new State House begun. In 1873 he was appointed United States minister to Russia, and was recalled to become postmaster-general in President Grant's cabinet in 1874. He resigned in 1876 on account of disagreement with the President's policy in the Whiskey Ring frauds. His work in the Post-office Department was very effective and led to the discovery of the Star Route scandal, and to the introduction of several reforms. In 1880 he was chairman of the Republican National Committee and managed the Garfield campaign.

Jew'elry, ornaments for personal adornment, usually made of gems and precious metals. At some remote period primitive man gradually migrated northward from the tropical belt in which he probably first came into existence, and as he felt the colder temperature inconvenient, especially at night, he found it advisable to invent some sort of covering or clothing, by means of which he could obtain warmth. What the first clothing was it is of course impossible to say, but it may be conjectured to have consisted of belts of grass or leaves knotted together either by their own stocks or by accessory vegetable fibres. When men became hunters, which they did not do until they had progressed far enough to have invented offensive weapons, they no doubt soon used dried skins for clothing. A rough tanning of such skins could have been managed by rubbing them with fat. Then came the difficulty of fastening them. Some savage tribes still wear cloaks which have only a hole cut for the head to go through, and this is likely enough to be a primitive type; then also they might have been tied up with strips of sinew, but at an early stage they were pinned together with a bone or large thorn. Here is the germ of the brooch. Numbers of such pins have been found in all places where the remains of primitive man exist, and they range from the simplest forms to quite ornamental ones. The heads of the carved specimens show a certain amount of progression, and are often decorated with engraved lines, dots, and circles. Ivory, wood, and bone are all commonly used, and in time, as metal workings became known, these carved pins are imitated in bronze or gold. From the Stone Age, through the Bronze Age, up to the Iron Age, in which we are still considered to be, pins and their derivatives, brooches and buckles, have been universally used, and it is an interesting study to endeavor to trace their utilitarian development as well as their artistic and technical beauties. Starting with the earliest metal pins, which are of bronze, it soon appears that the head or thickened end is treated ornamentally, hammered flat, and pierced. Into the pierced hole in the top of pins are often found wire rings coiled several times, or single rings, as in plenty of specimens found in Ireland. In other cases of Roman pins found in Britain, there are chains of which a few links only are left, and in one case at least a pin the head of which was threaded with a chain of several links, was found among the debris of one of the Swiss lake dwellings. The modern safety-pin is quite the same in all essential points as one which was found by Dr. Schliemann at Mycenæ, and the same form, with the arch more or less specialized in design, has been very largely used North and South, East and West. The Greeks made the arch short, and enlarged and ornamented the nose or hollow for the pin to rest in; the Romans made the arch big, and set it with beads of amber and bronze, and fretted it out in innumerable ways, curves, spirals, and all sorts of twists and turns which the fancy of the artist could devise. The Roman fibulæ are more usually made of bronze or silver, but the Greek are largely of gold, and of exquisite workmanship.

Among the Romans of about the Augustan age, cameos were largely used as pendants; coins also, richly set, were so used. Charlemagne, in the 8th century, wore a splendid reliquary as his necklace, which was sent to him by Haroun-al-Rashid. This was buried with him, and was found on his neck when the body was exhumed in 1169. The use of ornamental monograms in jewelry began during the 14th century. Diamonds used in jewelry before the beginning of the 17th century are always cut, either as «tables» or «roses,» the «brilliant» not being then invented, and all colored stones were cut in the rounded form known as «cabochon.»

A French jeweler, named Daniel Mignot, during the beginning of the 17th century, is supposed to have first set rows of jewels close together in consecutive order. This notion was, of course, very suitable for working the monograms then so prevalent, and it has been more or less used ever since. From the 16th century pearls were much in fashion, and pendants commonly have single pearls or groups of pearls dependent from them. Toward the end of the 17th century pendants are found made of gold only, but exquisitely pierced, chased, and engraved, and some specimens of Portuguese work are remarkable for delicacy of execution; these are sometimes set with very small diamonds. Sprays of leaves and flowers, and knots of ribbon, during the 17th century, are made in metal, and thickly set with crystals — paste or real jewels — particularly by Venetian, French, and Portuguese, followed at a safe distance by English workmen. The best of these are by Giles Légare, and in the 18th century his follower, Pierre Bourdon.

The jewelers of the beginning of the 18th century did not hesitate to mix gold and silver in their jewelry. Gold was commonly used for the settings of colored stones, and silver for diamonds. Summarized briefly: (1) Savage tribes have used for their ornaments natural objects easily worked. (2) The cultured nations of antiquity have generally made their finest pieces of personal ornament of gold. (3) During the period of the Renaissance gold and silver, colored precious stones, and vitreous enamels were very largely used. (4) During the 19th century the diamond particularly claimed the attention of jewelers. See DIAMOND; GEMS; PEARL, etc.

Jewelry Trade, The. The making of jewelry is one of the oldest trades of which the American historian can find record, for while the manufacture of such articles of adornment occupied a position of little commercial importance until several years after the settlement of this country by the colonists, the fact remains that jewelry was made by the native Indians many years before the first European set foot upon American soil.

Prim and precise as the Puritans are supposed to have been, it is a mistake to imagine that they were too primitive in their opinions to appreciate the advantages of a little jewelry in the adornment of their persons. Both the Dutch and the English brought such ornaments with them to the new world, and one's personal attire was considered incomplete without the buckles, brooches, and rings which were in vogue at that time. As the natural result gold and silver smithing was one of the first industries to be established in the colonies, and every large town had its smiths who produced the most popular articles of jewelry, as well as certain kinds of trinkets for the Indians, medals, snuff-boxes, etc.

One of the most important products of the early silversmith's art was the making of elaborate boxes from rare woods, or sometimes, shell, inlaid with gold or silver. Snuff-boxes were manufactured in this way, while other boxes were made to contain the parchments which conferred the freedom of the city upon distinguished guests. Sometimes these boxes were made entirely of silver and were lined with gold. Occasionally the metal was gold, studded with precious stones. It was such a box as this in which the people of New York presented the «freedom» to Alexander Hamilton, after his elaborate defense of the liberties of the press in New York, in 1784; while similar boxes were later conferred upon Lafayette, Washington, and Scott. The making of such boxes and other ornamental insignia conferred upon distinguished men represents but one of the branches of the art of the smith, for there were so many demands made upon the craft that its ranks were constantly extending. In 1788, when the adoption of the Federal Constitution was celebrated in Philadelphia, there were no less than 35 goldsmiths and jewelers in the procession, while, more than 20 years before, it had been the profuse display of jewelry, silverware, etc., in the homes of the prominent New Yorkers that had incited Townshend to introduce the historic bill known as the «Stamp Act,» which was undoubtedly the entering wedge in the struggle which finally separated the colonists and the Crown. At this period in the history of the nation the colonies that could boast of the richest inhabitants, and which could, therefore, afford to spend the greatest amount of money for jewelry and other articles of personal adornment, were South Carolina, Virginia, Maryland, New York, Pennsylvania, and Massachusetts.

When compared to the facilities afforded to jewelers at the present day the tools of the old-time silversmiths were crude enough. The only noticeable difference between them and those used by workers in other metals was in their size, a factor which fitted them for finer work.

The extreme tenuity and the lack of brittleness of gold and silver gave room for the exhibition of great ingenuity on the part of the artist who aspired to forget the ordinary patterns in the creation of more fanciful designs, while the attainment of the polished, or burnished surface, made a more tender treatment imperative. In the beginning of the century the art of frosting gold, like that of satin-finishing silver, was unknown. Gold and silver both came from the workshop with a glittering surface, and such ornamental and decorative work as may then have been attempted, was either crude enameling, applied work, or engraving. Later, of course, came all the new processes by means of which the precious metals have been used conjointly with other metals, or with wood, mother-of-pearl, glass, porcelain, pearls, and gems.

In those days everybody who engaged in the industry of jewelry-making learned his trade so thoroughly and in such an old-fashioned manner that it was impossible to draw the close distinctions between the several different but associated occupations that are so clearly drawn to-day. At that time, to say that a man was a «jeweler» indicated that he was a goldsmith and silversmith, a watchmaker and clockmaker, and a maker of fine mechanical instruments, for each of these branches involved a knowledge of the others. At the same time the trade was thoroughly a mechanical one, and any attempt to realize a higher ideal in the making of jewelry and other ornaments was most unusual. Instead of «wasting his time» over such inventions the artisan devoted all the hours of labor to such work as might be assigned to him, even dividing his time and skill between his own and kindred trades. To a similar degree the seller of such goods was more frequently a workman than a dealer. While a merchant in the strict sense of the word, he was unusually a person who could take his place at the bench if necessity required, and who owed his success as a salesman to his knowledge of the various kinds of metal and fancy work for the adornment of the person. Gradually, as the demand for such goods increased, the more progressive of these merchants began to manufacture the simple articles which they sold, although it was some time before this branch of the industry had extended beyond the making of spoons, forks, rings, and similar small pieces.

From the earliest days in the history of the jewelry trade, Providence, R. I., has been one of the great centres of this industry. It was shortly after the close of the Revolutionary War that Messrs. Sanders & Pitman and Cyril Dodge began to make silverware in that city. As early as 1805 there were no less than four establishments located there. They were operated by Nehemiah Dodge, John C. Jenckes, Ezekiel Burr, and Pitnam & Dorrance, and their product, to make which they employed about 30 men, included silver spoons, gold beads, and the simplest designs in finger rings. A few years later some of these manufacturers began to turn their attention to cheap jewelry in which silver and other alloys were used with a small fraction of gold. These included many small articles like breast-pins, ear-rings, key-rings, sleeve-buttons, etc., as well as some large articles which were plated by the hammering process. The first jewelry establishment at Attleboro, Mass., a town which has continued to hold pre-eminence in the trade, was opened about 1805, while the establishment of the busines in Newark, N. J., by the firm of Hinsdale & Taylor, dates from about the same time. Philadelphia also became identified with the early jewelry interests. The firm of Bailey & Company, a house which is still conducting business, although under another name, was one of the first manufacturers in that city, and its trade with the west and south soon became so extensive that the concern became known as one of the most prosperous in the business.

Maiden Lane, New York, did not become the centre of the American jewelry trade until about 1830. The steady increase in the demand for jewelry inspired new ideas in manufacture, and, as much of the desire for novelties originated in New York, that city naturally became the market for the introduction of such products. In the New York «Mercantile Register» for 1848–9, one may find the advertisements of the following houses, which were then prominently identified with the manufacture of jewelry, watches, and silverware: Ball, Tompkins & Black (late Marquand & Company), 247 Broadway; Allcock & Allen, 341 Broadway; Gale & Hayden, 116 Fulton street; Tiffany, Young & Ellis, 271 Broadway; Wood & Hughes, 142 Fulton street; Samuel W. Benedict, 5 Wall street; George C. Allen, 51 Wall street; Squire & Brother, 92 Fulton street and 182 Bowery. Some of these houses have since gone out of existence; only one now retains its original name, but three are still conducted under firm names which retain some portion of the early title.

Although great advances have been made in every branch of American art there is no particular in which it is more pronounced than in the metal work which is so conspicuous a part of the art of the gold and silver smiths, and the fact that the American product is now regarded as superior to that of any other country of the world is not only due to our knowledge of the art in itself, but is largely the result of our wider knowledge of the articles into whose manufacture good taste enters. To-day the designers employed by the great gold and silver smiths of America are not only men of refinement and liberal education, but they are so truly artists, in the best sense of the word, that they could, if required, draw or model from life, or paint in oils or water-colors. It is largely due to the efforts of such men that so much advance has been made in the making of ornamental gold and silver ware during the past half century, a progress which is indicated by our exhibitions of such articles as loving-cups, vases, and presentation pieces, among which one may mention the gold medals, valued at $1,000 and $500, which were presented by the State of New York to Dr. E. K. Kane and Commander H. S. Hartstein, the Arctic explorers, in 1858; the silver vase made in honor of William Cullent Bryant, now a part of the exhibit at the Metropolitan Museum of Art, and the several testimonials presented to Cyrus Field, upon the completion of the transatlantic cable, in 1866. Among the other conspicuous specimens of this art are the silver service which was presented to the arbitrators of the Alabama claims, in 1873, the silver centrepiece duplicating the statue, «Liberty Enlightening the World,» which was presented to August Bartholdi, in 1886; the elaborate testimonial presented to William Ewart Gladstone, in 1877; the Edwin Booth loving-cup, and the many yachting trophies that have been manufactured on the occasion of international and other important regattas.

The discovery of gold in California, in 1848, naturally gave a great impetus to the manufacturing jewelry industry, for it gave assurance of an ample supply of metal needed for all purposes without the cost of importation, and, if, at that time, we were lacking in knowledge as to the various forms in which the art of the smiths had been developed, it needed but such expositions as those at London and Paris to perfect our education in that respect. With such secrets revealed to us, however, it took but a comparatively short time for us to acquire the inventions in machinery and tools necessary to the reduction of the cost of production, and it is largely due to our success along these lines that we have been able to lead the nations of the world in this branch of the fine arts.

The process of electro-metallurgy was introduced about 1860, and since that time all kinds of goods in which plating has been employed have been made by this method, the centres of production being located chiefly throughout Connecticut, although there are other large plants at Newark, N. J., and Providence, R. I. Speaking from a strictly commercial point of view it is almost impossible to overestimate the value of this process, for it has brought within the reach of people of limited means an attractive line of tableware and other articles of utility that are now deemed indispensable in every household. If not as artistic and as highly finished as solid silverware they are extremely serviceable and there can be no question but that the better grades of such goods possess considerable artistic merit. In fact, for a time at least, the silver-plated ware encroached upon the province of solid silver, but during more recent years the low valuation of silver bullion, and the mechanical inventions which have further reduced the cost of production, have tended to reverse the tables.

The production of watches is so closely related to the jewelry trade that some reference must be made to it in any review of that industry. It was but a comparatively short time ago that all watches were imported, whereas, to-day we have progressed so far that it is only some very small watches for ladies' use and some particularly complicated chronographs that are now obtained in Europe. All others are made in this country, the industry being largely centred in New Jersey, Massachusetts, and Illinois. In its consumption of diamonds and other precious stones America will also compare favorably with other nations, New York being the largest market for such gems in the world. Although it was but a few years ago that the art of diamond cutting and polishing was established in the United States, our wise tariff regulations have given such an impetus to this branch of the trade that some of the most expert cutters from Holland have now located in this country.

So far as statistics go we have but little material concerning the early history of the jewelry industry. We know that, in 1812, the value of the Providence product was but $100,000, and that, as late as 1860, the returns from all parts of the country were small as compared to those of the present day. In that year, for example, the jewelers and watchmakers of Philadelphia produced but $691,430 worth; the silverware manufacturers, $516,000 worth, and the makers of watch-cases and chains, $1,714,800. The production of gold chains and jewelry at New York was $2,497,761; of gold watch-cases, $337,690, and of silverware, $1,250,695. In Newark, the total product was $1,341,000, while Providence produced $2,251,382 in jewelry, and $490,000 in silverware. The following census statistics, covering the years from 1880 to 1900, indicate the great advances which have since been made in the trade:

	1880	1890	1900
Establishments	739	783	908
Capital	$11,431,164	$22,246,508	$28,120,939
Employees	12,697	13,880	20,676
Wages	$6,441,088	$8,038,327	$10,746,375
Value of product	$22,201,621	$34,761,458	$46,501,181

Unfortunately, however, such statistics cannot indicate what great things have been accomplished from an artistic standpoint, for the time has now come when the American jeweler, instead of going to Europe for his ideas and models, leads the best European producers in both correctness and originality of designs and workmanship. More than 12 years ago the London «Art Journal» summarized America's progress in this branch of the fine arts, as follows: «Judging by the productions exhibited, one may well be in doubt whether our much-boasted European pre-eminence in these things is to last much longer, and whether, after all, we shall not in the near future be compelled to regard the firms of New York as at least our equals, if not our superiors, in the production of high-class gold and silver work.»

These words written in October 1893, were a prophesy which has certainly been realized, as is evidenced by the victories of the American jeweler, both at home and abroad.

Jewett, joo'ĕt, **Milo Parker**, American educator: b. Saint Johnsbury, Vt., 27 April 1808; d. Milwaukee, Wis., 9 June 1882. He was graduated from Dartmouth College in 1828, from the Andover Theological Seminary in 1833, and was professor of rhetoric and political economy in Marietta College (Ohio) in 1833–8. Having become a Baptist, he resigned his professorship, in 1839–55 was principal of the Judson female institute established by him in Marion, Ala., and at the same time edited the 'Alabama Baptist.' He then established a young ladies' seminary at Poughkeepsie, N. Y., assisted Matthew Vassar (q.v.) in founding Vassar College, was its first president in 1862–4, and subsequently was active in educational and religious work at Milwaukee, Wis. Among his writings are a treatise on 'Baptism' (1840), and pamphlets on 'The Relations of Boards of Health and Intemperance' (1874) and 'The Model Academy' (1875).

Jewett, Sarah Orne, American novelist and writer of short stories: b. South Berwick, Maine, 3 Sept. 1849. She was educated at Berwick Academy and became a contributor to the 'Atlantic Monthly' in 1869, in which periodical the larger part of her work has appeared. Her usual theme is the New England character seen from its most attractive side, its gentler aspects given greater prominence, and its harsher ones not unduly emphasized. Her works include: 'Deephaven' (1877); 'Play Days' (1878); 'Old Friends and New' (1879); 'Country By-Ways' (1881); 'The Mate of the Daylight, and Friends Ashore' (1883); 'A Country Doctor,' a novel (1884); 'A Marsh Island,' a novel (1885); 'A White Heron and Other Stories' (1886); 'The Story of the Normans,' an historical work (1887); 'The King of Folly Island, and Other People' (1888); 'Betty Leicester' (1889); 'Strangers and Wayfarers' (1890); 'A Native of Winby, and Other Tales' (1893); 'The Life of Nancy' (1895); 'The Country of the Pointed Firs' (1896); 'The Queen's Twin and Other Stories' (1899); 'Betty Leicester's Christmas' (1899); etc. Her literary style possesses great charm.

Jew'fish, a huge Californian game-fish (*Stereolepis gigas*) of the sea-bass family (*Serranidæ*). It has a single dorsal fin, the soft part of which is shorter than the spinous portion, and is brown with black blotches and becomes much darker with age. Among the dense growths of kelp in moderately deep water along the coast of southern California the jewfish finds a congenial home. It haunts the neighborhood of islands and is especially abundant about Santa Catalina. Belonging to a family of game-fishes and reaching a weight of 300 to 500 pounds, it has long been a favorite object of sport for ambitious anglers. It is commonly taken on hand-lines baited with small fish, is exceedingly gamy, and brings a good price in the market.

Two other fishes of the same family but more closely related to the groupers are known as the Florida or black jewfish (*Garrupa nigrita*) and the spotted jewfish (*Promicrops guttatus*). The former ranges from Florida to Brazil, and the latter widely through the warm parts of both Atlantic and Pacific oceans. The black jewfish is quite common about the coral reefs, in the caverns of which it lurks. Although not especially gamy, its enormous size and weight, sometimes reaching even 1,000 pounds, have induced a few anglers to essay its capture with rod and reel. It is easily distinguished from the Californian jewfish by its greater robustness, strong canine teeth, and rounded caudal fin. Consult Jordan and Evermann, 'American Food and Game Fishes' (1903); Holder, 'Big Game Fishes of the United States.'

Jewish Calendar. The Jews date their era from the Creation, which according to their tradition was 3760–1 years before the Christian era. The Jewish year is a lunar year and consists of twelve months, with an additional one for leap year. The months have alternately 29 and 30 days, the first and thirtieth days being called New-moon. Each cycle of 19 years has 7 leap years, the 3d, 6th, 8th, 11th, 14th, 17th, and 19th. The spring months are called Nisan (in which the Passover is celebrated), Iyar, Sivan; summer includes Tammuz, Ab, Elul; autumn Tishri, Heshvan, Kislev; and winter Tebeth, Shebat, Adar, with 2d Adar for leap year. The civil year began with the month of Nisan; the religious with Tishri. Rules for the computation of the calendar were issued, after various methods had been employed in earlier centuries, by Hillel II. (330–365). The date usually assigned by Jewish writers to the year when Hillel fixed the calendar is 670 of the Seleucidan era, or 4119 A.M., or 359 of the Christian era.

Jewish Charities. On 26 April 1655, the board of directors of the Dutch West India Company wrote to Governor Stuyvesant as follows: «After many consultations, we have decided and resolved upon a certain petition made by said Portuguese Jews, that they shall have permission to sell and to trade in New Netherland and to live and remain there, provided the poor among them shall not become a burden to the company, or to the community, but be supported by their own nation.»

The records of the Department of Charities of the city of New York on 31 Dec. 1902 show that in a Jewish population approximating 600,000 in Greater New York, in the almshouse on Blackwell's Island there were 17 pauper Jews, of whom the majority were blind, idiotic or possessed of some peculiar defect which prevented admission to existing Jewish charitable institutions. These figures indicate how thoroughly the Jews of New York have assumed the responsibility imposed upon them over 250 years ago. The same is true of Jews throughout the United States. In our modern day, under more favorable conditions and auspices, the Jew has, to some extent, become non-sectarian in his philanthropies. Hospitals, as a rule, supported and endowed by Jews, throw open their doors to sufferers irrespective of creed, color or nationality. Other instances could be cited of charities not medical, organized along similar lines. The free employment bureau of the United Hebrew Charities of New York makes no distinction with its applicants. The Educational Alliance in the same city offers its clubs and classes to Jew and Gentile alike. Jewish agencies, giving material relief, or to use a better term, those which care for the needy in their own homes, in the main confine their work to beneficiaries of their faith, without, however, making any rigid distinction. On the other hand, the trend of Jewish charity has been in the direction of caring for the Jewish poor, solely through Jewish agencies, and without the intervention or co-operation of other sectarian or non-sectarian societies or institutions.

The problem of the Jewish charitable societies of the United States to-day is the problem of the care of the immigrant. As such, it passes beyond merely local lines. In some of its manifestations it is national in character and in a few it has an international significance. The fact that the large bulk of the needy Jews in the United States reside in New York is accidental, and concerns the Jews of Denver and San Francisco equally with those of the eastern seaboard cities. In so far the problem is a national one. Moreover, to deal intelligently with the question requires a knowledge of the immigrant's antecedents, the impelling motive which brought him to the United States, and an acquaintance with his previous environment. And here the international phase of the question comes in. Roughly speaking, it may be said that there are no American-born Jewish poor. Of the 10,924 families who applied for assistance to the United Hebrew Charities of New York during the year ending 30 Sept. 1903, 2 per cent were born in the United States. And of these the majority of heads of families were of the first generation. Jewish dependents who have an ancestry in the United States of more than two generations are practically unknown.

In the year 1881 began that great wave of emigration from eastern Europe, the end of which is not yet. Driven by a relentless persecution, which endangered not only their homes but frequently their lives, thousands of Jews were compelled to flee from their homes to seek new residence on these shores. The Russo-Jewish committee which originally undertook the work of caring for these immigrants turned it over very shortly to the Hebrew Emigrant Aid Society, which came into existence in December 1881. In one year this society spent $250,000, $50,000 less than had been spent by the United Hebrew Charities of New York in the seven years of its existence. In the first and only annual report of the Emigrant Aid Society, its president outlined as tersely as possible the efforts that had been made to provide homes and occupations for the thousands of fleeing exiles who reached these shores during the momentous summer of 1882. In the month of July the committee spent for board and lodging alone over $11,700.

With the gradual falling off in immigration, the Emigrant Aid Society went out of existence, and the care of the needy immigrant who remained in New York and who became impoverished after residence, reverted to the United Hebrew Charities. In 1885 immigration again began to grow heavier and continued to grow in such numbers that in the following five years over 120,000 immigrants arrived at Castle Garden. In 1890 the immigration reached the figures of 32,321, the largest number ever recorded up to that time. With all that had been done, the real work of the charities was but to begin. In 1891 the religious persecution of the Russian Jews reached a climax. In the year ending 30 September 62,574 immigrants arrived at New York, of whom nearly 40,000 arrived between June and September. The entire charitable effort of the New York Jewish community was for the time directed out of the ordinary channels and applied to this monumental question of caring for the arriving Russian Jews. The Baron de Hirsch Fund, instead of utilizing its income for its educational work, appropriated over $67,000 to the United Hebrew Charities to assist in the work of the immigration bureau. Over $175,000 was spent by the United Hebrew Charities during this year. In September of 1891 it became apparent that there would be no cessation to the immigration, and that much larger funds would be necessary to give anything like adequate assistance to the unfortunates who were arriving at the rate of 2,000 per week. The enthusiasm which was aroused at a banquet tendered to the late Jesse Seligman brought into existence the «Russian Transportation Fund,» which added over $90,000 to the revenues of the United Hebrew Charities and which was given by citizens of New York, irrespective of creed. Later in the year, a standing committee of the society, known as the Central Russian Refugees Committee, was organized and was made up of representatives of the Baron de Hirsch Fund, the Russian Transportation Fund, the United Hebrew Charities and the American Committee for Ameliorating the Condition of the Russian Exiles. The last committee was organized to secure the co-operation of relief societies in other cities, in order that the various European societies who were assisting the persecuted Russians to emigrate should thoroughly understand the attitude of the New York organization. The year, October 1891 to September 1892, will ever be a memorable one in the history of Russian emigration and of Jewish philanthropy; 52,134 immigrants arrived at the Barge office in that time. The treasurer of the United Hebrew Charities paid out the enormous sum of $321,311.05, of which $145,200 was spent by the Russian Refugees Committee between February and September.

Since the year 1881, fully 600,000 Jewish immigrants have arrived at the port of New York alone. Of these the bulk comprise refugees from Russian and Rumanian persecution, Austrians and Galicians. They came from countries in which many of them lived under conditions of appalling poverty. The records of the immigration bureau show that from the standpoint of material wealth, these immigrants are below the average of immigrants from other European countries. Due to their previous condition, a goodly percentage is illiterate. On the other hand, the number of skilled artisans and craftsmen is so large as to be distinctly noticeable. From the standpoint of dependency, it will be of interest to study to what extent this large body of immigrants has added to the dependent and delinquent classes of the communities in the United States. The only figures that are at hand are those of New York, which are higher than would be found in other cities and towns for reasons that are obvious.

In December 1899 a study was made of 1,000 families who had originally applied to the United Hebrew Charities for assistance in October 1894. Of these 1,000 applicants it was found that 602 had not applied for assistance after December 1894. Of the balance, 67 families were dependent on the society to a greater or lesser extent in January 1899. More detailed investigation disclosed the fact that nearly all of these 67 applicants were made up of families where the wage-earner had died, leaving a widow with small children, or of respectable aged and infirm couples unable to be fully self-supporting, or of families in which the wage-earner had become incapacitated through illness. In other words, after five years over 93 per cent of the cases studied were independent of charitable interference. The marked feature in the care of the Jewish poor in the United States is the almost entire absence of the so-called pauper element. Even the 67 families above mentioned cannot be included in this category. Widowhood is the resultant of purely natural conditions, and when it afflicts the poor mother with a family, it frequently produces a condition of dependence which has in it no characteristics of demoralization.

If there is one cause more than another leading up to this condition, it is the absence of the drink evil among Jews. The instances in which drunkenness lies at the bottom of Jewish dependency are so infrequent that they may be ignored. Combined with the absence of this vice, there are other virtues engrafted on the Jew for centuries, all of which tend to the preservation of his self-respect and his self-esteem. Among these are the love of home, the inherent desire to preserve the purity of the family, and the remarkable eagerness which he shows for education and self-improvement.

From what has preceded, it will be comprehensible that the Jewish charities of the United States, having a special problem with which to deal, have instituted special methods for its solution. In the main, relief organizations have followed the organized methods of sister societies. In the past 25 years, new organizations of all kinds have sprung into existence to meet the demands made by the constantly increased immigration. To revert to New York, when the Central Russian Refugees Committee went out of existence in January 1893, the decrease in immigration no longer warranting its continuance, the active work of assisting the arriving immigrants devolved upon the United Hebrew Charities. The work of this society is typical of similar Jewish organizations throughout the United States. The report of the fiscal year ending 30 Sept. 1903, shows that 10,924 individuals and families applied for assistance. Of these, 6,260 had applied for the first time. Material relief was granted to 7,290; 1,802 were found not to require assistance of this kind, and 1,202 were refused assistance for some cause or other. The society conducts an employment bureau which is free to employer and employee, and during the last fiscal year found employment for 3,892 applicants. It grants relief in kind, including groceries, clothing, shoes, furniture, etc. The extent of the society's work in this direction will be gathered from the statement that 51,875 garments and pieces of furniture were distributed last year. The annual disbursements for material relief alone amount to over $150,000 per annum. Ever since its organization 30 years ago, the society has endeavored to uphold the principles of organized charity. In some instances it has antedated the charity organization societies themselves; as in the giving of relief in amounts adequate to make the recipient independent of further intervention on the part of the relief-giving agency, and the establishment of a graded, carefully regulated and supervised system of pensions covering if necessary a long period of years. As a rule, these pensions are given only to families where the wage-earner has died, and where, unless such provision were made, no recourse would be left, except the breaking up of the family and the commitment of the children to orphanages and similar institutions. To obviate the necessity of such commitment, the United Hebrew Charities disburses annually over $35,000 in pensions. In the history of the society there is no form of relief which shows such good returns for the investment made. Families so supported do not become pauperized, since the subsidy which is granted enables the surviving parent to devote her time to the proper rearing of her children so that they may become useful and intelligent citizens.

Along the lines of making families self-supporting the United Hebrew Charities frequently grants assistance, presumably as a loan, in amounts varying from $50 to $250. These loans are made in special cases where it is not possible to make the applicant self-supporting through the ordinary channels of employment, etc. A wage-earner who has been incapacitated through illness or injury and hence unable to follow any routine work, may still be established in some small business venture and be able to support his family. Thousands of dollars have been spent by the United Hebrew Charities along these lines with the most gratifying results — not only have beneficiaries become independent of the society, but many of them have managed to repay the loans made to them. Of all the problems which confront the average charity organization, possibly the most perplexing is the one of the family in which the mother must be the wage-earner. The kindergarten and the day nursery have by no means solved the problem. They are at best but makeshifts in an attempt to solve a situation which has its root in economic and industrial conditions. Again, the factory removes the mother from her sphere of influence over her children, and opens up opportunity for the growth of incorrigibility and waywardness on the part of the latter. In the hope of partially overcoming this difficulty, the United Hebrew Charities has for some years conducted a work-room for unskilled women in which the latter are taught various needle industries, in the hope that they may eventually be sufficiently accomplished to work in their own homes, and in this fashion supplement the family income. The amount of such work that can be found is limited. More and more, daily, the factory is competing with home industry to the exclusion of the latter. A study made by the society in 1902 showed that work could be obtained for women to do at home in industries such as silk-belt making, men's and women's neckwear, garters and hose supporters, paper boxes, slip covers for the furniture trade, overgaiters and leggings, dressing sacques, hats and caps, flowers and feathers, beaded purses and other beadwork, dress shields, incandescent light mantles, embroidery and art embroidery, passementerie work, bibs, knit goods, etc. In the society's work-room the effort has been made to teach such industries to unskilled women, so as to enable them to become at least partially self-supporting.

It is needless to state that in a system as comprehensive as the United Hebrew Charities desires to be, provision has been made to alleviate distress in all its forms. Under the plan of dividing the city into districts, immediate relief can be given to emergency cases. These districts are in charge of co-operating societies known as Sisterhoods, who are responsible for the condition of the poor who have been placed in their care. Each of these agencies is practically a miniature United Hebrew Charities. Not only have they organized centres for the distribution of material relief, but along the lines of a more progressive philanthropy, the sisterhoods have developed day nurseries, kindergartens, clubs and classes of various kinds, employment bureaus, mothers' meetings, and in fact have become a social centre for the poor of their neighborhoods. Since a large percentage of the distress which is met with is occasioned by illness, medical relief of all kinds has been organized. Each district as a rule has its physician and its nurse, and where these are not at hand, co-operation has been effected with other organizations specially equipped for such work.

In very recent years, the spread of tuberculosis among Jews has merited the earnest attention of the society, and among its other activities it has been a pioneer in developing a systematic plan for caring for such tuberculous applicants in their own homes, for whom no provision could be made in existing sanatoria. The campaign thus begun has been not only a charitable, but a social one. Not only have these unfortunates been given food, nourishment and medical care to aid them toward recovery, but in addition thereto, instruction has been given them in the rudiments of sanitation, and in the prevention of infection. It is significant that the work of the United Hebrew Charities in this field has been followed to some extent by the recently organized Committee on Tuberculosis of the Charity Organization Society.

The name "United Hebrew Charities" as applied to the New York organization is somewhat of a misnomer, since it does not include all Jewish charitable agencies in the city of New York. It would be more proper to speak of it as the consolidation of all the purely relief societies which existed in New York prior to 1874. Aside from these, there are to-day hospitals, orphanages, technical schools for boys and girls, trade schools, day nurseries and kindergartens, guilds for crippled children, burial societies, loan societies, societies for maternity relief, and a goodly number of smaller organizations which have been founded by the immigrants of the last twenty years. Among the most important large organizations and institutions in New York may be mentioned: The Mount Sinai Hospital, Lebanon Hospital, Beth Israel Hospital, Montefiore Home, Hebrew Orphan Asylum, Hebrew Sheltering Guardian Society, Hebrew Infant Asylum, and Hebrew Free Loan Association. It is estimated that there are over 1,000 Jewish organizations and societies in the city of New York to-day, whose activities to a greater or lesser extent are directed along philanthropic lines. Practically all of the larger organizations, such as the hospitals, etc., work in co-operation with the United Hebrew Charities. In some of the other cities in the United States, where the question of the care of the poor is not so complex as in New York, closer co-operation has gone by leaps and bounds. In cities like Philadelphia, Cincinnati, Chicago, Cleveland, and others, the individual societies have formed federations of charities, the purpose of the federation being to express the philanthropic impulse of the community in terms of greatest economy, the smallest amount of friction and the highest possible efficiency. In Philadelphia the federation is the common treasury. It acts as the common collection agency of all moneys and distributes them pro-rata among the various societies and institutions whose autonomy is not impaired by this method. In other cities, this plan with some slight variations is in force. In New York sporadic attempts to form a federation have been unsuccessful owing to the immensity of the problem. There are indications at present that federation may become a possibility in the near future.

In addition to these local federations, the various societies throughout the United States have joined together to form a national body known as the National Conference of Jewish Charities. At present it comprises the relief organizations of 53 cities. Two biennial conferences have been held and the third will be held in the city of New York in May 1904. The published reports of these meetings indicate conclusively the wisdom and the necessity of founding such a national organization. The rules governing the transportation of dependents which have been in force in the National Conference of Jewish Charities since its inception were adopted with alterations and additions at the last meeting of the National Conference of Charities and Correction at its meeting in Atlanta in May 1903. At the meeting of the National Conference of Jewish Charities held in Detroit in May of the same year, the writer introduced a resolution advocating the establishment of a central bureau for the placing out and boarding out of dependent Jewish children in private homes. At that time the work of devising such a plan was delegated to the Independent Order B'nai B'rith, a fraternal Jewish order, which at present has the entire subject under discussion, and has drafted a plan which has been submitted to the various Jewish societies and institutions throughout the country. In New York city, under local auspices a similar movement has been inaugurated. Since July 1903, at which time work was begun, applications have been received for children from 84 Jewish families. Sixteen children have been placed in boarding homes and four in free homes.

Some idea of the extent to which Jewish charities have been developed in the United States may be gathered from the following: In practically every city and town there are benevolent societies which look after the interests of the poor in their midst. Jewish orphan asylums are established in the cities of Atlanta, Baltimore, Boston, Brooklyn, Chicago, Cincinnati, Cleveland, Newark, New Orleans, New York, Philadelphia, Pittsburg, Rochester, and San Francisco. In New York there are three institutions and in Philadelphia there are two. New York has four Jewish hospitals and Philadelphia has two. Baltimore, Chicago, Cincinnati, Denver, New Orleans, and San Francisco have each one. Homes for the aged and infirm are found in most of the large cities. Similarly, educational movements along philanthropic lines are developing throughout the country. These include organizations such as the Hebrew Educational Society of Brooklyn, the Hebrew Education Society of Philadelphia, the Jewish Training School of Chicago, the Hebrew Free and Industrial School Society of Saint Louis, the Hebrew Industrial School of Boston, the Clara de Hirsch Home for Working Girls, the Hebrew Technical School for Girls, the Hebrew Technical Institute and the Baron de Hirsch Trade School, the last four being situated in the city of New York. The Maxwell Street Settlement of Chicago and the Neighborhood House in Saint Paul are under Jewish auspices. Cincinnati, Milwaukee, and Cleveland have Jewish settlements. In New York the Educational Alliance, the largest institution of its kind in the United States, has within the past few years developed a settlement with resident workers. Along educational lines, the Jewish Chautauqua Society, a national organization, has for the past two years conducted a summer school in philanthropy in connection with its summer assembly held in Atlantic City, N. J. At these sessions, important communal problems of interest to Jewish workers in philanthropy have been considered.

Other national organizations of importance are the Jewish Agriculturalists' Aid Society, the

Baron de Hirsch Fund, and the Jewish Agricultural and Industrial Aid Society. The first named, with headquarters in Chicago, is engaged in placing farmers throughout the Northwest, particularly in Dakota. The work of this society while not on an extended scale, has nevertheless given results and has demonstrated the fact that it is possible to take residents of congested centres, remove them to country districts, and make farmers of them. The Baron de Hirsch Fund was established under a foundation of the late Baron de Hirsch, the deed of trust being incorporated in March 1890. Its activities at present are directed to the conduct of the Baron de Hirsch Trade School in New York city and the Agricultural Colony at Woodbine, N. J., where the Fund has an Agricultural and Industrial School. The Fund likewise gives moneys to co-operating societies in various cities for the purpose of granting tools and teaching trades to recently arrived immigrants. The Jewish Agricultural and Industrial Aid Society is an off-shoot of the Baron de Hirsch Fund, receiving money from the latter society and from the Jewish Colonization Society, which was created under a de Hirsch endowment. Its purpose is to find agricultural and industrial positions for Jewish immigrants. Under the care of this organization are the various colonies in south Jersey, aside from Woodbine, and the organization has made farm loans to farmers in various parts of the United States, particularly in Connecticut. Probably the most important phase of this organization's work is the attempt to remove residents of the congested centres of large cities to places throughout the United States, where work has previously been found for them. In the first year the organization sent away 1,800 persons. In the second year 3,200 persons. During its present fiscal year, beginning 1 Jan. 1903, it has sent out 5,190 individuals, and its work is constantly increasing. The plan of the society is to find industrial positions anywhere in the United States, and having found them, to obtain individuals able to fill them from New York and other large cities like Philadelphia, Chicago, and Boston. In order to carry on the work as effectively as possible, the society co-operates with the Independent Order B'nai B'rith, which has lodges distributed throughout many of the smaller towns and communities in the United States, and with the benevolent organizations and societies represented in the National Conference of Jewish Charities. It has an office in New York city known as the Industrial Removal office, which is the centre of the activities of the society. From here all applicants who desire to leave the city are sent away, provided with the necessary transportation and with the guarantee that provision will be made for them at their destination until such time as they become full-fledged wage-earners. Should conditions require it, it is not uncommon for the society to send the wage-earner in advance and to make provision for the care of the family remaining here through the United Hebrew Charities. As soon as the society hears from its correspondent that the wage-earner is in a position to care for his family the latter is sent on and a reunion of the family accomplished.

On the literary side of Jewish philanthropy, it is interesting to note that the United Hebrew Charities of New York city is publishing a monthly magazine, 'Jewish Charity,' which is devoted to the consideration of all topics of interest to workers in Jewish philanthropic fields.

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Jewish Chautauqua, founded in 1893 by Rev. Dr. Henry Berkowitz of Philadelphia, and incorporated in 1899, with a body of officers representing the chief cities in the United States. This society has about 3,000 members, divided into various sections. Its courses include preparatory, two years, with readings in Jewish history and literature; Bible, four years; and special courses in post Biblical history and literature, 'Jewish Characters in English Fiction,' 'Beginners and Advanced Hebrew.' Its chief work of late years has been embodied in its summer assembly, at Atlantic City, N. J., which is held annually in July and lasts three weeks. It includes a summer school, popular lectures and conferences, literary and social entertainments, in which many prominent speakers participate. During the session of 1903 the condition of religious schools, dependent and delinquent children, how to relieve congestion in large cities, the status of the Jews of Russia, the attitude of Jewish university students toward Jewish problems, were the topics discussed. The average attendance at the morning sessions was from 150 to 350 persons and at the evening from 300 to 800 persons. During the summer of 1903 an English organization on the plan of the Jewish Chautauqua was formed at Ramsgate.

Jewish Exchequer, a special division of the Court of Exchequer of England (1200–90) which dealt with lawsuits between Jew and Christian, chiefly in reference to debts due the former, and recorded the taxes imposed on the Jews. The fact that it was found necessary to have a centre for Jewish business indicates the prominence in trade and finance of the Jews in England from the reign of Henry II. to the period of their expulsion (1290). The court did not long survive their departure. Many important data from its records have been jointly published by the Selden Society and the Jewish Historical Society of England.

Jewish Fraternities. While societies for mutual benefit exist in large numbers among the Jews in every land, in the United States, the fraternities or orders have acquired special popularity, and promote not alone Jewish solidarity but aid in maintaining many charitable institutions. These organizations as a class give pecuniary benefits in case of illness, and death-endowments, which latter insurance feature is now being made optional. The oldest and most influential is the Order of Benai Berith ("Sons of the Covenant"), formed 60 years ago, and having a membership of 30,000. Its 315 lodges extend over the entire country, and it has 13 lodges in Algeria, Bulgaria, Egypt, Turkey, and Palestine, 42 in Germany, 16 in Rumania, and 10 in Austria. It supports orphan asylums in Cleveland, Ohio, Atlanta, Ga., San Francisco, Cal., a home for the aged at Yonkers, N. Y., a free library in New York, while it co-operates with an orphan home in New Orleans, a technical school in Philadelphia, and a hospital for consumptives in Denver, Colo. The next leading order is the Free Sons of Israel, founded in 1849, with 103 lodges and 11,000 members. The Free Sons of Benjamin (1879) has 192 lodges; 14,088 male and 1,361 female members. The Berith Abraham (1859) has 288 lodges and 42,000 members. The I. O. Berith Abraham, with 302 lodges and 56,949 members, was founded in 1887. The Ahavas Israel Order (1890) counts 124 lodges. In addition there are seven other fraternities which have been recently started. The Order of Kesher Shel Barzel, founded a home for the aged at Cleveland. Special efforts are now being made by the Benai Berith to institute lodges among the Russian and Rumanian immigrants, and the project of establishing a Jewish University of the highest rank has been brought to its attention.

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Jewish Sects. To the fact that Judaism has never been a sluggish stream, but was ever in active movement, we owe the existence of sects among the Jews. The right of liberty of thought was always exercised, and to the conflict of opinion the survival of Judaism is largely due. Apart from the individualism which is a marked element in Jewish character, the influence of surroundings has had a formative effect, and the rise of sects in the nations among which he lived accustomed the Israelite to the spectacle of sects in his own community, due usually to the interpretation of text or ceremony, or to the initiative of some resolute leader. The history of Jewish sects displays the same bitterness and hostility that characterize sectarian feuds in general, although since the dispersion there has been more rattle than fang in the conflict between schools and parties in Jewry. The synagogue has never proclaimed any dogma of infallibility, and the rabbi was never regarded as absolute authority over conscience and soul. Climate, temperament, and environment were often the determining factors in precipitating the conflict which was waged, not by fierce encounters on the bloody field, but by debate in the schools and in polemical treatises that aroused partisan outcry and led to peaceful secession within the fold. Judaism and the law were never at stake — it was only the interpretation of one body of teachers or individual opinion which had to shift its ground.

Samaritans.— A brief summary of Jewish sects may best begin with the oldest of all. The Samaritans, termed in the Talmud (q.v.) «Cuthim,» are traced to the mixed multitude who were made to settle in Samaria on the fall of the kingdom of Israel. The religion of the new colonists was a blending of Mosaism and heathenism, which led to a gradual separation from the Jewish body. They took no part in the revived commonwealth under Ezra and Nehemiah, but formed their own community, with their own temple, which was destroyed about 120 B.C. by John Hyrcanus I. (q.v.). The Samaritans gradually lost whatever prestige they had claimed. They now exist as a small sect, with constantly dwindling numbers, at Nablûs (the Arabic form of Neapolis, the name given to Shechem under Vespasian). Here perhaps 100 survivors follow their traditional rites, and sacrifice as of old on Gerizim. The Samaritans now possess interest only from an archæological point of view, although their ritual and literature have value for students of the Bible and of post-Biblical history.

Pharisees.— This party, often misunderstood and maligned, and which has had the ill-fortune (similar to that of the Jesuits, for example), of supplying the term «pharisaic,» in the sense of hypocritical, was the great popular party in Judea, including the representative leaders and men of learning in the Asmonæan era, who strove to maintain the traditional faith and ceremonies at all hazards and despite political entanglements. It is the opinion of Graetz, the best-known Jewish historian, that, deriving their name from *Perushim,* «the explainers» (of Scripture), they formed the learned body of the nation, and can only be called a party by way of distinction from the Sadducees and the Essenes. The Pharisees were the religious enthusiasts of their day, loyal to every traditional observance, naturally with the defects of their virtues when such rigid adherence became formalism. But it is faulty generalization to stigmatize all Pharisees as hypocrites because some were insincere, as occurs in the history of every creed.

Sadducees.— This sect, probably named from one of their leaders, Sadok, constituted the party of wealth and political power, who made the law subordinate to the exigencies of the national life, and to whom the traditions of their religion were secondary when the independence of the nation was to be upheld. Hence the differences in interpretation of the law, which led to violent feuds and internecine conflict at a critical era when union might have checked the advancing Roman legions.

Essenes.— Sprung from the Assideans of the early Maccabæan days, resembling in some respects the Nazarites, the Essenes were rigid separatists from contamination, large numbers of whom were ascetics, favoring celibacy and forming a kind of religious brotherhood whose relation to early Christian practices, like baptism, is a suggestive topic for study. They were mystics, too, the logical forerunners of the sect of Chasidim, which was to acquire more notoriety than good repute in later centuries. The Essenes exercised no political influence. It was reserved for the Pharisee and the Sadducee to employ intrigue, hatred, and bloodshed against each other until Jerusalem fell.

Karaites.— About the middle of the 8th century this important sect arose among the Jews in Moslem lands. Their name means «readers,» and they were followers of the Old Testament, but not the Talmud or rabbinical interpretations. Just as a sect in Islam rejected the traditional ruling, so almost contemporaneously a sect in Jewry abandoned rabbinical tradition. The leader in the movement was Anan ben David, a native of Babylon, who, chagrined at his failure to become an ecclesiastical dignitary, resolved to organize a revolt against tradition. For a time the movement made headway, but it never gained many adherents, and to-day exists in remnants only in Jerusalem and parts of Turkey, in Egypt, Galicia, and the Crimea. The Karaites, however, contributed largely to the study of the Old Testament, for the conflict between the Talmudists and their opponents led to closer and more accurate inquiry, and Scriptural investigation was followed with scientific thoroughness. The Karaites were keen disputants, and their polemical onslaughts on the Talmudists furnish a piquant phase in the history of Jewish thought. They failed, however, in their protest, and no reformation resulted. It is of interest to note that to-day in Russia the Karaites receive special consideration from the government, and apparently are not subjected to all the harsh exactions under which the rabbinical Jews suffer. Their very limited numbers, however, may account for the toleration.

Sabbatians.— In the 17th century a remarkable sect arose among the Jews, the followers of Sabbathai Zebi (1626–76), who was born in Smyrna, went to Jerusalem in 1664, and there proclaimed himself the Messiah and predicted his approaching rule over the universe, with his headquarters in Jerusalem, restored and made glorious. The news spread rapidly and produced profound excitement in Turkey and elsewhere. It was a century of gloom and anxiety for the Israelite, the era of Jewish massacres in the Ukraine, and with the greater avidity he turned to hopes of a revived nationality; many in sober European lands began to prepare for the journey eastward. Such Zionistic dreams are of frequent recurrence, and numerous have been the false Messiahs in Jewish history. Sabbathai's career, however, was to receive a sudden check: the Sultan of Turkey, Mahomet IV., disliking popular excitement, imprisoned the prophet when he visited Constantinople, and after two months' confinement his pretensions faded away. He made a tame confession of his dishonesty and became a convert to Islam when the Sultan suggested the step. Many of his adherents in Turkey, Poland, Italy, Austria, Holland, and Germany were not discouraged by his conversion, but still believed in his Messiahship. In 1668 on the Passover he declared that he had received revelations from the Holy Ghost and was permitted by the Turks to preach in the synagogues. A sect of Sabbatians was gradually formed, with special doctrines and rites of their own, gradually dissolving into minor bodies of no influence. The Sabbatians in Turkey adopted Islam in 1687, with Sabbathai's successor, his brother-in-law Jacob Querido, at their head. On his death, his son became their Messiah (1695–1740). This Jewish-Turkish sect still exists and numbers about 4,000 adherents. Sabbathai's followers in Poland fell into crass mysticism, with harmful influences on Jewish development. In Italy they soon ran their course, and in Holland and Germany they were unmasked and sought flight.

Frankists.— These were a sect named after their founder, Jacob Leibovicz Frank, born in Podolia about 1726, died at Offenbach 1791, who was one of the apostles of Sabbathai Zebi. His vagaries were as pronounced as those of his master. Ultimately, after heated disputes with the rabbinical Jews, he abolished the law, and his sect became Catholic and was absorbed by the dominant religion in Poland.

The Chasidim.— The people who bear this name, meaning «the pious ones,» constitute a sect dating from about the middle of the 18th century, and which exercised a profound influence on the Jews of eastern Europe. In its inception, as Dr. Schechter states in his ‘Studies in Judaism,’ it was a revolt against the excessive casuistry of the contemporary rabbis and «a protest of an emotional but uneducated people against a one-sided expression of Judaism» without feeling and affection. It was to develop rapidly into mysticism, the reveries and revelries of the Cabala, which produced incalculable evil wherever it spread. Its founder was Israel Miedzibocz (1698–1759), later called Israel Baal Schem, shortened into Bescht, born in a small village in Bukowina, and about whose childhood and youth wondrous legends are narrated. He became a rabbi in Podolia and Wallachia, teaching his doctrines to eager disciples and working miracles. In some respects he was an Essene of the 18th century, and he has been both condemned and admired. A religious revivalist, he drew much of his inspiration from the ‘Sohar,’ aptly called the Bible of the Cabalists, a clever literary forgery of the 13th century; but his idealism became a downward development in the sect's subsequent history. Under his successor, Beer of Mizriez, Chasidism extended to a more learned circle, who in their turn exercised a wider influence which led to many divisions and degeneracy. They were fiercely opposed by the rabbinical Jews. In Wilna their writings were publicly burnt (1772), and they were put under the ban. Solomon Maimon in his autobiography gives an account of this sect. It is still in full swing in eastern Europe, an aberration that will pass away with the spread of modern culture.

Other Sects.— The Falashas of Abyssinia, the Daggatouns of the Sahara, the Black Jews of India and Cochin-China, may be regarded as sects or colonies, along with the few remaining Jews in Kai-Fung-Fu, Province of Honan, China, and are mentioned to show the variety of type in present-day Israel. The divisions into «orthodox,» «conservative» and «reform» Jews are largely arbitrary, and await more exact classification.

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Jewish Women's Council. Founded September 1893, this organization has been of marked value in awakening the interest of American Jewesses in the history and literature of their special creed as well as in developing among them modern methods in educational and charitable. Affiliating with the National Council of Women it has arrayed on a common platform its representatives. The latest survey of its condition and workings was given at its third triennial in Baltimore, Md., 2–11 Dec. 1902. There were present 3 officers, 7 directors and 52 delegates from 26 sections, with 2 delegates from Junior sections. Addresses were made by Miss Jane Addams, of Hull House, Chicago, on ‘The New Social Spirit’; other topics discussed were: ‘Aspects of Judaism in Cities and Small Towns,’ ‘Federated Charities,’ ‘The Juvenile Court.’ The Council consists of 64 active sections, with about 8,000 members, and 16 junior sections, with about 500 members. There are 82 study circles, 2,000 members, studying Jewish history and literature, and 12 circles studying methods in philanthropy. It has 18 religious schools among the poor, with 19 paid and 141 volunteer teachers, reaching 2,500 pupils. Thirty-three sections carry on activities in philanthropy, with settlements, sewing and industrial schools, five kindergartens, one manual training school, two gymnasiums, two free baths, two day nurseries, four personal service groups, two kitchen gardens, and other forms of useful activity, often open to all creeds. Cooperation is encouraged with the State Federation of Women, International Congress of Women, the National Jewish Hospital for Consumptives at Denver, Colo., the National Needlework Guild and the Consumers' League.

Jews, The Lost Ten Tribes of. After the downfall of the kingdom of Israel, the ultimate fate of the people who were led into captivity by Assyria has been the subject of much discussion, wholly conjectural, and many theories have been advanced as to their continued existence. The question of the literal fulfilment of Old Testament prophesies as to the return of Israel seems to be connected with the existence of the Ten Tribes; for if so large a body has totally disappeared, doubt would necessarily be cast in the eyes of many upon the credibility of Scripture. Hence various attempts have been made to identify the Ten Tribes. Without referring to the traditions in the Apocrypha and Talmud—in fact the famous Rabbi Akiba asserted that the Ten Tribes would never return—the chronicler Eldad of the seventh century claimed that they existed in his day in parts of Southern Arabia or possibly Abyssinia. Farissol, a Jewish geographer (b. 1451), sees in the Beni Israel (q.v.) of India their descendants, while alleged traces have been discovered in Persia, Cochin China, and Yemen, among the Nestorians in Mesopotamia and the Jezidis or devil-worshipers of the same religion. The Afghans with their Jewish appearance and traditions are identified by Mohammedan writers and by G. Moore in his ‹Lost Tribes› (London 1861) with the Ten Tribes and the latter goes so far as to derive the Hindus from the same origin, through the Scythians. The Anglo-Israelites identify the entire English, if not the whole Teutonic race, with the Ten Tribes. As recently as 1879 McLeod in his ‹Epitome of the Ancient History of Japan› advocated the theory that the Shindai or holy class of Japan were descendants of Ten Tribes; the same origin is claimed by others for the Australians and the Masai of British East Africa. The legend of such descent has been affirmed of the aboriginal inhabitants of Central and South America as well as of the North American Indians, Jewish customs having been traced among them. It is possible that long before the compulsory migration of the Israelites under Assyrian supremacy, many had intermarried with the Jews of the neighboring kingdom, while others had amalgamated with the people of Central Asia, to whom they may have imparted some of their ceremonies and ideas and who by subsequent migration, so frequent in those ages, may have still further spread Jewish customs and opinions. Consult Newbauer, in the London Jewish Quarterly Review I.; A. F. Hyamson, J. Q. R. XV.; Mallory, ‹Israelite and Indian› (New York 1889).

Jews in America. Although the Jewish population of America has been greatly increased by immigration only since 1881, Jews have been closely identified with American history for centuries.

Before taking up the history of the Jews in America, some statistics concerning the American-Jewish population at various periods will be in order, as tending to throw light on more isolated historical incidents relating, for the most part, to the experience of a small fraction only.

Statistics.—The latest and most authoritative statistics as to the present Jewish population of the United States are furnished by the ‹American Jewish Year Book› (September 1903), wherein it is computed that the total number of Jews in this country is 1,127,268, of whom 500,000 are credited to New York State, 28,000 to California, 75,000 to Illinois, 25,000 to Indiana, 26,500 to Maryland, 60,000 to Massachusetts, 50,000 to Missouri, 25,000 to New Jersey, 50,000 to Ohio, and 95,000 to Pennsylvania; all the other States and Territories, including Hawaii, Porto Rico, and the Philippine Islands, and also the District of Columbia, likewise containing some Jewish residents. In making up this total, account is taken of the fact that 761,598 Jewish immigrants arrived at the ports of New York, Philadelphia, and Baltimore from 1881 to 1 July 1903. The same authority computes the Jewish population of America, exclusive of the United States, as follows: Canada and British Columbia, 25,000; British West Indies, approximately, 2,500; Argentina, 22,500; Brazil, 3,000; Cuba, 4,000; Mexico, 1,000; Curaçao, 103; Surinam (Dutch Guiana), 1,121, and Venezuela 411; making 1,186,903 in all for America. These figures are mere estimates, than which nothing more accurate is at present obtainable; but they are no doubt approximately correct, being based upon partial actual counts, analyses of death-rates, and reports of competent judges in the various localities; and having also been reviewed from time to time in the light of criticism and new data. If anything, the figures are probably somewhat too low, the city of New York, in its five boroughs, being credited by competent judges in 1903 with a population of over 600,000 Jews, which would make the estimate for the State above quoted about 150,000 too low. Estimates for other districts are also likely to be low; although that given for Cuba is undoubtedly too high. In rough figures, then, the Jewish population of the United States today is about 1,200,000.

The first systematic attempt to secure statistics of the Jewish population in the United States culminated in the publication of a report by the Union of American Hebrew Congregations in 1880, giving estimates for each State and city in the Union, and aggregating 230,257 persons. In connection with the national census of 1890 statistical information was gathered regarding Jewish congregations in the United States, and the total number of Jewish communicants was estimated at 130,496, belonging to 533 church organizations. Of these, 316 organizations, having 122 church edifices, valued at $2,802,050, and 51,597 communicants, are to be credited to Orthodox Judaism, while Reform Judaism counted 217 organizations, having 179 church edifices, valued at $6,952,225, and 72,899 communicants. A very large majority of the Jewish immigrants arriving in the United States since 1890 belong to the orthodox wing, and even the figures of 1890 undoubtedly disregard numerous small, often unorganized, orthodox congregations, from whom it was relatively more difficult to secure reports. In 1818 the Jewish population of the United States was estimated at 3,000 only; in 1848, at 50,000. In South America there were several thousand Jews prior to 1650, the greater part of whom were in Brazil, as noted below; but hostile laws and the persecutions of the Inquisition, while driving some to the West Indies, and even as far north as New Netherlands, caused several thousand Jewish settlers in Spanish and Portuguese territories to totally give up their Jewish identity.

It might be said that there were successive tides of Jewish emigration to America from European countries, fairly well separated from each other in point of time. During the first 250 years after the discovery of America the settlers were mainly Jewish immigrants of Spanish-Portuguese stock, with only an occasional sprinkling of German, French, English, and Polish Jews. German Jewish emigration becomes considerable only a short time before the American Revolution (though evidence is accumulating that it took upon itself larger dimensions and at an earlier period than is commonly believed); it was stimulated by the reactionary measures following the Napoleonic wars and the revolution of 1848, and began to include emigrants from the Austro-Hungarian empire, and later on an increasing number of Poles. The Russian-Jewish exodus, which began about 1881, was by far the heaviest of these various currents of emigration, and was itself succeeded or joined by a Rumanian-Jewish wave about 1900. For Jewish statistics of other countries see JEWS AND JUDAISM.

Jews in the Spanish and Portuguese Colonies.— Before the discovery Jews were actively identified with the fate of America, as may be said without reference to the curious and once widely accepted theory that the American Indians are descendants of the lost Ten Tribes. Emilio Castelar, the late Spanish statesman and historian, referring to the coincidence that the Jews were expelled from Spain in the year that Columbus started on his first voyage of discovery — a circumstance noted by Columbus himself in his journal, and repeatedly thereafter commented upon by Jewish historians — makes this observation:

> It chanced that one of the last vessels transporting into exile the Jews expelled from Spain by the religious intolerance of which the recently created and odious Tribunal of the Faith was the embodiment, passed by the little fleet bound in search of another world, whose creation should be new-born, a haven be afforded to the quickening principle of human liberty, and a temple reared to the God of enfranchised and redeemed consciences.

But Jewish aid to Columbus was not limited to Jews accompanying him on this first voyage (including Luis de Torres, a new convert to Christianity, who went as interpreter because of his knowledge of Arabic, and settled before 1500 in America), nor to the circumstance that Columbus carried with him, as aids on his voyage, a sea-quadrant called "Jacob's Staff," invented by a Spanish Jew, and astronomical tables and charts invented by another Jew. The more significant and important fact is that Jewish financiers at the Spanish court were his leading patrons, and advanced the money for his voyage, as evidenced by original account-books still found in the Spanish archives; so that it was a mere recognition of this circumstance that induced him to address the first two letters (now justly famous, and the earliest copies of printed editions of which command thousands of dollars from book-fanciers) narrating his discovery to those two secret Jewish friends, Louis de Santangel, chancellor of Aragon, and Gabriel Sanchez, royal treasurer. In the light of such facts the late Herbert B. Adams wrote that "not jewels, but Jews, were the real financial basis of the first expedition of Columbus." The revenues needed to fit out the second expedition were secured from the proceeds of the property, of which the expelled Spanish Jews were despoiled by the Inquisition at the time of their expulsion from Spain.

In spite of prohibitions upon Jewish settlement in Spanish and Portuguese America, many Jews rapidly emigrated to the New World from among those exiled from Spain and Portugal; occasionally, in spite of the inconsistency involved, in view of those prohibitions, Jews and Jewesses were forcibly transported to America by the state through the agency of the Inquisition. By 1548 Jews are referred to not merely as having settled in Brazil, but as introducing sugar-culture there, which they transplanted from Madeira. The smoking of tobacco had been introduced to Europeans even before 1500 by Liuis de Torres, a companion of Columbus. Occasionally, enormous sums of money had to be raised and given to the crown in order to effect suspensions or revocations of prohibitions upon Jewish settlement in the Spanish and Portuguese colonies. But the Inquisition and its terrors were introduced even into the New World; hence Jews found it advisable to try to conceal their faith under the cloak of Christianity; and it is principally in the records of the Inquisition that we find proofs of the Jewish practices of many of these settlers — called Marranos or secret Jews — whose trials commonly resulted in imprisonment, frequently in death at the stake, and were at all events followed by confiscation of their property.

In Brazil, Jewish settlers actively aided the Dutch in effecting their conquest of that country, about 1620, after which the Jews *en masse* threw off their Christian disguise and publicly professed their own religion. The Dutch West India Company (q.v.), which obtained the proprietorship of Brazil, had many influential Jewish stockholders, and under their auspices large numbers of Jews from Portugal, Holland, and Germany immigrated. Jewish residents are referred to about 1640 as owning the principal sugar-plantations of Brazil, and as heavily interested in the diamond industry then developing there; and there is also evidence that a Jewish literature sprang up in Brazil at this time. Some idea of their numbers may be gathered from the fact that at the time of the surrender of Recife (Pernambuco) to the Portuguese, after its recapture from the Dutch, soon after the middle of the 17th century, that city alone contained about 5,000 Jews, even after many had departed from the city. In smaller numbers they were also established in other cities of Brazil, in Mexico, Peru, the West Indies, and at other points. The Dutch capitulation of Brazil in 1654 led to their flight in large numbers from that country, their migrations leading them northward, particularly to the West Indies, and one party of refugees even becoming the nucleus of a Jewish settlement at New Amsterdam (New York city) in 1654. Many, however, remained in the South American colonies, and their Jewish identity was gradually lost under the hostile influences at work. The settlements under Dutch auspices at Surinam, Cayenne, and Curaçao, are deserving of particular attention.

Of the professing Jewish inhabitants now to be found in these districts, enumerated in the statistics just considered, very few are descendants of the original Spanish settlers, the great bulk of them being comparatively recent arrivals from Germany, Russia, and Rumania. Through the munificence of Baron de Hirsch (q.v.) millions of dollars were employed about 1891 in the purchase of land and equipment for the use of agricultural colonies of Russian Jews established under his auspices in Argentina, where several thousand Jews settled, though they have met with only moderate success.

West Indies.— Reference has already been made to early settlements of Jews in Cuba and other West Indian islands. Their settlement in Jamaica was particularly important on account of their numbers and the once great commercial importance of the island. For the latter reason, their residence in the Barbados, at St. Eustatius, Martinique, and in the Danish West Indian colonies also led to important consequences. Reference will be made hereafter to this circumstance. Except in Cuba, the decline of the above named places commercially has caused a decided diminution in the number of their Jewish inhabitants, and to-day the chief interest in the settlements is historical.

Early Settlements in the United States before the Revolution.— There are indications of some isolated and casual arrivals of individual Jews within the present limits of the United States prior to the arrival of the party from Brazil in colonial New York during the Dutch régime, in 1654; these were in Maryland, Virginia, and New England, to say nothing of a party of Jewish soldiers and sailors who seem to have reached New Netherlands (New York) in 1652. These instances (other than those in the Dutch colony) are purely casual, however, and unimportant, because Jews were not allowed at this time to live as avowed Jews in any of the principal countries that then had colonies in America except Holland. Prohibitions against their settlement were in force (though occasionally ignored) in Spain, Portugal, England, and to some extent in France. Holland alone at this time welcomed the Jewish refugee, to her great commercial advantage; and this «common harbor of all opinions and of all heresies» was, logically enough, destined to establish a precedent for granting religious liberty also in the New World. It is true that in New Netherlands Governor Peter Stuyvesant (q.v.) was decidedly hostile to the Jewish arrivals, as were also some of the early Dutch ecclesiastical authorities; but, thanks to the leveling and humanizing influence of commerce, and to Jewish holdings of stock in the Dutch West India Company, the directors of that company, 26 April 1655, instructed their governor that the «Jews shall have permission to sail to and trade in New Netherlands, and to live and remain there, provided the poor among them shall not become a burden to the company, or to the community, but be supported by their own nation»; and Stuyvesant was strongly reproved soon after for seeking to thwart these clearly expressed wishes of the company. The emancipation of Jews was, however, only gradual; certain restrictions were continued through the whole colonial period, though they decreased from time to time, and in importance. Public worship, as distinguished from private religious services, was forbidden them till near the close of the 17th century, as was also selling at retail, and certain political rights of citizenship were also denied; but these restrictions in the course of time were largely removed in practice, so that the adoption of the first constitution of the State of New York, in the Revolutionary period, which established absolute religious liberty, conferred in effect few, if any, privileges on the Jewish residents of that State, which they had not already virtually enjoyed. In the interior, the number of Jewish residents had grown somewhat by emigration from Germany, Hungary, Poland, and also from England, which, under Cromwell, readmitted the Jews soon after the time of their settlement in New Netherlands; but the increase in numbers through immigration was not great till after 1800, for there were few Jews in England, and still fewer who desired to emigrate from there, while emigration to New York and New England prior to the above date from any of the other designated countries was very small.

To Newport, R. I., Jews emigrated very soon after they first settled in New Amsterdam, and Roger Williams (q.v.) in terms included them in his programme for establishing a colony where religious liberty would be accorded to all sects and creeds. In the course of time they erected a synagogue here also, as well as in New York, and established a community which contributed most materially to the commercial prosperity of Newport, which city far outrivaled New York for some decades before the Revolution, and until, during that struggle, its shipping interests received a blow from which they never wholly recovered. Here also, there were some retrogressions during the colonial period from Roger Williams' enlightened declaration of principles; but on the whole, Jews were most prosperous residents of Newport during the latter portion of the colonial period. Even though the colony never was numerous, it embraced such merchant princes as Aaron Lopez and Jacob Rodrigues Rivera, and its fortunes were commemorated, after all the old-time residents had departed, in Longfellow's famous lines on «The Jewish Cemetery at Newport.» Already in the colonial period Jewish settlers occasionally found their way into Connecticut, also to Boston, and even, it would seem, to Maine, but they were very few in number, and the present Jewish residents of New England date almost entirely from the period of German settlement after 1848, followed by a much more considerable Polish and Russian-Jewish settlement toward the end of the 19th century. About 1820 Major Mordecai M. Noah, at one time United States Consul to Tunis, developed a fantastic plan for founding a Jewish state for the oppressed Jews of other lands under his own «judgeship,» near Niagara Falls, at a place he named, «Ararat, City of Refuge,» and attempted to tax all the Jews throughout the world for this purpose, but the scheme merely aroused amused attention. Other less ambitious early colonization schemes also were formed.

Pennsylvania, under William Penn's generous plan for founding a home for victims of persecution, attracted Jewish settlers, and in the early decades of the 18th century a little stream of immigration began which brought a number of German, English, and Polish Jewish settlers to the colony, whose numbers were increased, after the capture of New York by the British in 1776, by the arrival of Portuguese Jews from that city. The Jewish settlement in Lancaster, Pa., was made about the time of the American Revolution; and there was a small Jewish immigration into Maryland and Virginia, with communities in Schaefersville, Easton, Baltimore, and Richmond. Before the close of the Revolution a Portuguese synagogue had been erected in Philadelphia; soon a German Jewish congregation was established there; and about the same period one was erected in Richmond, Va. The laws of Maryland prohibited Jewish settlement, and as early as 1658, Dr. Jacob Lumbrozo, "the Jew physician," figured there as defendant in a blasphemy trial, which nearly cost him his life. Baltimore is of particular interest because it was the only city in the United States in which systematic and long-continued efforts were necessary, subsequent to the Revolution, in order to secure full civil and political rights for Jews as such: they acquired them finally in 1826. Georgia attracted Jews almost immediately after the founding of the colony, parties of both German and Portuguese Jewish settlers having arrived at Savannah in 1733. Some of these were indigent Jews, who were assisted to emigrate by coreligionists in England. Offshoots from this colony migrated to South Carolina before the first half of the 18th century, and a congregation was formed in Charleston in 1750. By the time of the Revolution, and for some decades thereafter, Charleston contained one of the most important and prosperous Jewish communities in the United States. In both of these colonies Jews seem to have figured as holders of responsible civil office before the close of the Revolutionary War.

The various places which contained Jewish communities prior to the Revolution have now been enumerated; the total Jewish population embraced in them and in other and more isolated settlements was, as seen, somewhat less than 3,000 in the year 1800.

Interior Settlements.— Space does not permit consideration of the various Jewish settlements and their date of establishment outside of the limits of the 13 colonies. The great majority of Jewish residents of the United States still reside along the eastern coast-line. In time, the westward movement carried Jewish settlers along with it, some into interior cities in the original 13 States, others farther west. By 1800 there were several Jewish residents at Pittsburg. Judah Touro (q.v.), the well-known Jewish philanthropist, went to New Orleans about 1801, and Jews were destined, during the latter half of the 19th century, to achieve considerable political distinction there, though probably there were some Jewish settlers in the Louisiana Territory nearly a century earlier, who were persecuted by reason of the prohibitions in the French "Code Noir" upon Jewish settlement. The first indisputable Jewish resident of Kentucky seems to have settled there about 1808. Ohio appears to have received its first Jewish residents about 1817–19, and after 1830 a considerable tide of German-Jewish immigration flowed toward Cincinnati. In Illinois, which has to-day a considerable number of Jewish inhabitants (see above), especially in and about Chicago, the first Jewish settler probably arrived about 1841; and after a couple of years, numbers of German Jews began to come. A little later this same tide reached Detroit, Mich. Texas, while still belonging to Mexico, had quite a contingent of Jewish settlers, who began to arrive about 1821. California attracted a considerable number of Jews at the time of the gold discovery in 1849, and in 1850 they had two congregations in San Francisco. It will be observed that the great majority of Jews in the United States are to be found in the large cities.

The reactionary movement that followed the Napoleonic wars in Germany, early in the 19th century, and particularly the barbarous Jewish marriage laws of some of the German states (which, among numerous disabilities from which Jews suffered, were possibly the most objectionable, as they forbade more than a certain number of Jewish couples to live in any district), greatly stimulated German Jewish emigration to the United States from about 1815. After the revolutions of 1848 the political and economic unrest in Germany and throughout Europe caused a particularly valuable and intelligent class of Jewish immigrants to come to this country, including, in addition to Germans, also Hungarians, Poles, and Bohemians; while after 1881 the Russian-Jewish exodus assumed large dimensions, and the Rumanian-Jewish emigration began to be heavy about 1900. The volume of these tides can be gauged by comparing the estimates of Jewish population at various periods, already quoted, with these various dates. The forced emigration of recent years from Russia and Rumania has naturally had the effect of bringing to these shores persons less adequately equipped, and who had known fewer opportunities for development and self-improvement than the earlier immigrants, generally speaking, had enjoyed.

The Jews in American Commerce, Industries, and the Professions.— Reference has already been made to early Jewish activities in the field of commerce, exhibited in Brazil and the West Indies particularly. It is most important here to note the consequences which followed the dispersion of the Jews throughout so many different lands and districts, resulting in their opening of international and intercolonial trade relations with each other long before those having no such ties of relationship or confidence, and no such common language or commercial abilities, were ready for any such mutual intercourse. The result was that in early colonial days Jews were pioneers and prime promoters of intercolonial and foreign commerce in America, which became not merely profitable, but actually indispensable, for the maintenance of the colonies. The most distant points thus became interlinked by means of their Jewish residents. Every industry and branch of trade engaged their attention. Among persons who were particularly prominent in these fields, besides Lopez, Rivera and Touro, already referred to, were Lewis Gomez and his sons, who were exporters of wheat on a very large scale in colonial New York, early in the 18th century; Hayman Levy, the fur-dealer of New York, who had close relations with the

American Indians, and was at one time the employer of the first John Jacob Astor; David Gradis of Bordeaux, who is described as having "controlled the trade of France with the West Indies," in the 18th century, etc. Aaron Lopez of Newport had a fleet of over 30 vessels shortly before the Revolution, engaged in trade between Newport, the West Indies, and Africa. Newport Jews also created the spermaceti industry. Jews were among the founders of the New York Chamber of Commerce, and one figures on its seal as a member of the committee receiving its charter from the colonial governor. They were also among the founders of the New York Stock Exchange, and ever since that time have been growing in importance in America as bankers, brokers, financiers, and railroad magnates. They have been particularly influential in certain lines of trade, including the cotton, tobacco, sugar, coffee, jewelry, leather, hides, meat-packing, and clothing industries, and department-store activities.

The Jews of America have produced distinguished inventors, lawyers, physicians, rabbis, journalists, scientists, artists, dramatists, and professors, filling chairs at all the leading universities, far in excess of the proportional number of their race in the population of the country. On the other hand, the large immigration of unskilled laborers into the United States has led to the employment of thousands of Jews here in every industrial pursuit, frequently at very low wages and under unfavorable conditions.

Jews in the Army, Navy, and Public Service Generally.— Prior to the American Revolution there were Jews serving in the militia and in the colonial wars. During the Revolutionary War, their numbers on the army rolls far exceeded their ratio to the total population, and a number achieved distinction above the ranks. The New York Jewish congregation concluded, by a decisive majority vote, to disband, rather than to sacrifice patriotism on the altar of religion, and many of its members fled to Philadelphia, just prior to the British occupancy of New York. In the South a corps of volunteer infantry, known as Captain Lushington's company, composed principally of Jews, was organized in Charleston in 1779, and fought in the patriot ranks. A number of Jews had figured as signers to the Non-Importation Agreement of 1765. Among those on the Revolutionary rolls who achieved military distinction are Col. Solomon Bush; Col. David S. Franks, aide-de-camp to Gen. Arnold before the latter's treason, and who was the bearer of the signed definitive treaty of peace, sent abroad by Congress for delivery there; Isaac Franks, who became colonel of Pennsylvania's volunteers soon after the Revolution, after having served long during the war in the ranks; Capt. Jacob de la Motta; Maj. Nones; Lieut. Seixas; and Deputy Commissary-General of Issues Sheftall, of Georgia. During our War of 1812 and the Mexican War many Jews served in the ranks, and occasionally as holders of important military positions; while during the Civil War the number of Jewish soldiers in the field far exceeded their ratio to the whole population of the country, and they held military positions from brigadier-general down. Hon. Simon Wolf, in his work, 'The American Jew as Patriot, Soldier and Citizen,' has, by means of enormous labor and investigation, collected available names and records of Jewish soldiers in the Federal army and navy, in which he reports that during the Civil War, no fewer than 7,884 Jews served, and even these numbers are necessarily incomplete. As the Jews were Union men in the North, so those living in the South generally espoused the cause of the Confederacy; but Mr. Wolf's figures include less than 2,000 Confederate Jewish soldiers. The number included by him as serving in the Union and Confederate navies is almost negligible. A similar list of Jews who served during the Spanish-American War has been compiled (American Jewish Year Book 1900–01, pp. 527–622), and includes thousands of names, again exceeding the relative ratio based on that of the total number of persons serving to the total population; and President Roosevelt, years later, felt called upon to compliment them publicly upon their bravery, as indicated by instances of Jews who served under him and were commended for gallantry. Neither have Jews failed to enlist in our navy, for since the latter was instituted, a number of Jews have notably risen from the files to naval distinction, as witness the careers of Capt. Etting, Maj. David M. Cohen of the United States Marine Corps, Capt. Levi M. Harby, Capt. Jonas P. Levy, and "Commodore" Uriah P. Levy, who at the time of his death in 1862 was the ranking officer in the United States navy. Nor have Jews failed to render the government signal services in private life. Haym Salomon, the associate of Robert Morris and Madison, was broker to the Office of Finance, and it was through his hands that the loans from France and Holland to the infant republic passed; he made heavy advances to the government, which at the time of his death was indebted to him in hundreds of thousands of dollars, which have never been repaid, in spite of repeated Congressional reports in favor of the claim. During the Revolutionary period, there were still others who aided the government's hazardous financial fortunes. Among the most distinguished Jewish patriots of the Revolution stands Francis Salvador, who was a member of the South Carolina Provincial Congress and of the General Assembly of that State. On the other hand there were, naturally enough, also a few Tories among the Jews, chief among whom were David Franks of Philadelphia, who had been British commissary-general, during the French and Indian war, together with his father, Jacob Franks. David Franks' daughter, Rebecca Franks, was one of the leading belles and wits of Philadelphia and New York during the Revolution. A number of Jews have served in Congress, both in the Senate and the House of Representatives, the most prominent among them having been Judah P. Benjamin (q.v.), who resigned his seat in the Senate to become attorney-general, secretary of war, and then secretary of state of the Confederate States, and subsequently became leader of the English bar. Several Jews have been U. S. ministers to Turkey and consuls-general, one of the former, Oscar S. Straus, now being a member of the Permanent Court of Arbitration at The Hague. Many have been judges in different States, and several have been attorneys-general of their States. A number have been mayors of leading cities, while many others have held local and

State offices. Among those who rendered our government most valuable services in trying financial times are J. & W. Seligman & Co. Several Jews, particularly Moritz Pinner, David Einhorn, and M. Heilprin, were active workers for individual liberty in the anti-slavery movement.

Charities and Other Institutions.— The Jewish charities of the United States are unequaled in magnitude and efficiency, compared with the total Jewish population. Naturally enough, the enormous exodus of well-nigh indigent Jews to these shores has greatly increased the burden falling on their more fortunate coreligionists. The amounts disbursed by the organized Jewish charities in New York city alone exceeds $1,000,000 per annum. Almost every possible field of charitable endeavor is attended to. New York city, for example, contains three Jewish hospitals, a home for incurables, two Jewish orphan asylums, two Hebrew technical schools, an educational alliance, a home for aged and infirm, and an organization of United Hebrew Charities for direct relief; and these are but a few out of scores of charitable societies and institutions. The pure milk depots opened by Nathan Straus, at a heavy loss to himself, in New York — an example which has been followed in other cities — is one of the most effective forms of charitable endeavor, and has saved thousands of infant lives. Various Jews of the United States have contributed hundreds of thousands of dollars at a time in individual instances to charitable purposes, best known among whom Mr. Jacob H. Schiff of New York, who is credited with observance of the old Jewish practice of giving a tithe of his income to charity. The arbitration movement for settling controversies between capital and labor, known as the Civic Federation, has enlisted several Jews in its directorate. The Jewish charities of the United States are being systematized and organized more and more from year to year; aid is being afforded by the newly instituted annual national conferences of Jewish Charities, and under their auspices, removal offices have been opened within the United States to aid indigent immigrants after arrival, to seek locations for them in the interior of the country, and thus somewhat relieve the congestion of the large Eastern cities. Of course all the local New York charities deal particularly with recent arrivals, but the Baron de Hirsch Fund and the Educational Alliance especially address their efforts toward them.

A number of very large mutual benefit and mutual development societies, taking the form of fraternities of Jewish lodges, exist within the United States and do much good, chief among them being the Independent Order B'nai B'rith, the Independent Order Free Sons of Israel, and the Independent Order Sons of Benjamin. The recently organized Zionist movement has appealed greatly to many thousands of Jews in America, particularly to the more orthodox, and they have organized numerous societies to aid in establishing a Jewish state, in Palestine or elsewhere, for the benefit of the persecuted Jews of eastern Europe.

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Jew's Harp, a small musical instrument held between the lips, the sound coming from the vibrations of a tongue of metal, bent at a right angle, which is set in motion by being twitched with the fore-finger. The sound is increased in intensity by the breath, and altered in pitch by the shape of the cavity of the mouth, which acts as a reflector. The name some derive from *jeu,* play, from the fact of its being a toy; but more probably it is a derisive allusion to the harp of David.

Jew's Mallow, a pot-herb. See Corchorus.

Jex-Blake, Sophia, English physician: b. Sussex January 1840. She was the daughter of a physician, studied medicine in Boston, Mass., 1866–8, and returning to England matriculated at the University of Edinburgh, but was not allowed to complete her studies there and take the degree of M.D., which she subsequently obtained at the University of Bern. She founded the London School of Medicine for Women, the Edinburgh School of Medicine for Women in 1886, and retired from active practice in 1899. She has published ‘American Schools and Colleges’ (1866); ‘Medical Women’ (1872); ‘Puerperal Fever’ (1877); ‘The Care of Infants’ (1884).

Jez'ebel, the Phœnician wife of Ahab, king of Israel. She was the evil genius of her husband, favored the idolatrous worship of Baal in Palestine, and persecuted the prophets of Jehovah. Her name left a dark stain upon the annals of Israel and survived to the later dispensation where it occurs in the Book of Revelations (Rev. xi., 20) as a symbol of feminine depravity and impiety.

Jhelam, jē'lạm, or **Jhelum** (ancient Hydaspes), a river which has its rise in Kashmir. An octagonal tank has been built in a garden at Vernag, and into this reservoir flow springs from the Western Himalayas, which form the head waters of the Jhelam. The river flows northwest to the Wulur Lake, about 10 miles from Srinagar; then southwest and northwest, forming a curve from Wulur Lake through Barambula Pass to Mazufurubad, where it turns south, and flows along the boundary between Punjab and Kashmir, a distance of about 100 miles. Leaving the boundary line at Jhelam it flows southwest into the Chenab River. Its whole course is about 500 miles, nearly all of which is navigable. The first part of its course is through remarkable mountain scenery and the last through a rich agricultural region. It is the thoroughfare for a number of large cities and small towns. This is the river upon the banks of which Alexander the Great built a war fleet in 326 B.C. and fought a battle with Porus.

Jig, a light quick tune or air to be found in the sonatas of Corelli, Handel, and other composers till toward the middle of the 18th century. The Irish jig, played to a dance also called a jig, is a lively tune of two or three sections written in 6–8 time. The jig is popular among many nations, is distinguished by various titles, and has a certain amount of difference in the steps according to the habits and customs of the people by whom it is adopted. With some it is a sober, steady country dance; with others it is a wild, savage exercise, without point of meaning. With some it is made a means of displaying the agility of the lower limbs of a combined company of dancers; with others it is a terpsichorean drama for two performers, in which all the emotions excited by love are represented by gestures and cries.

Jig'ger, the corrupt current form of «chigoe,» the South American name of a small arachnid, or red bug (*Sarcopsylla penetrans*), which abounds in tropical America, and is troublesome by working its way under the skin, especially of the feet, where, unless speedily removed, it produces eggs and forms a bad sore.

Jihad, jĭ-häd', **Jehad,** or **Tihad** (Arab. «zeal, endeavor»), the term applied to the religious war, as undertaken by Mohammedans against those who did not believe in the mission of the Prophet, for the purpose of promoting the spread of Islam. The Jihad was a religious duty, imposed upon the faithful both by the Koran and the concurrence of sacred tradition. Its purpose was ostensibly the Mohammedanization of the unbelieving, and it was carried on in a systematic manner. The disposition of the peoples conquered in the Jihad was prescribed by law. Captives and others who fell into the hands of the Mohammedan hosts had the choice of three things given them. Either they were to deny their own faith and accept that of Islam, or to consent to pay a toll tax to their conquerors. If they refused both of these alternatives they were put to death by the sword. Consult: Baillie, ‹Of Jihad in Mohammedan Law› (1871); T. T. Hughes, ‹Dictionary of Islam› (1886).

Jim'son-weed. See DATURA.

Jingal, jĭn'gâl, a large heavy musket used in eastern Asia, especially by the Chinese. It is fired on a rest, or swivel, from a wall, or the bulwark of a boat or ship.

Jingo, a word first used as a political term in the Russo-Turkish War of 1877–8, and was applied to a class of British politicians who continually urged on Disraeli, then the prime minister, the necessity of taking sides with the Turks. The word was adopted from «McDermott's War Song»—that is, the song sung in music halls by McDermott and very popular at the time. The chorus ran thus:

> We don't want to fight, but, by Jingo! if we do,
> We've got the ships, we've got the men, we've got the money, too.

Jinrikisha, jĭn-rĭk'ĭ-sha («man-power vehicle»), a two-wheeled carriage, resembling a gig, and drawn by a human runner between the shafts, universally used in Japan since 1868.

Jiu Jitsu, the Japanese method of personal attack and self-defense, literally means the gentle art of making one's opponent use his strength to his own disadvantage. There are many methods, but only one is recognized as official, that devised by Prof. Jiguro Kano, principal of the High Normal School of Tokyo, and is taught to every officer and enlisted man of the Japanese army, navy and police departments. Included in the one hundred and sixty feats of the Kano system are the «serious tricks,» by which death may be caused at the will of the adept, and the process of kuatsu or revivification, by which the apparently lifeless victim is restored to the full use of his functional powers. Jiu Jitsu is not a system of muscle building by physical training, but rather a means of offsetting the effectiveness of powerful muscles, by performing the most skilful yet simple maneuvers. The United States Government has recognized its importance as science by having it taught at West Point and Annapolis as a special training. Consult Skinner, ‹Jiu Jitsu› (New York 1904).

Joab, jō'ăb, the son of King David's sister Zeruiah, and commander-in-chief of David's army. He is first mentioned as the leader of David's men in an expedition against Abner. When Joab treacherously murdered Abner in revenge for the death of Asahel, David dared not punish the deed, and thus showed the ascendency which Joab had acquired over him. After David had been established king in Jerusalem, Joab conducted all his wars with uniform success. He remained faithful to him during the rebellion of Absalom. When he had slain that ungrateful son, David made a weak attempt to supersede him in favor of Amasa, the general of Absalom. Joab slew Amasa and resumed his post, a proceeding in which the king tacitly acquiesced. He further supported David by assisting in the murder of Uriah the Hittite. Toward the close of David's reign he joined in the rebellion of Adonijah, for which Solomon, by the advice of David, put him to death.

Joachim, yō'ä-HĭM, **Joseph,** Hungarian violinist: b. Kittsee, near Presburg, 28 June 1831; d. Berlin 15 Aug. 1907. He studied under Szervaczinsky at Budapest, with Böhm at Vienna, and Hauptmann at the Vienna Conservatory, and after appearances in concert, continued his studies at Leipsic. In 1849 he became concert-meister of the Weimar grand-ducal orchestra, of which Liszt was then conductor, in 1854–66 was solo-violinist and conductor of concerts to the king of Hanover, and in 1868 became director of the Hochschule für ausübende Tonkunst at Berlin. He became known, both as an interpreter of the best music and as an executant, as the greatest violinist of his time, and particularly as a quartette player gained an almost classic reputation. His compositions include the 'Hungarian Concerto' in D-minor for violin and orchestra, his most important work; ballads, trios, overtures, marches, and works for violin and pianoforte.

Joachim, jō'ạ-kĭm, **Saint, Order of,** an order of knighthood founded 20 June 1755, under the title "Order of Jonathan for the purpose of defending the honor of Divine Providence." It consisted of 14 dukes, princes, counts and nobles, and its grandmaster was Prince Franz Christian of Saxe-Coburg. Its object was by the establishment of commanderies to stir up the rich to philanthropic work among the lower classes. This order was still in existence in 1820, but it has since then been dissolved.

Joan (jo-ăn or jōn) **of Arc** (JEANNE D'ARC — properly DARC), the Maid of Orleans, heroine in French history: b. Domrémy, Basse Lorraine, now department of the Vosges, 6 Jan. 1412; d. Rouen 30 May 1431. While she was still a girl she began to be deeply affected by the woes of her country, much of which was conquered by the English and their Burgundian allies, leaving only a small portion to the French king, Charles VII. From about 13 she declared she heard heavenly voices, which at last became very definite in their commands to go to the aid of Charles and liberate France. At first she was regarded as insane, but eventually she found her way to the king and his councillors, and having persuaded them of her sincerity, received permission to hasten with Dunois to the deliverance of Orleans. In a male dress, fully armed, she bore the sword and the sacred banner, as the signal of victory, at the head of the army. The first enterprise was successful. With 10,000 men she marched from Blois, and on 29 April 1429 reached Orleans with supplies. By bold sallies, to which she animated the besieged, the English were forced from their intrenchments, and Suffolk abandoned the siege (8 May 1429). Other successes followed; Charles entered Rheims in triumph; and at the anointing and coronation of the king, 17 July, Joan stood at his side. She then asked to be allowed to return home, but at the urgent request of King Charles, remained with the army. She was later less successful and failed to capture Paris. On 24 May 1430 she entered Compiègne, then besieged by the Burgundians, and on the same day, in a sally from the town, was taken prisoner. Subsequently she was delivered to the English, who, with the University of Paris and the bishop of Beauvais, demanded her execution as a sorceress. She was taken to Rouen, and after a long mock-trial, accompanied with many shameful circumstances, condemned to death. On submitting to the church, however, and declaring her revelations to be the work of Satan, her punishment was commuted to perpetual imprisonment. But pretexts were soon found to treat her as a relapsed criminal, and as such she was burned at Rouen, and her ashes were thrown into the Seine. She died with undaunted fortitude. Her recantation is now doubted by some historians. Voltaire, in a notorious burlesque, 'La Pucelle,' Southey, Schiller, and others have made her the subject of their verse. Schiller's drama, 'Die Jungfrau von Orleans,' still remains the worthiest monument of her fame. A revision of the trial was later had, and she was declared innocent (1456). From 1875 the question of her canonization was discussed at Rome, and in 1902 she had been pronounced "venerable." Consult: Quicherat, 'Condemnation et Rehabilitation de Jeanne Darc' (1841–9); Marin, 'Jeanne Darc, Tacticien et Stratégiste' (1891); Oliphant, 'Jeanne d'Arc' (1896); Murray, 'Jeanne d'Arc' (1902).

Joan of Arc, Personal Recollections of, a historical novel by "Mark Twain" (S. L. Clemens), published in 1896. It professes to be a translation by Jean François Alden from the ancient French of the original unpublished MS. in the national archives of France, written by the Sieur Louis de Conte, her page and secretary. The historical facts are closely followed.

Job, jōb, **Book of,** title of a book in the Old Testament, so called from the man whose history it relates. It cannot be ascertained with certainty when the book was produced. Job himself belongs to the patriarchal age, but the book was written at a period when great calamities had fallen upon the people of God, and they had been driven by bitter experience to consider the nature and object of His providential workings. It is probably later than Jeremiah (626 B.C.) or Habakkuk (604 B.C.), both of whom had paid some attention to this problem.

The prologue (ch. i. ii.) is written in prose. Satan is permitted to test Job's trust in God, and the patriarch is suddenly stripped of his possessions and bereaved of his children. Yet Job ascribes no wrong to God. He himself is smitten with deadly leprosy. Job's three friends came to see him and he bursts into a despairing cry for death.

The debate between Job and his three friends (ch. iv.–xxxi.) is written in poetry. These friends attribute Job's affliction to his sin and hypocrisy. They are answered by Job's self-vindication; he adjures God to reveal the cause of his chastisement. In the speech of Elihu, a youth, who has listened to the debate, the goodness of God is asserted. He afflicts men to deter them from sin.

Then the Lord speaks out of the whirlwind (ch. xxxviii.–xlii. 6) and shows his power as Creator and Preserver of all things in the material world. Job answers, "I have heard of Thee with the hearing of the ear, but now mine eyes see Thee." The epilogue is in prose. Job is restored to health and prosperity.

The meaning of the book seems to be, that suffering or calamity is not a proof of guilt in the sufferers; the ways of God are so high, His power so vast in creation, in the government of nations and in the realm of mind, that man is incapable of gauging His methods of overruling human life.

Job's Tears, a stout grass (*Coix lachryma-jobi*), allied to maize, and which is sometimes seen six or eight feet in height. It is a native of southern Asia, is naturalized in Spain, and in other countries is sometimes grown in hothouses. The hard, round, shining seed-capsules, from whose fanciful resemblance to tears the plant derives its name, are used in making rosaries and ornamental articles, as medicine by the Chinese, and as a staple food among some of the hill-tribes of northern India. See also, GRASSES IN THE UNITED STATES.

Jocelyn, jŏs'ĕ-lĭn, **Ada Maria Jenyns,** English novelist: b. Aldershot, Hampshire, 7 Sept. 1860. She was married to Colonel R. J. O. Jocelyn in 1892. Among her numerous fictions may be mentioned ‹A Distracting Guest› (1889); ‹Only a Horse Dealer› (1892); ‹Pamela's Honeymoon› (1894); ‹Lady Mary's Experiences› (1897); ‹The Seat of Fortune› (1901).

Jocelyn, Nathaniel, American portrait painter: b. New Haven, Conn., 31 Jan. 1796; d. there 13 Jan. 1881. At 18 he was apprenticed to an engraver, but after three years his early love for painting asserted itself and he established himself as a portrait painter at New Haven in 1820. He was for some time resident in Savannah, where he painted many portraits, but returned to his native town where his work was very popular and where from 1825 to 1835 he painted the portraits of many notables, not a few of which are preserved in Alumni Hall at Yale. His fame extended beyond the limits of his State and he exhibited at the Academy of Design on several occasions. At the age of 80 he painted ‹Ocean Breezes,› a successful work of fancy, and his only one. His portraits have been greatly prized by critics. Jocelyn was a staunch anti-slavery man, and his home in New Haven was long one of the stations on the Underground Railroad. He was for many years the senior partner of a bank-note engraving company in New York which subsequently became the American Bank Note Company, resigning from the latter in 1867.

Joe Miller, the name attached to a well known collection of jests, first published in 1739. The name belonged to a comic actor, Joseph Miller (1684–1738), who had then a great reputation as a wit and humorist. The real compiler, however, was a certain John Mottley, an obscure author (1692–1750). The term is now often applied to any stale or worn out jest.

Joe Pye Weed. See EUPATORIUM.

Joel, jō'ĕl, one of the minor prophets. He most probably flourished about 770 B.C., a few years before Amos and Hosea, whose writings have many correspondences with his. Joel's prophecy is full of Oriental symbolism, and is pervaded by a tone of solemn warning. He announces what he calls «a day of Jehovah,» that is, a day of judgment and vengeance for Judah and Jerusalem. This is typified by a plague of locusts whose devastations are vividly described. The prophet appeals to the people to meet the impending judgment by prayer and fasting. Jehovah himself is represented as giving his answer to the cry for help; relief from famine, abundant rain, rich harvests are to bring relief. Moreover a new spirit is to be poured out upon the people so that in the day of trial they shall call upon God and be saved. The people of Jehovah sold into captivity by Phœnicians and Philistines are to be restored. The nations are to be called to judgment, and in that fearful day Jerusalem shall find refuge in Jehovah. The style of the prophet is gorgeous in its profusion of imagery; metaphor and hyperbole have to be interpreted, and fact discerned amid the maze of fancy. Yet the language is smooth and flowing without the strain and abruptness of Hosea and Jeremiah, and we are compelled to look upon Joel as a man of calm and settled mind, without any of the doubts and struggles that racked the minds of other Hebrew poets and prophets.

Jogues, zhōg, **Isaac,** French missionary among the North American Indians: b. Orleans 10 Jan. 1607; d. Ossernenon, near the present Awnesville, Montgomery County, N. Y., 18 Oct. 1646. He became a Jesuit at Rouen in 1624, and, after some years passed in study and teaching, was ordained in 1636. At his own request he was immediately sent to the Huron mission in Canada. In 1639 he undertook a mission to the Tobacco Nation, in 1641 preached to the Algonquins at Sault Sainte Marie, not long after went to Three Rivers for supplies for the Huron Mission, and upon his return was captured by the Mohawks and severely tortured. He remained among the Indians as a slave, until the summer of 1643, when he made his escape to the Dutch settlement of Rensselaerswyck (Albany), and was conveyed thence to New Amsterdam. He finally reached France, where he was treated with great consideration, and invited to court. Returning to Canada, he traveled to the Mohawk country in May 1646, in the capacity of an ambassador to conclude a treaty between that people and the French. Ascending the Sorel, he passed through Lake Champlain and Lake George, which he named Lac Saint Sacrement. Having ratified the peace he returned to Quebec, and after a few days' rest set out for the Mohawks again, this time as the founder of the Mission of the Martyrs. He was soon tortured as a sorcerer, and finally killed. Consult: Martin, trans. by Shea, ‹Father Isaac Jogues› (1896); Parkman, ‹The Jesuits in North America› (new ed. 1898).

Johannesburg, yō-hän'nĕs-boorg or jō-hăn'nĕs-bėrg, South Africa, the metropolis of the Transvaal Colony, situated 5,500 feet above the sea, about 30 miles southwest of Pretoria, with which and with Delagoa Bay 397 miles, Durban 483 miles, East London 668 miles, Port Elizabeth 715 miles, and Cape Town 1,015 miles, it is in railway communication. It is the recognized business centre of the rich gold fields of the Witwatersrand, and the largest town in the Transvaal. In 1886 it was represented by a few shanties, but the discovery of gold and the development of gold mining made it within a comparatively few years one of the most important towns of South Africa. Municipal government was conferred upon the city by the Transvaal authorities in 1896, when the population within a three-mile radius was 102,078, of whom 50,907 were whites, 67 per cent of these being of British origin, while the Boer citizens numbered 6,205. The great Uitlander agitation which culminated in the Transvaal war 1899–1902, centred in Johannesburg, which was occupied by Lord Roberts in 1900. Since the close of the war, important public improvements to cost $30,000,000 have been begun. These include many miles of well-paved streets, an elaborate electric car system, new waterworks, sanitation system, a factory section, and handsome suburbs. Mementoes of the former Boer rule are an imposing but dismantled fortress which dominates the town, and the monument near Krugersdorp which commemorates the declaration of Boer independence in 1880. Among the notable buildings and institutions are: many fine hotels, clubs, etc.; a handsome railway station lighted by electricity; the market buildings, in the large Market Square, where also are the post and telegraph offices and the buildings of the chamber of mines; the fine public library building; the stock exchange; the court-house; many churches; a synagogue; a good hospital; a jail and a police barracks, and a new theatre and opera house. The town is lighted partly by gas but mainly by electricity.

In 1903 there were 160 incorporated mining companies employing 40,000 natives. Prior to the war 96,000 natives were working in the mines; 124 of the mining claims are located on the main reef and the others in the neighborhood of Klerksdorp. Prior to the war the gold production was valued at $7,000,000 a month, and the machinery employed was estimated at $100,000,000. The industry is fast recovering itself, and it is estimated that within a few years the annual production of gold will be equal to $121,500,000. The international peace exhibition of South Africa, to be held at Johannesburg 1904–5, is expected to fully rehabilitate commercial interests, and it is predicted that within six years Johannesburg will have a population of 200,000.

John, the name of 23 popes, as follows:

John I., Saint: b. Tuscany; d. 526. He succeeded Hormisdas in 523, and was a friend of Boethius, who dedicated to him several of his works. Theodoric sent him to Constantinople, to induce the Emperor Justin to adopt milder measures toward the Arians. Though received with uncommon pomp, his mission was fruitless, and on his return Theodoric threw him and his companions into prison, where he died. He is commemorated by the Roman Catholic Church 27 May.

John II. (Mercurius, mėr-kū'rĭ-ŭs): d. Rome 27 May 535. He was a Roman and was surnamed Mercurius by reason of his eloquence. He became pope in 532.

John III.: d. Rome 12 July, 572. He was a Roman and became pope in July 560. During his time the Lombards frequently ravaged Italy.

John IV.: b. Salona in Dalmatia; d. Rome 11 Oct. 642. He was elevated to the papal chair in December 640 and was noted for zeal and orthodoxy. He formally condemned the Monothelitic statement of faith which Sergius had drawn up at the desire of the Emperor Heraclius.

John V.: b. Antioch, Syria; d. Rome 2 Aug. 686. He was the earliest of several pontiffs of Oriental origin and had been sent to the sixth General Council by Pope Agatho as legate. He became pope, 24 July 685.

John VI., he was a Greek by birth; d. Rome 9 Jan. 705. He became pope in 701, and when appealed to with reference to the long dispute between Saint Wilfred of York and the archiepiscopal see of Canterbury, decided in favor of the latter.

John VII., a Greek: d. Rome 17 Oct. 707. He became pope 1 March 705.

John VIII., a Roman: d. Rome 15 Dec. 882. He became pope in 872. The Saracens during his pontificate pushed their ravages to the gates of Rome, and he was compelled in 877 to pay them tribute. He crowned three emperors, Charles the Bald, 875; Louis the Stammerer, 878; and Charles the Fat, 881. He attempted, but unsuccessfully, to unite the Greek and Latin churches.

John IX.: b. Tibur; d. May 900. He belonged to the Benedictine order and became pope, as the choice of the Frankish party, in June 898.

John X.: b. Romagna; d. July 929. He was a man of great ability and of virtuous character notwithstanding the aspersions Liutprand casts upon him. He was archbishop of Ravenna in 905 and became pope in 914. He placed himself at the head of an army and drove the Saracens from Italy, but his determination to rule independently of any faction aroused the anger of his opponents and he was imprisoned, and at length murdered, by Theodora's daughter, Marozia, whose ambitions he had thwarted.

John XI.: b. 906; d. 936. He was the son of Marozia (q.v.) and Guy, duke of Spoleto. He was elected pope while under age in 931, and governed through the influence of his mother. His brother Alberic II. revolted and imprisoned the pope and his mother in the castle of San Angelo, where John died.

John XII. (Octavian): d. Rome 14 May 964. He was the son of Alberic and grandson of Marozia. He became pope in 956, after the death of Agapetus II., though only 18, and was the first pope who changed his name on accession to the papal dignity. He applied to the emperor Otho I. for assistance against Berengarius II., crowned the emperor 962, and swore allegiance to him, but soon after revolted against Otho, who caused him to be deposed by a council, in 963, and Leo VIII. to be elected. On Otho's death, in 964, John returned and excommunicated his rival.

John XIII., a Roman: d. Rome 6 Sept. 972. He was bishop of Narni, was made pope in 965 by the influence of the emperor Otho I., and was expelled by the Roman nobles. Otho II. restored him to Rome, and was crowned by him. The Poles and Hungarians were converted during his pontificate.

John XIV. (Peter): b. Pavia; d. Rome 20 Aug. 984. He was bishop of Pavia and had been chancellor to Otho II. who made him pope in November 983, in place of the anti-pope Boniface VII. The latter had seized the papacy after the death of Otho I. Boniface now returned from Constantinople and imprisoned John in the castle of San Angelo, where he died soon after.

John XV.: d. Rome April 996. He did not reach the blood-stained throne of his predecessor. He died within the month of his election, even before his consecration.

John XVI. (Philag'athus), a Greek of Calabria: d. 996. He became pope in 986. He solemnly canonized St. Udalbric, bishop of

Augsburg. This is the first historical mention we find of a solemn pontifical canonization.

John XVII. (Sic'co): b. Ripa Jani; d. Rome 7 Dec. 1003. An anti-pope intruded during the pontificate of Gregory V.

John XVIII. (Phasianus, fạ-sē-ā'nŭs). He became pope on Christmas Day 1003, and in May 1009, resigned his office and entered a monastery.

John XIX., a Roman: d. January 1033. He succeeded his brother Benedict VIII. He was disposed to concede the title Ecumenical to the Patriarch of Constantinople, but this met with so much opposition from the Latin Church that he was obliged to withdraw the concession.

John XX., frequently called **John XXI.** (Pedro, pā'drō): b. Lisbon, Portugal; d. Viterbo, Italy, 20 May 1277. He became in 1273 cardinal-bishop of Frascabi and pope in September 1276. He was learned in philosophy and medicine and wrote several treatises still of interest as showing the status of mediæval medicine.

John XXI. See John XX.

John XXII. (Jacques D'Euse, zhäk dės): b. Cahors about 1244; d. Avignon 4 Dec. 1334. He was archbishop of Avignon, and was elected pope at Lyons 1316, after the death of Clement V. He resided at Avignon, but had many adherents in Italy. He is important in German history on account of the active part he took in the disputes of the emperors Louis of Bavaria and Frederick of Austria. Louis intruded the anti-pope Nicholas V. and declared John XXII. deposed. Several theological controversies filled his pontificate with ecclesiastical strife, the most notable being the question of absolute Evangelical poverty raised by the Franciscans and that of hominalism led by William Ockam. He published in 1317 the ‘Constitutions of Clement V.,’ a manual of canon law, since known by the title ‘Clementines’ (q.v.). He was also the author of the decretals called ‘Extravagantes.’ See Canon Law.

John XXIII. (Baldassare Cossa, bäl-dä-sä'rā kōs'sä): b. Naples; d. Florence 22 Dec. 1419. He was elected pope in 1410, by the Council of Pisa, after the death of Alexander V., on condition that, if Gregory XII. and Benedict XIII. would resign, he would also retire to end the schism. He summoned the Council of Constance, demanded by the Emperor Sigismund, in 1415, where he confirmed his resignation 2 March; but 20 March he fled secretly from Constance to Schaffhausen, and revoked his resignation. He was cited before the council, but not appearing, he was suspended, and finally deposed. He was imprisoned four years. Pope Martin V. subsequently pardoned him and made him cardinal bishop of Tuscoli, and dean of the college of cardinals.

John, king of England: b. Oxford 24 Dec. 1166; d. Newark, Nottinghamshire, 19 Oct. 1216. He was the youngest son of Henry II., by Eleanor of Guienne. Being left without any particular provision he received the name of *Sans Terre* or Lackland; but his brother, Richard I., on his accession conferred large possessions on him. He obtained the crown on the death of Richard in 1199, although the French provinces of Anjou, Touraine, and Maine declared for his nephew, Arthur of Brittany, who was lineally the rightful heir, then with the king of France. A war ensued, in which John recovered the revolted provinces and received homage from Arthur. In 1201 disturbances again broke out in France, and Arthur, who had joined the malcontents, was captured and confined in the castle of Rouen, and never heard of more. John was universally suspected of his nephew's death, and in the war which followed, he lost Normandy, Anjou, Maine, and Touraine. In 1205 his quarrel with the pope began regarding the election to the see of Canterbury, to which the pope had nominated Stephen Langton. The result was that Innocent III. laid the whole kingdom under an interdict, and 1211 issued a bull deposing John. Thereupon John made abject submission to the pope, even agreeing to hold his kingdom as a vassal of the pope (1213). His arbitrary proceedings led to a rising of his nobles, and he was compelled to sign the Magna Charta or Great Charter 15 June 1215. But he did not mean to keep the agreement, and obtaining a bull from the pope annulling the charter, raised an army of mercenaries and commenced war. The barons, in despair, offered the crown of England to the dauphin Louis, who accordingly landed at Sandwich 30 May 1216, and was received as lawful sovereign. The issue was still doubtful when John died. Consult: Stubbs, ‘Constitutional History of England,’ Vol. I.; Norgate, ‘England under the Angevin Kings’ (1887), and ‘John Lackland’ (1902).

John II., king of France, surnamed the «Good»: b. about 1319; d. London 8 April 1364. He was the son of Philip VI. and was a monarch distinguished alike for his incapacity and his misfortunes. In 1356 he was defeated and taken prisoner by the Black Prince at the battle of Poitiers, and detained at Bordeaux and at London till released at a heavy expense to his country by the Peace of Brétigny in 1360. On learning that his son, the duke of Anjou, who had been left as a hostage in England, had effected his escape, he returned to London, where he died.

John III. (Sobieski), king of Poland: b. Olesko, Galicia, 2 June 1624; d. 17 June 1696. John Casimir appointed him standard-bearer to the crown, and he distinguished himself in the war against the Russians and Swedes, which terminated with the Peace of Oliva in 1660. In 1669 Michael Koribut was chosen king on the resignation of John Casimir against a party who preferred Sobieski. On the death of Michael he was chosen king, 21 May 1674. A new war with the Turks was concluded after varying success by a peace, 27 Oct. 1676. The anarchy in which Poland was constantly kept by the turbulence of its aristocracy was aggravated during the reign of Sobieski by the intrigues of his wife, and his own talent for administration was not equal to his capacity as a general. Besides internal troubles, European politics at this time occupied the attention of Sobieski, whose alliance was solicited both by Louis XIV. and the emperor. He at length concluded (31 March 1683) an alliance with the latter against the Turks, who had allied themselves with the malcontents in Hungary and threatened a most formidable invasion of the empire. Uniting with the Austrian forces 9 September, at the head of a combined force of 83,000 men, he inflicted a decisive defeat on the Turks, and compelled them to raise the siege of Vienna, 12 Sept. 1683. He terminated the campaign with the capture of Gran (27 October), which had been in the possession of the Turks for nearly a century and a half. In 1686 he overran Moldavia and Wallachia, but failed to make a permanent conquest.

John of Austria, commonly called **Don John of Austria,** Spanish general: b. Ratisbon, Bavaria, 24 Feb. 1547; d. near Namur, Belgium, 1 Oct. 1578. He was an illegitimate son of the emperor Charles V. In 1570 he conducted a campaign against the Moors of Granada with great vigor and relentlessness, and in the following year commanded the allied fleet which won the great naval battle of Lepanto over the Turks (7 Oct. 1571). In 1576 he was appointed governor of the Netherlands, and had won with the Prince of Parma the victory of Gemblours (1578) over William the Silent, when he died, not without suspicion of having been poisoned by his jealous half-brother, Philip II., but for this belief there is no evidence. Consult: Motley, ‘The United Netherlands’; Stirling-Maxwell, ‘Don John of Austria’ (1883).

John of Gaunt, gänt or gânt, DUKE OF LANCASTER, English soldier: b. Ghent, Flanders, (whence his name) 1340; d. London 3 Feb. 1399. He was the fourth son of Edward III. and his queen, Philippa of Hainaut. He was created Duke of Lancaster in 1362; served in the French wars, and became governor of Guienne. He assumed in right of his wife the title of King of Castile, invaded that kingdom to assert his claims, but relinquished them in favor of Prince Henry of Castile, his son-in-law. He was a supporter of the reformer John Wiclif, and a patron of the poet Chaucer. Shakespeare introduces him as a prominent figure in the play of ‘Richard II.’ His eldest son, Bolingbroke, became king of England as Henry IV. Consult: Longman, ‘Life and Times of Edward III.’ (1869); Trevelyan, ‘England in the Age of Wycliffe’ (2d ed. 1899).

John of Leyden, lī′dĕn. See ANABAPTISTS.

John, Epistles of, three letters upon Christian doctrine and conduct attributed to Saint John the Divine, the fourth Evangelist.

The First Epistle of Saint John.— This epistle was attributed to the apostle and evangelist by writers of the generation succeeding that in which he lived. Its thought, diction and style are those of the fourth gospel, though nothing indicates whether it was written before or after that book. Its date cannot be earlier than 90 A.D. nor later than 100 A.D. Critics generally agree that it was written from Ephesus. It was addressed to certain Christians of Ephesus and its vicinity who had fallen into error. These were Docetæ (q.v.) and failed therefore to reach true fellowship in Christ. The apostle presents Jesus as Christ and shows that we come into fellowship with God through Him, and inculcates faith in a real Redeemer, as a means of crushing the practical error whose result was barrenness in religion.

The book is a pastoral letter of instruction and exhortation, not a theological tract or a commentary on the Gospel. The purpose is set forth in chapter v. 13. The epistle falls into three main divisions: (1) God is light (i. 5–ii. 28), (2) God is righteous, or God is love (ii. 29–v. 5), (3) Jesus is the Son of God; fellowship with God comes through him. Sometimes the second division is subdivided under the headings (1) God is love, (2) God is righteous. But the writer evidently intends these two truths to stand as different aspects of the same truth, for as the love of God springs from his righteousness so his righteousness is the outcome of his love.

The Second Epistle of Saint John.— All evidence conclusively points to the apostle Saint John as author of this epistle. It is directed «to the elect lady and her children,» who must have been an individual Christian woman; other views are attended with grave grammatical difficulties, whether we translate it to «the lady Elect» or «the elect Kyria.» Her name is in fact unknown. The apostle had been met by some of her children and had rejoiced in their conduct, but warns them against defection.

The letter opens with a greeting; expresses joy in her sons' behavior (verse 4); exhorts all to abound in love (verses 5, 6); warns against deceivers (verses 7, 8), in closing the writer expresses a hope of visiting her, and delivers her sister's greeting.

The Third Epistle of Saint John.— It is addressed to Gaius, who cannot be identified with any person of that name mentioned in the New Testament (Acts xix. 29; xx. 4; Rom. xvi. 23; 1 Cor. i. 14). He lived near Ephesus, and was hospitable to the preachers sent by the apostle (verses 2–4). The character of Diotrephes (verses 9–11) Demetrius, who probably bore the letter is commended (verse 12). A vivid glimpse of church life at the close of the 1st century is given in these letters which reveal the Church in Asia Minor infected with speculative error, personal ambition, and insubordination to apostolic authority, and points to opposition which local leaders sometimes exhibited toward the delegates of the central authorities.

John, Order of Saint, a military religious order of mediæval origin. The Knights Hospitallers of Saint John, subsequently known as Knights of Rhodes, and lastly as Knights of Malta, were once a great power in Christian Europe. The origin of the order is unknown, but most probably it was early in its history that a rich merchant of Amalfi built not far from the Holy Sepulchre at Jerusalem a certain church known as Santa Maria della Latina, with a monastery for monks, under the rule of Saint Benedict, and a hospital for pilgrims. The first patron of the order seems to have been Saint John the Compassionate, patriarch of Alexandria in the 7th century. Afterward Saint John the Baptist was chosen patron, and the Benedictine brethren assumed the title of Johannites, or Brothers Hospitallers of Saint John. Pope Paschalis II. in 1113 gave them the privilege of electing their own rector. Later, in addition to the vow of poverty, chastity and obedience they were pledged to make war upon the infidels, and assumed a black cloak with a white cross on the left side. The members were divided into three classes, knights of noble birth, the fighting class, priests bound to the service of the church, and brethren of service who took care of the sick and acted as guides to the pilgrims. In 1291 the order was driven from Palestine by the conquests of the Saracens, and after holding Cyprus for a time they occupied Rhodes in 1309, from which they were ultimately driven by Sultan Soliman II. in 1522. After that the knights retired to Candia and other places, but finally to Malta, which Charles V. granted them in 1530. Here they continued to be a bulwark of western Europe against the Turkish navies till modern times. The chief of this order, which had great possessions in almost every part of Europe, was called "Grand-master of the Holy Hospital of St. John of Jerusalem, and Guardian of the Army of Jesus Christ." He lived at Valetta, in the island of Malta.

The military duty of the knights consisted in taking the field at least three times against the Turks or the pirates of Barbary. In war they wore a red jacket or tabard, charged with a white cross. In 1798 Malta was unexpectedly attacked and taken by Bonaparte, and about the same time the extensive properties belonging to the order in various countries were confiscated. This may be considered the end of the order as a vital institution, although shortly after the capture of Malta, Paul I., who had been chosen grand-master, took the order under his protection, and it still exists nominally at least. After the death of Paul the nomination of the head of the order was vested in the pope.

John, yōn, **Eugenie,** "E. MARLITT," German novelist: b. Arnstadt, Thuringia, Germany, 5 Dec. 1825; d. there 22 June 1887. She was the daughter of a portrait painter, and after pursuing the study of music at Vienna, lived at court for some years. She then returned to her native town and took up novel writing, using the pseudonym of "E. Marlitt." Her works, which are very numerous, have been translated into English by Mrs. A. L. Wistar, and have been very popular in this country. Among them are 'Gold Elsie' (1868); 'Old Mamselle's Secret' (1868); 'Countess Gisela' (1870); 'Princess of the Moor' (1872); 'The Second Wife'; 'In the Counselor's House'

John, Saint. See SAINT JOHN.

John, Saint, Gospel of. See GOSPELS.

John B. Stetson University, a coeducational school founded in 1883, at De Land, Fla., under the auspices of the Baptist denomination. The institution was first called De Land University, but in honor of John Batterson Stetson (q.v.), who has given large gifts to the institution, nearly all of the buildings and the campus, the name has been changed. The departments are a preparatory, schools of music, law, art, and technology, a normal and practice school for teachers, a business college, and a college of liberal arts. The courses lead to the degrees of bachelor of arts, laws, and philosophy, and to degrees of bachelor of civil, electrical, and mechanical engineering. The school in 1898 made arrangements with the University of Chicago, whereby the graduates of the college of liberal arts, who have a high standing in their studies, may receive corresponding degrees from the Chicago institution. In 1902 the number of students in attendance was nearly 450, the number of professors and instructors 40. The endowment fund amounted to about $210,500.

John Baptist, the forerunner of the Messiah and the Elijah, or Elias of the New Testament. About five years before the Christian era the Angel Gabriel, according to St. Luke's Gospel, appeared to the aged priest Zacharias and announced the birth of John by Elizabeth, the priest's wife. John was to be filled with the Holy Ghost and to go before the Lord in the spirit and power of Elisha to prepare a people for Him. This was some months before the angel announced in Nazareth, to a maiden called Mary that she should bear a son, whose name was to be Jesus, "the son of God." John Baptist, born 5 B.C. spent his early manhood in the desert. He announced the coming Messiah, and preached repentance, baptizing as a symbolic rite of purification and pardon. He was naturally the first publicly to recognize Jesus Christ and salute him as the "Lamb of God." Herod Antipas (q.v.) then ruled Palestine, his throne being under the protection of Augustus, and he imprisoned the Baptist in the gloomy fortress of Machaerus, east of the Dead Sea, being offended by the plain speaking of the stern ascetic. At a birthday feast given to his Galilean nobles Herod was fascinated by the dancing of Salome, the daughter of Herodias, the wife of his brother Philip, whom he had taken to wife, although her lawful husband still survived. The rebuke administered to Herod for his adultery by John had incensed Herodias and she was bent on vengeance. When Antipas swore to give Salome whatever she might ask to the half of his kingdom, she at her mother's suggestion, asked for the head of John Baptist on a charger or large dish. This was the occasion of the Baptist's martyrdom. The place where this incident happened was the Golden House of Tiberias, whose ruins are still pointed out as Kasr Bint-el-Melek, "Palace of the King's Daughter."

John Brown's Body, a famous marching song of the Civil War, the origin of which has for years been in dispute. It has been generally credited to C. S. Hall of Charleston, Mass., (1861). The words were applied to an old tune common in England in the 18th century.

John Bull, a name first used by the English humorist, Arbuthnot, and since popularized as a typical name suggesting a humorous or burlesque representation of the English character. He is represented as a bluff, jolly, bull-headed farmer.

John C. Green School of Science. See GREEN, J. C.

John Chrysostom. See CHRYSOSTOM, JOHN.

John Doe, a fictitious name given to unknown plaintiffs or defendants in law. In former times the name was applied to the fictitious lessee of the plaintiff in the mixed action of ejectment, that of the fictitious defendant being "Richard Roe."

> But if the lessor made out his title in a satisfactory manner, then judgment and a writ of possession were awarded to John Doe, the nominal plaintiff, who by this trial had proved the right of John Rogers, his supposed lessor.— Blackstone.

John Dory. A fish. See DORY.

John Halifax, Gentleman, a novel by Dinah Maria Muloch Craik (1856), in which the hero, John Halifax, one of «nature's noblemen,» beginning life as a poor boy, works his way up to prosperity and happiness, by means of his high principles, undaunted courage, and nobility of character. The heroine is Ursula March; and the simple domestic story includes few minor characters. The interest lies in the development of character: and the author's assertion is that true nobility is of the soul, and does not inhere in wealth, in learning, or in position; and that integrity and loftiness of purpose form the character of a true gentleman.

John Paw, a large and beautiful grouper (*Epinephelus Drummond-Hayi*), which is dark umber brown densely covered with small white pearly spots. It inhabits the Gulf of Mexico and is valued as a food fish in Florida. It is also known in the Bermudas, where it is called «speckled hind.»

John Strange Winter. See STANNARD, HENRIETTA.

John Ward, Preacher, a novel by Margaret Deland, published in 1888. A Presbyterian minister named Ward, a logical Calvinist, is assured that belief in election and reprobation, eternal punishment, and kindred doctrines, is necessary to salvation; and so preaches them with force and conviction. While his congregation agrees with him, his wife entertains decidedly broad theological views in general. The couple love each other with that singleness of devotion without which the course of the story would be manifestly improbable; for it depends upon the question whether love will be able to hold together what conscientious habits of thought and ethical convictions tend to drive apart.

John's, Eve of Saint, the survival of a popular celebration of remote antiquity, held on the 23d of June, which in Christian times became the vigil or eve of the feast of the nativity of St. John Baptist, 24 June (Midsummer Day). On the eve of the feast it was the custom in former times to kindle fires called St. John's fires. This was indeed a continuance of those Teutonic and Scandinavian pagan festivals, which at the winter solstice were observed with Yule-fires, and at the summer solstice with similar beacon-fires, originally intended to communicate through the country the changes in the seasons announced by the priesthood, so as to direct the activities of agriculture and navigation. The burning of the Yule log at Christmas is a survival of these observances.

Johns Hopkins University, a university at Baltimore, Md., founded by Johns Hopkins, who was born in Maryland and amassed a fortune in Baltimore. He died in 1873 and bequeathed $3,500,000 to found a university. Opened in 1876, it is now one of the foremost universities in the United States. The students are distinguished by the title of graduates and undergraduates, the former being such as have received a degree at this university or elsewhere, and who desire to carry their studies further, special attention being here given to the most advanced subjects, as well as to original research. The buildings of the university include McCoy Hall, in which are the library, assembly room, and rooms appropriated to literary and historical studies; Levering Hall, the building of the Young Men's Christian Association; Hopkins Hall, equipped for the study of geology and mineralogy; a chemical laboratory; a biological laboratory; a physical laboratory; a gymnasium; an administration building; and four buildings for medical instruction.

In 1902 a large tract of land in the suburbs of the city, comprising 176 acres, was presented by several friends as a future site for the University, and it is expected that before many years it will be possible to remove the philosophical department thereto. This noteworthy gift was followed within a few months by a generous contribution, from alumni and citizens of Baltimore, of $1,000,000 toward the permanent endowment of the institution.

Connected with the university is the Johns Hopkins Press, from which issue the ‹American Journal of Mathematics›; ‹The American Chemical Journal›; ‹The American Journal of Philology›; ‹Memoirs from the Biological Laboratory›; ‹Studies in Historical and Political Science›; ‹Journal of Experimental Medicine›; ‹Beiträge zur Assyriologie›; ‹Modern Language Notes›; ‹Johns Hopkins University Circulars›; ‹Terrestrial Magnetism and Atmospheric Electricity›; etc.

The degrees of Bachelor of Arts, Doctor of Philosophy, and Doctor of Medicine are conferred. Advanced and graduate students have elective courses, but each instructor has a discretion of his own with regard to admission to his classes. The university reported at the close of 1903: Professors and instructors, 147; students, 695; number of graduates, 1,535; volumes in the library, 115,000; productive funds, $3,488,843; grounds and buildings valued at $1,157,881; value of books and apparatus, $350,000; income, $250,454.

An important place at Johns Hopkins University has always been held by the «fellows.» Twenty fellowships are awarded each year to the most promising among the many candidates, without preference of college; each fellowship is of the annual value of $500, though it does not exempt from charges for tuition. In the language of the official announcement of the university, the fellowships are bestowed «almost exclusively on young men desirous of becoming teachers of science and literature, or proposing to devote their lives to special branches of learning which lie outside of the ordinary studies of the lawyer, the physician and the clergyman.» The university also extends the privilege of «fellowships by courtesy» (without emolument) to certain individuals.

The university receives as students the following classes: (1) College graduates, who may proceed to the degree of doctor of philosophy, or may work for longer or shorter periods in the various seminaries or laboratories without reference to a degree. (2) Undergraduate students looking forward to the degree of bachelor of arts and following one of seven parallel groups of study. (3) Candidates for the degree of doctor of medicine, for whom a four-year course is provided, and who may be either men or women. (4) Doctors of medicine desiring to pursue certain special courses. (5) Students who have not taken a degree, and are not looking forward to a degree, but who desire to avail themselves for a brief period of the opportunities here offered. The courses of study under 1, 3 and 4 are entirely closed to those who are still candidates for a baccalaureate degree. The Johns Hopkins University, although giving little attention to applied science and technology, has been a very large factor in determining the character and methods of instruction to which these schools owe their success. It is impossible to overestimate its influence upon higher education in this country, and especially is this true in all things relating to science. There is scarcely an American college faculty that has not been enriched by the presence of one or more of its graduates, bringing with them at least something of the spirit of that institution, its respect for exact scholarship and regard for scientific truth.

Johnson, jŏn'sŏn, **Alvin Jewett,** American publisher: b. Wallingford, Vt., 28 Sept. 1827; d. New York 22 April 1884. He worked on a farm, taught school in Virginia, went to New York in 1853, published ‘Johnson's Illustrated Atlas,’ a reconstruction of ‘Colton's Atlas,’ and thereafter several works, including ‘Johnson's Universal Cyclopædia,’ now known in a revised form as ‘The Universal Cyclopædia.’

Johnson, Andrew, the 17th president of the United States: b. Raleigh, N. C., 29 Dec. 1808; d. near Carter's Station, Tenn., 31 July 1875. In 1818 he was apprenticed to a tailor at Raleigh, in 1824–6 worked as a journeyman at Laurens Court House, S. C., and then removed to Greenville, Tenn., where also he worked at his trade. At that time the State of Tennessee was controlled by the landed proprietors, who formed an aristocratic class. Johnson made himself the leader of an opposition or workingman's party, in 1828–30 was an alderman of Greenville, and in 1830–3 its mayor. In 1834 he was a leading advocate of the new State constitution, by means of which the power of the greater landholders was reduced. He was elected to the State legislature in 1835 and again in 1839, as a Democrat of the Jacksonian type. A Democratic elector for the State in 1840, he stumped effectively for the Van Buren ticket, and gained considerable reputation as an orator. In 1840 he was elected to the State senate from the counties of Greene and Hawkins, and during his term urged that the basis of representation should be the white vote without consideration of slave-ownership. In 1843 he was chosen to Congress, to which he was four times re-elected. While in the House he supported the restoration to General Jackson of the fine imposed upon him for the imprisonment of a judge at New Orleans in 1815; the annexation of Texas; the homestead law, distasteful to the Southern slaveholding class; the compromise of 1850; and the presidential veto-power. He was opposed to disregard of economy in the expenditure of public moneys. In 1853 he was elected governor of Tennessee, and in 1855 re-elected after a bitter campaign. He sat in the United States Senate in 1857–62, and there opposed the grant for the construction of a Pacific railway and strongly attacked secession. His vigorous Union attitude rendered him so unpopular in the South that he was several times burned in effigy, and upon his return to Tennessee his life was endangered. Appointed military governor of the State, with rank of brigadier-general of volunteers, 4 March 1862, he displayed great prudence in the employment of his autocratic powers. On 6 June 1864 he was nominated Vice-President of the United States by the national Republican convention assembled at Baltimore, and, elected with Lincoln, entered on his office 4 March 1865. President Lincoln died by assassination 15 April, and Johnson became President. His policy toward the seceded States was, contrary to expectation, one of leniency. On 22 May he opened all Southern ports save four in Texas, to foreign commerce, and 29 May he proclaimed general amnesty to all except 14 specified classes. These and similar measures aroused the opposition of the majority of Republicans in Congress, and thenceforward differences between the executive and legislative branches of the government were constantly arising. Johnson established provisional governments, afterward disallowed by Congress, in seceded States, and Congress retaliated by passing over his veto of 27 March 1866 the civil rights act, admitting freedmen to full citizenship rights. In August 1866 he undertook a tour of the Northern States which became known as «swinging 'round the circle,» and in the course of which he denounced Congress and advocated his own plan of reconstruction. Other bills, including one for the arrangement of the Southern States, with the exception of Tennessee, into military districts; and the tenure-of-office act, were passed over the President's veto. In August 1867 Johnson removed from office Stanton, secretary of war, and appointed Grant to the post; but in September following Congress refused to ratify the removal, Grant resigned, and Stanton resumed his former duties. On 21 Feb. 1868 Johnson dismissed Stanton and appointed Gen. Lorenzo Thomas secretary ad interim. Two unsuccessful attempts to impeach the President had already been made. On 24 February a resolution of impeachment was passed by the House and on 5 March the trial began. Eleven articles charged the President with high crimes and misdemeanors in connection with five various matters, most important of which were the removal of Stanton in disregard of the tenure-of-office act and the appointment of Thomas. The trial was presided over by Chief Justice Chase. On 16 May a test vote resulted in 35 for conviction, 19 against; and the requisite two thirds vote not having been obtained, the President was acquitted. The result is now generally approved. «The single vote by which Andrew Johnson escaped conviction,» says Dunning, «marks the narrow margin by which the Presidential element in our system escaped destruction.» In January 1875 he was chosen to the Senate, and 5 March took his seat in the extra session. He was sincere and able, and if Congress viewed his procedure as usurpation no less did he believe that of Congress to be unconstitutional. Consult: Dunning, ‘Essays on the Civil War and Reconstruction’ (1898); and Dewitt, ‘The Impeachment and Trial of Andrew Johnson’ (1903), a spirited defense. See also United States — Reconstruction.

Johnson, Bradley Tyler, American lawyer: b. Frederick, Md., 29 Sept. 1829; d. 5 Oct. 1903.

He was graduated from Princeton in 1849, studied law at Harvard in 1850–1, entered practice at Frederick in 1851, became in that year State's attorney for Frederick County, was a delegate to the National Democratic Convention at Charleston and Baltimore in 1860, withdrew from the convention, and supported the Breckenridge and Lane ticket. At his own expense he organized a company for the Confederate service, in which he rose to be brigadier-general of cavalry (1864). Subsequent to the War he practised law at Richmond in 1865–79, at Baltimore in 1879–90; and was a member of the State senate of Virginia in 1875–90. His works include: 'Reports of Chase's Decisions' (1875) 'Memoir of J. E. Johnston' (1891); a 'Life of General Washington'; etc.

Johnson, Bushrod Rust, American soldier: b. Belmont County, Ohio, 7 Oct. 1817; d. Brighton, Ill., 11 Sept. 1880. He was graduated at West Point in 1840. He saw service in the Florida and Mexican wars, resigning his commission in 1847 to become professor in the Western Military Institution of Kentucky, at Georgetown. He entered the Confederate army as a brigadier-general at the commencement of the Civil War, and in 1864 became a major-general. He commanded a division under General Lee till the surrender at Appomattox. He subsequently became superintendent of the Military College in the University of Nashville, and chancellor of that institution.

Johnson, Cave, American politician: b. Robertson County, Tenn., 11 Jan. 1793; d. Clarksville, Tenn., 23 Nov. 1866. Admitted to the bar, he practised at Clarksville, in 1820 became a judge of the State circuit court, and was a Democratic representative in Congress in 1829–37 and again in 1839–45. In 1845 he was appointed postmaster-general, from which post he retired at the close of Polk's administration (1849). He was president of the Tennessee State bank in 1850–9, and was elected to the State senate as a Unionist in 1863, although unable to serve because of ill-health.

Johnson, Clifton, American author and illustrator: b. Hadley, Mass., 25 Jan. 1865. He obtained a secondary education, worked on a farm, was clerk in a book-shop and schoolteacher, studied in the New York art-schools, published in 1892 'The New England Country,' an illustrated study of farm-folk, and later was much abroad obtaining notes and pictures for works on foreign life. Other volumes of which he is author and illustrator are: 'The Country School' (1893); 'The Farmer's Boy' (1894); 'What They Say in New England' (1896); 'Among English Hedge Rows' (1899); etc.

Johnson, David, American painter: b. New York May 1827. He was self-taught, excepting for the few lessons he received from Jasper F. Cropsey, and chose American landscape as his specialty. Among his works are: 'Echo Lake' (1869); 'Lake George' (1876); 'Greenwood Lake' (1878).

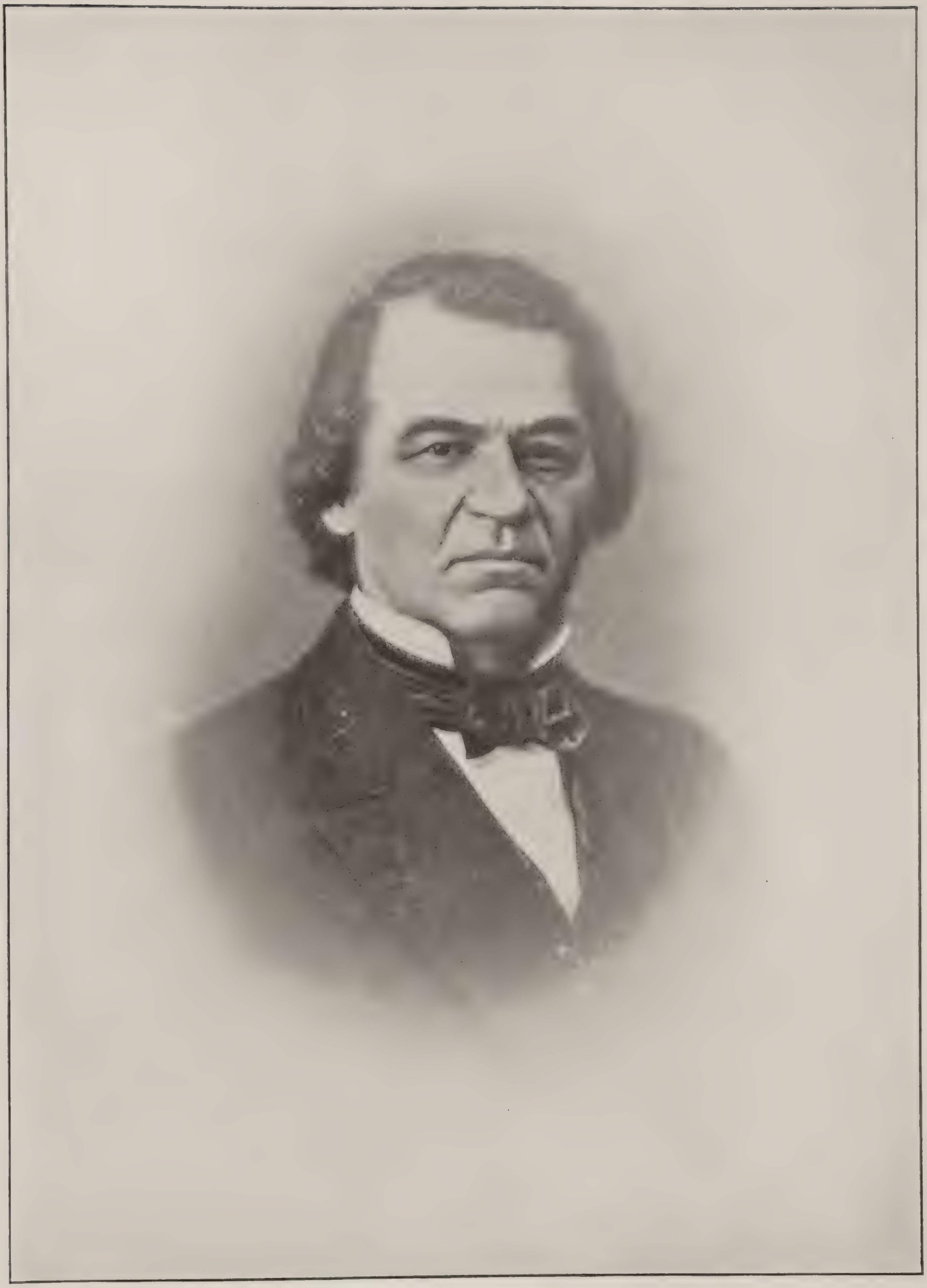
Johnson, E. Pauline, Canadian poetess: b. Chiefwood, Ont., 1862; the daughter of George Johnson, head chief of the Mohawk Indians, and of his English wife. She has written several striking poems on Indian subjects and has given public recitals from her works. 'The White Wampum' appeared in 1894.

Johnson, Eastman, American painter: b. Lowell, Maine, 29 July 1824; d. New York City 5 April 1906. He began his art studies at the Royal Academy, Düsseldorf (1849–51) and developed a distinct talent for genre. He afterward traveled in France, Italy, and Holland, and spent four years at The Hague. Among his pictures painted in Europe are the 'Savoyard,' and the 'Card Players,' in which he showed the influence of the Dutch school. He returned to the United States in 1856 and devoted himself for some years to the study of rustic and negro life and he painted some of the most popular pictures ever produced by a native painter; many of them have been engraved and chromolithographed. The best known are 'Old Kentucky Home'; 'Husking Bee'; and the 'Boyhood of Abraham Lincoln.' He also produced excellent likenesses of Grover Cleveland, Benjamin Harrison and other eminent men.

Johnson, Edward, American colonial historian: b. Herne Hill, Kent, England, about 1599; d. Woburn, Mass., 23 April 1672. He emigrated to America probably with Governor Winthrop in 1630. In 1632 he was engaged in trade at Merrimack, and was on the committee appointed to superintend the foundation of a new town and church at the place now called Woburn. In 1643 he was elected by the town of Woburn a member of the legislature of Massachusetts, in which he continued to sit till 1671, with the exception of 1648. In 1655 he was chosen speaker of the house. He was recorder of Woburn from the time of its incorporation till his death. In 1665 he was one of the members deputed to hold conference with the commissioners sent from England by Charles II. He wrote a 'History of New England from the English Planting in 1628 till 1652, or Wonder-Working Providence of Zion's Saviour' (1654).

Johnson, Edward, American soldier: b. Chesterfield County, Va., 16 April 1816; d. Richmond, Va., 22 Feb. 1873. Graduated from the United States Military Academy in 1838, he fought in the Florida wars, for his services in which he was brevetted captain, and subsequently in the Mexican War, being brevetted major for his conduct at Chapultepec. He received his captain's commission in 1851, but in 1861 resigned to enter the army of the Confederate States as colonel of the 12th Georgia volunteers. He was promoted brigadier-general in 1862 and major-general in 1863. At Gettysburg he commanded a division. He was captured with his entire force at Spottsylvania (12 May 1864) and retaken in the following December. Subsequent to the war he was a farmer in Chesterfield County, Va.

Johnson, Franklin, American Baptist clergyman and scholar: b. Frankfort, Ohio, 2 Nov. 1836. He was graduated from the Colgate Theological Seminary (Hamilton, N. Y.), in 1861, held pastorates in Michigan, New Jersey, and at Cambridge, Mass., in 1862–88, was co-editor of 'The Watchman' in 1876, and in 1890–2 president of Ottawa University. In 1892 he was appointed professor of history and homiletics in the University of Chicago. Among his writings, besides translations and an annotated edition of St. Matthew, are: 'Moses and Israel'; 'Heroes and Judges from the Lawgiver to the



ANDREW JOHNSON.

SEVENTEENTH PRESIDENT OF THE UNITED STATES.

King'; 'The New Psychic Studies in their Relation to Christian Thought.'

Johnson, Helen Kendrick, American author: b. Hamilton, N. Y., 4 Jan. 1843. She was the daughter of A. C. Kendrick (q.v.) and was married to Rossiter Johnson (q.v.) in 1869. Beside editing several compilations of verse she has published 'The Roddy Books,' popular juvenile tales (1874–6); 'Our Familiar Songs' (1881); 'Raleigh Westgate' (1889); 'Woman and the Republic' (1897). She has been an active member of the Association Opposed to the Extension of Suffrage to Women.

Johnson, Herschel Vespasian, American jurist and politician: b. Burke County, Ga., 8 Sept. 1812; d. Jefferson County, Ga., 16 Aug. 1880. He was graduated from the University of Georgia in 1834, studied law, practised there, from 1844 at Milledgeville, and in 1848 was appointed to the Senate of the United States to fill the seat of W. T. Colquitt, resigned. A strong advocate of Clay's compromise scheme, he identified himself with the Southern Unionists. In 1849–53 he was a judge of the Georgia superior court, in 1853–7 governor of the State. He was nominated by the northern Democracy in 1860 as vice-president on the presidential ticket with Douglas. Though opposed to secession, he followed his State, and in 1862 was elected to the Confederate Congress. Elected United States senator in 1866, he was refused his seat because of war disabilities. He was a judge of the Georgia superior court from 1873 until his death.

Johnson, Horace Chauncey, American artist: b. Oxford, Conn., 1 Feb. 1820. He was a pupil of A. H. Emmons at Hartford, and of the antique school of the National Academy, New York; studied also in Rome (1856–8); established his studio in Italy, and later at Waterbury, Conn. His works include: 'Roman Peasants on the Campagna'; 'Grape Gatherers of Gensano'; 'Italian Kitchen'; 'Azrael'; etc.

Johnson, Sir John, American colonial soldier: b. near Johnstown, N. Y., 5 Nov. 1742; d. Montreal 4 Jan. 1830. He was the son of Sir William Johnson (q.v.), was knighted in 1765 and succeeded to his father's estates and baronetcy in the Mohawk Valley in 1774. When the Revolution came on he escaped to Canada in 1776 with 700 loyalists. He organized the corps known as the Queen's Own American Regiment, of which he was commissioned colonel. In July 1777, he took part in the siege of Fort Stanwix (q.v.). He defeated General Herkimer in the latter's brilliant attempt to cause the besiegers to abandon their operations; but was himself subsequently defeated. During the next two years he continued active in northern and central New York, and the Indian massacres of Cherry Valley and Wyoming formed some of the most painful incidents of the war. He was, however, crushingly defeated at Newton 29 Aug. 1779, and retired to Montreal. His influence over the Indians had always been remarkable and the British government appointed him superintendent-general of Indian affairs in British North America, besides making him extensive land grants, to replace the Mohawk family estates which had been confiscated.

Johnson, Lionel Pigot, English poet: b. Broadstairs, Kent, March 1867; d. 9 Oct. 1902. He was educated at Winchester College, and Oxford University. He published 'Poems'; 'Ireland and Other Poems'; and 'The Act of Thomas Hardy'; and contributed to 'The Academy' and other literary journals. His verse though often obscure exhibited much command of metre and was full of promise.

Johnson, Oliver, American reformer and editor: b. Peacham, Vt., 27 Dec. 1809; d. Brooklyn, N. Y., 10 Dec. 1889. He became editor of 'The Christian Soldier' in 1831, and from that year to 1865 was engaged in the anti-slavery cause as a lecturer and editor. He was one of the founders of the New England Anti-Slavery Society in 1832. He was editor of the 'Independent' from 1865 to 1870; became editor of the 'Christian Union' in 1872; and published 'William Lloyd Garrison and his Times' (1880).

Johnson, Owen, American novelist: b. New York 27 Aug. 1878. He is a son of R. U. Johnson (q.v.) and was graduated from Yale in 1900. He has published 'Arrows of the Almighty' (1901).

Johnson, Reverdy, American jurist: b. Annapolis, Md., 21 May 1796; d. there 10 Feb. 1876. He was educated at St. John's College in that city, and at 17 began to study law. In 1815 he was admitted to the bar, in 1817 removed to Baltimore and subsequently devoted his time mainly to the arguing of cases before the United States Supreme Court. He reported seven volumes of the decisions of the Maryland court of appeals, known as 'Harris's and Johnson's Reports,' 1820. In 1821 he was elected a State senator, and at the expiration of his term in 1825 was re-elected for a second term. In 1845 he was chosen a United States senator, resigning in 1849 on being appointed attorney-general of the United States. On the succession of Mr. Fillmore, after the death of President Taylor, he resigned that office, and resumed in Baltimore the practice of the law. In 1861 he was a member of the peace commission, was United States senator 1863–8, and succeeding Charles Francis Adams as minister to England in 1868 negotiated the treaty for the adjustment of the Alabama claims, afterward rejected by the Senate.

Johnson, Richard Mentor, American statesman and soldier: b. Floyd's Station, near Louisville, Ky., 17 Oct. 1780; d. Frankfort, Ky., 19 Nov. 1850. He was educated at Transylvania University, and subsequently studied law and practised with success. He commenced his public career as a member of the Kentucky legislature, to which he was elected at 23, and in 1807 was returned to Congress, and remained a member of the House until 1819. He was a firm supporter of the administration of Madison, and upon the commencement of the War of 1812 raised a body of Kentucky mounted riflemen, whom he commanded, on the Canadian frontier. The decisive charge of his mounted volunteers mainly contributed to the brilliant victory gained over the British and Indians at the battle of the Thames, 5 Oct. 1813, and it was by his hand that the Indian leader Tecumseh is commonly supposed to have fallen. In 1819 he was elected to fill a vacancy in the United States senate, of which he continued a member until 1829, when he was again returned to the House of Representatives. He remained a member until his election by the Senate in March, 1837, as Vice-President of the United States.

He discharged the duties of presiding officer of the senate for four years, and in the Presidential election of 1840 was an unsuccessful candidate of the Democratic party for Vice-President. He thenceforth lived chiefly in retirement. He was, however, serving a term in the State legislature at the time of his death. In Congress his chief efforts were against the discontinuance of the Sunday mails, and in behalf of soldiers of the Revolution or of the War of 1812, who applied for pensions. He was the author of the law abolishing imprisonment for debt in Kentucky.

Johnson, Richard W., American military officer: b. near Smithland, Ky., 7 Feb. 1827; d. St. Paul, Minn., 21 April 1897. He was graduated at West Point in 1849, in 1861 became colonel of the 3d Kentucky cavalry, 11 October was appointed brigadier-general of volunteers, and later commanded a division at Murfreesboro, and with his division fought under Thomas at Chickamauga, (19–21 Sept. 1863). He commanded the 12th division of the Army of the Cumberland in the invasion of Georgia and a division of cavalry at Nashville, was brevetted brigadier-general, United States army, for his services (13 March 1865), and, having been mustered out of the volunteer service, became provost-marshal of the military division of the Tennessee. In 1867 he resigned from the service with rank of major-general, changed by act of Congress (1875) to brigadier. Among his writings were: ‘Life of Gen. G. H. Thomas’ (1881); and ‘A Soldier's Reminiscences’ (1886).

Johnson, Robert Underwood, American aditor and poet: b. Washington D. C., 12 Jan. 1853. He became associate editor of the ‘Century Magazine’ in 1881. His efforts as secretary of the American Copyright League in behalf of the establishment of international copyright greatly aided in obtaining the law of 1891. He edited, with C. C. Buel, the notable ‘Battles and Leaders of the Civil War’ (1887–8), and has published three volumes of verse: ‘The Winter Hour and Other Poems’ (1891); ‘Songs of Liberty and Other Poems’ (1897); and ‘Poems’ (1902).

Johnson, Rossiter, American author and editor: b. Rochester, N. Y., 27 Jan. 1840. He was graduated from the University of Rochester in 1863 and was associate editor of the Rochester *Democrat* 1864–8. From 1869 to 1872 he edited the Concord (N. H.) *Statesman;* and in 1873–7 was associated with George Ripley and Charles A. Dana in editing the American Cyclopædia, while in 1879–80 he aided Sydney Howard Gay in his ‘History of the United States.’ From 1883–1902 he was editor of the ‘Annual Cyclopædia,’ and since 1900 has been editor of the ‘Universal Cyclopædia.’ He edited the series of ‘Little Classics’ (8 vols. 1874–80), and was editor-in-chief of the ‘World's Great Books’ (50 vols. 1898–1901). His original works include ‘Phaeton Rogers,’ a novel of boy life (1881); ‘A History of the French War ending in the Conquest of Canada’ (1882); ‘History of the War of 1812’ (1882); ‘Idler and Poet,’ verse (1883); ‘Short History of the War of Secession’ (1888); ‘The End of a Rainbow,’ a story (1892); ‘The Hero of Manila’ (1899); ‘Short History of the War with Spain’ (1899); ‘Morning Lights and Evening Shadows,’ poems (1902); ‘The Frankfort Boys’ (1905); etc.

Johnson, Samuel, American college president, first president of King's College (now Columbia University): b. Guilford, Conn., 14 Oct. 1696; d. Stratford, Conn., 6 June 1772. He was graduated at Yale College in 1714, and two years later appointed tutor there. In 1870 he resigned to receive ordination as a Congregational minister, and settled at West Haven. He relinquished his charge in 1722 and soon after sailed for England, where he received Episcopal ordination in 1723. Shortly after he returned to America, bearing a commission as missionary of the Society for the Propagation of the Gospel in Foreign Parts, and settled in Stratford, Conn., as rector of an Episcopal church there. In 1743 he received the degree of D.D. from the University of Oxford. In 1746 he published ‘A System of Morality,’ and in 1752 a compend of logic and metaphysics, and another of ethics; the two latter were printed in Philadelphia by Franklin as text-books for the University of Pennsylvania. In 1755 he was offered the presidency of that university, but declined it. In 1753 he was invited to accept the presidency of the newly founded King's College in New York, in all the plans for which he had been consulted. He did so, but in 1763 resigned and returned to Stratford, where he resumed his parochial duties, revised his previous works, and published an ‘English and a Hebrew Grammar’ (1767). Consult Beardsley ‘Life of Samuel Johnson, D.D.’ (1876).

Johnson, Samuel, English man of letters: b. Lichfield, 18 Sept. (N. S.) 1709; d. London 13 Dec. 1784. He was the son of Michael Johnson, a learned bookseller, and his wife, Sarah Ford. The father was a Jacobitical, high church Tory, somewhat given to melancholy, and not methodical in habits. The son took after him in these particulars. Of the mother little is known. They had another son, Nathaniel, born in 1712, who died at 25. The elder Johnson was a man of some local importance, church warden, sheriff, and bailiff, but before his death in 1731 his business had declined until he was nearly bankrupt.

Samuel is said to have been a very precocious child, but his mental forwardness could not compensate for his bodily defects. His face was deeply marked by scrofula and one eye was permanently injured, Queen Anne's touch profiting him nothing, but leaving in his loyal memory a vague picture of a «lady in diamonds and a long black hood.» He was first taught by a dame, later at the Lichfield school. Being lazy and lumbering he early exerted his powers of command upon his fellows by making three of his mates carry him to school. In 1726, he was sent to school at Stourbridge for a year. Then he remained for two years at home, where he did little except to read widely among his father's books. His talents impressed a neighboring gentleman, who offered to send him to Oxford. Johnson entered Pembroke College as a commoner 31 Oct. 1728, remained in continuous residence a little over a year, and returned for brief periods, until the autumn of 1731. He was wretchedly poor during his college residence, and he left without a degree because of his father's business troubles. The stories of his haranguing students in a tattered gown and flinging away in a passion a pair of shoes left at his door are well known. His unusual learning seems to have impressed the college authorities from the beginning, and his Latin translation of Pope's ‹Messiah,› printed in 1731 in a «miscellany,» pleased that famous poet. But Johnson was too indolent and hypochrondriacal to profit greatly from the college routine, and the cutting short of his academic career is thus not specially to be regretted.

After his father's death he found himself obliged to earn his living by teaching school and acting as chaplain to a baronet, who did not treat him kindly. He soon gave up the place and removed to Birmingham, where he lived with an old schoolmate named Hector and became a bookseller's hack. The only fairly important work of these years was his translation, through the French, of the Portuguese Lobo's ‹Voyage to Abyssinia,› which appeared in 1735. Johnson is said to have walked to Oxford to get a copy of the French version, which has never yet found its way back to the shelves of the Pembroke College library.

In 1735 he made a marriage which has afforded posterity a great deal of amusement. Among his acquaintances in Birmingham was a mercer named Henry Porter, who died in 1734, leaving a widow and three children. In a little less than a year Johnson married the widow, who was about twenty years his senior. Johnson declared that it was a love match on both sides, and his own constancy to her throughout her life and his devotion to her memory prove that for himself at least he did not exaggerate. Despite his uncouth appearance, his eccentricities, his visionary and morbid qualities which made some people think him insane, the widow is said to have recognized, that he was at bottom one of the most sensible of men. According to Garrick he showed no sense of the beautiful in choosing a fat, painted, and affected old woman. She showed no prudence in placing her small fortune under the control of a poor young man with apparently slim prospects. Yet as Johnson was nearsighted and could see but little of what shocked others in his wife — if indeed the report of Garrick was not purposely exaggerated — and as he undoubtedly made her a good husband, there seems to be little reason to waste sympathy on either party to the match.

After his marriage Johnson set up a boarding school near Lichfield. His peculiarities naturally prevented him from succeeding. He may have had only three pupils; but one of these, David Garrick, combines with the master himself to make the short-lived school a very famous one. Early in 1737 the two set out together to seek their fortunes in London, Mrs. Johnson being left in Lichfield. They had little money, and Johnson's chief baggage seems to have consisted of part of his tragedy ‹Irene› and a few letters of introduction.

The literary adventurer spent his first months in London seeking employment from the booksellers. He lived prudently and seems to have been aided by Henry Hervey, a son of the Earl of Bristol. In the summer he returned to Lichfield and finished ‹Irene;› in the autumn he removed permanently to London with his wife.

Macaulay in an excellent paragraph of his admirable essay on Johnson describes the desperate state of authors at the time. In 1736 the day of the patron was drawing to a close, but, although Pope had succeeded in making the public his patron, it was too early for other men to hope to rival him. Writers who under Queen Anne might have received money and political positions were now rather happy when they were sure of their meals. Booksellers kept them under by «sweat-shop» methods. Johnson took his place in the toiling ranks, but, because of his pride, suffered more than most of his brother hacks. His never polished manners deteriorated in cellar restaurants; he became a sloven in his dress and, as all the world knows, he never got over his acquired aversion to clean linen. Much of the brutality of manners for which he was afterward reproached is accounted for by the rough treatment to which he was subjected at this period of his career.

The details which Boswell was able to gather with regard to the early life of his hero are not very ample. After ‹Irene› was refused by a manager, Johnson secured employment with Cave in 1738, revising for ‹The Gentleman's Magazine› the parliamentary debates, which could be published only as if they had occurred in the Senate of Lilliput. From July 1741 to March 1744 he wrote the debates, making use of notes taken by others. They were often regarded as genuine, few readers knowing that the writer, to use his own words, had taken care that the Whig dogs should not have the best of it.

Meanwhile in 1738 Johnson had published through Dodsley his first important piece of work, the satire entitled ‹London,› in which he imitated Juvenal's third satire as Boileau and Oldham had done before him. Being a strong, manly spirit and having his own sufferings and indignities to spur him on, he produced a poem which seemed so good to his contemporaries that the first edition was exhausted in a week. Pope inquired who the author was and endeavored to have him elected to the mastership of a school. The project failed and Johnson remained in London gathering the knowledge of writers and life that stood him in such good stead in his later criticism.

This knowledge was first displayed on a considerable scale in his life of Richard Savage (q. v.), which appeared in February, 1744. Johnson, who had been much thrown with Savage, took that curious personage far too seriously; but his small biography is not only valuable as an excellent description of the literary Bohemianism of the day, but is important as one of the first books of its kind to abandon a stiff and formal or a stately tone, and to present a life simply and vividly. When we praise Boswell as a biographer, we ought not to forget that his great subject gave him instructions which the Scotchman bettered.

Little is heard of Johnson for the next two or three years, but his fame must have grown, for in 1747 he was employed by a sort of booksellers' syndicate to prepare an English dictionary, this project superseding that of an edition of Shakespeare, which he contemplated in 1745. The dictionary was to be in two folio volumes, for which he was to receive £1,575. The entire cost of preparing copy fell on him, however; hence the bargain was not a profitable one to the needy scholar except in so far as it enhanced his reputation. He issued a plan of his work dedicated to Lord Chesterfield; did a large amount of reading to secure quotations; employed six amanuenses to copy such citations as he had marked; supplied etymologies and definitions; and finally on 15 April 1755 stood forth to the world as «the great lexicographer.» All things considered, it was a monument of scholarship despite its compiler's ignorance of the history of the language. Of its definitions, excellent as a rule, the humorous ones, such as that oats is a grain used for horses in England but for people in Scotland, are mainly remembered; but it should not be forgotten that Johnson not only far surpassed his predecessors, but also laid the foundations on which subsequent lexicographers have reared more imposing structures. The dictionary is also remembered as the occasion of Johnson's writing one of the most famous of all letters — that to Lord Chesterfield, who had neglected him for years but on the eve of the publication of the great work wrote flattering notices of it in the hope that it might be dedicated to him. Johnson's letter of 7 Feb. 1755 is remarkable not merely for the dignity with which he refused to be encumbered with help after he had safely reached the shore unassisted, but also for the touching pathos with which he referred to his disillusionment and his loneliness. His «Tetty,» for whose sake he had labored so heroically, was not by his side to share his rewards. She had died in March 1752.

The completion of the «Dictionary» in eight years would have been sufficient work and glory for a more than ordinary man of letters; but between 1747 and 1755 Johnson added greatly to his reputation in other ways. In January 1749 the second of his celebrated satires appeared, 'The Vanity of Human Wishes,' based upon the tenth satire of Juvenal. It is better than the 'London,' indeed it is one of the best sententious pieces of moralizing in verse to be found in English literature. It brought Johnson only 15 guineas. He received nearly £300 in benefits and copyright for his tragedy 'Irene,' which Garrick produced in February 1749. Even Garrick's acting and Johnson's appearance in a box clad in a gold-laced hat and a gold-laced scarlet waistcoat could not save so undramatic a performance. It ran nine nights; the person who has read it nine times has probably never existed.

More important than his reappearance as a poet was his assumption of the rôle of periodical essayist. His famous semi-weekly imitation of 'The Spectator,' entitled 'The Rambler,' which ran from 20 March 1750 to 14 March 1752, was not specially successful as a journal, but when the numbers were gathered into volumes, which Johnson most carefully revised, the work became very popular. That it was the equal of 'The Spectator,' as the novelist Richardson, who wrote the only really popular number, and other contemporaries declared, nobody now believes. That it should have held its own against so formidable a rival, when so many other attempts had failed, is a clear proof that it had genuine merits. It certainly established Johnson's fame as a moralist, and, if we omit the papers in which he clumsily attempted to be entertaining as well as some of his specifically critical essays, we can still find in its pages more sound thought and feeling with regard to human life in its lights and shadows than can be discovered in the pages of most of the essayists we actually read. Johnson's contemporaries were also greatly impressed by his elaborate, balanced, Latinistic prose style. The effects of this both upon the prose of his period and upon his own reputation were injurious. Even to this day most people think of Dr. Johnson — he was not yet M.A., that degree coming to him from Oxford, partly in reward for 'The Rambler,' in time to be printed on the title page of the Dictionary — as a pompous affected writer who never used a short English word, if he could find a long Latin one to put in its place. 'The Rambler' and other works produced when he was about 40 give a basis of truth to this opinion; but we should remember that as he grew older and after he had had much practice as a racy talker, his style became simpler and stronger.

The last number of 'The Rambler' was written when Mrs. Johnson was dying. He mourned her loss sincerely through 32 years of widowerhood. He did not see her painted cheeks or hear her affected giggles; he saw only an ideal being whose death left him desolate. No one can read the numerous references to her in his 'Prayers and Meditations' (1785) without feeling a profound respect for the blinded man.

During the years between 1752 and 1759, that is between 'The Rambler' and 'Rasselas,' Johnson not only published the Dictionary, wrote essays for his friend Dr. Hawkesworth's 'The Adventurer' (1753–54), and edited and contributed to the 'Literary Magazine, or Universal Review' (1756–58), but also issued proposals for the edition of Shakespeare he had long contemplated (1756), and began a new series of essays, 'The Idler.' He lazily put off the Shakespeare until a taunt by the satirist, Charles Churchill, in 'The Ghost,' to the effect that he was cheating the subscribers who had paid in their money forced him to go to work on the promised edition, which finally appeared in 1765. Naturally, it was not a monument of scholarship, but it contained some sound criticism, and its preface has long been regarded as one of the most sensible introductions to the reading of Shakespeare that we possess. 'The Idler' ran in weekly numbers from 15 April 1758 to 5 April 1760 on Saturdays in Newberry's 'Universal Chronicle.' It was collected in two volumes in 1761 and in part deserved its title, for it was distinctly less ponderous than 'The Rambler.'

It is at this period that the Johnson who has impressed the world's imagination as a man begins clearly to emerge. He was still the old impecunious Johnson, for the year after the Dictionary appeared he was twice arrested for debt. But he was slowly improving his finances, and he was gathering around him friends who were better than riches. He had long delighted in tavern clubs where he met queer characters, such as the forger, Psalmanazar (q.v.). In 1749 he organized a club of his own at the King's Head, which included Bathurst, Hawkesworth, and his future biographer, Sir John Hawkins. Then he formed friendships — destined to become more famous because they figure so frequently in Boswell — with the accomplished Grecian Bennet Langton, with the gay, fashionable Topham Beauclerk, with Sir Joshua Reynolds and Dr. Burney, and, a trifle later, with Goldsmith and Burke. An humbler circle of friends is still more picturesque — to wit, the unfortunates he received into his gloomy house after his wife died — blind Miss Anna Williams, good talker but peevish, Robert Levett, the self-educated physician of the poor, to whose memory Johnson consecrated one of the most pathetic of English elegies — and later, Mrs. Desmonlins and Miss Carmichael. These dependents, as was natural, quarreled among themselves and harassed their benefactor. Another inmate of his house, of whom we frequently hear, was his black servant, Francis Barber.

In January 1759 Johnson's old mother died at Lichfield. The story that he wrote ‹Rasselas, Prince of Abyssinia,› in a week, to pay her funeral expenses is, as is usual, not altogether accurate. It seems to have been begun before her death, mainly in order to defray the cost of a visit to her. When published, it became the most popular of his writings, and it still has readers and ranks as a classic, although a ponderous one. It has little narrative interest, lacks the atmosphere of the East, presents us with personages rather than with persons, and makes them talk in an impossibly magniloquent style; yet, when all deductions are made, it remains not only a strong attack upon the fashionable shallow optimism of the day which Johnson detested, but also one of the most manly utterances on the evils of life and the courage needed to combat them that has ever been heard from an English moralist. In literary ability Johnson was inferior to Voltaire, whose witty ‹Candide,› by a curious coincidence, attacked the optimists almost contemporaneously with ‹Rasselas;› but in moral force the advantage was entirely on Johnson's side.

Three years after ‹Rasselas› began its long life in numerous editions and translations, Johnson's own life was almost entirely changed. In July 1762, despite his famous uncomplimentary definition of «pension,» he accepted one of £300 per annum. He was independent enough to be able to afford being slightly inconsistent, and he did not promise to support the Tory government in return for its favors. Pensioned or unpensioned he would have taken his reactionary position on American affairs, whether or not he would have written his unfortunate ‹Taxation no Tyranny› (1775), just as naturally as he took part in exposing the Cock Lane Ghost (1762).

His pension gave Johnson full opportunity to indulge his constitutional sluggishness. He could afford to write only now and then, to lie in bed till the afternoon, to spend the evening at a tavern laying down the law to his hearers. Thanks partly to his genius for conversation and friendship, partly to his rooted dislike of solitude, he grew to be more and more of a club-man, as the word was then understood, and it was in this capacity rather than as a productive man of letters that he became the literary dictator of his time. As Macaulay remarks, between 1765 and 1775 Johnson published only what it would scarcely have taken him a week to write, if he had been working at his old rate of speed. Instead of writing he talked, and when he came forward again as an author, the vigorous English of his conversation got the better of the stately Latin of his pen. About the beginning of 1764 he became the chief figure of the famous club which for nearly 20 years held weekly or fortnightly meetings at the Turk's Head, Soho. Besides Johnson, its chief members were Reynolds, Burke, Goldsmith, Gibbon, Garrick, Sir William Jones, and, last but not least, James Boswell, whom Johnson caused to be elected early in 1773. Langton, Beauclerc, Bishop Percy, Fox, and others nearly or quite as distinguished, were also members. It is perhaps not so surprising that these men admitted Boswell at Johnson's solicitation as that Johnson should have tolerated the bibulous, gossiping little man, who hailed from a part of Great Britain for which the sturdy English moralist had always professed a great dislike. The matter can no more be settled by explanation than Johnson's infatuation with Mrs. Porter. Boswell, with all his faults, must have been amusing, and his devotion to his master doubtless touched that essentially kind though rough personage. At any rate, posterity, which owes so much to Boswell, has no occasion to criticize harshly either of the apparently ill-assorted friends. It is better to remember that, although several other members of the club wrote books that have stood the wear and tear of time more successfully than most of Johnson's writings have done — Burke, Goldsmith, and Gibbon, for example, and Boswell himself — the fact that Johnson dominated such men speaks volumes for his essential greatness as a man. Mere dictatorial rudeness and other qualities natural to an *Ursa Major,* as the poet Gray used to denominate him, are not sufficient to explain the phenomenon.

Boswell is not the only person who lives in literature because he was once associated with Johnson. Henry Thrale, the brewer, and his bright, gay wife are mainly remembered, because after 1764 Johnson passed much of his time at the brewery in Southwark and at their villa at Streatham, leaving his new house in Fleet street to be occupied in the main by the queer recipients of his bounty already mentioned. He now became somewhat more polished in his manners and enjoyed the society of such interesting women as Fanny Burney (Mme. D'Arblay, q. v.), Hannah More (q. v.), Mrs. Montagu, and Mrs. Carter. The literary lion in such company presents a picture very different from that of the adventurer wandering the streets with Savage. Boswell gives so many interesting pictures of the later Johnson that it is difficult to select the most striking. The interview with George III. was a great event in the life of so loyal a subject. It took place in February 1767. His softening down in the presence of that amusing radical, John Wilkes, showed him in a still happier light. His excursions, whether with Boswell or the Thrales, to the Hebrides (1773), to Wales (1774), and to France (1775) — to say nothing of visits to old friends at Oxford and elsewhere, had their share with time in mellowing his character and widening his outlook upon men and institutions. ‹A Journey to the Western Isles,› the account he gave of his visit to Scotland with Boswell, upon which the latter wrote a more sprightly book, would have given far more offense to the Scotch if it had been written two decades earlier. It was published in 1775, the year Oxford, following Dublin by 10 years, made him a doctor, and is a dignified and worthy book; but it is probably chiefly remembered because in it Johnson severely handled James Macpherson of Ossian fame, a fact which led to Macpherson's challenging him, and to Johnson's purchasing a stout sick, which he did not have occasion to use on his challenger.

Two years later — Easter Eve 1777 — a committee representing many of the best London booksellers called upon Johnson to ask him to furnish introductions to a proposed series of the works of the English poets since the Restoration. The project pleased him, he named a compensation far too low (200 guineas, subsequently increased by £200 by the booksellers), shook off his lethargy, and by 1781 had finished the most famous of his books, the ‹Lives of the English Poets,› which appeared (collected) in 10 small volumes (1779, 1781). This latest work was, in literary merit, by far his best. He was in sympathy with most of the poets he had to treat, he had amassed through reading and gossip much information about them, he had mellowed with age, the common sense and sound morality, which are the best features of his criticism, had full chance to display themselves, and his style was no longer ponderous and unidiomatic. The life of Milton was marred by prejudice, religious and political, as well as by lack of appreciation of such a poem as ‹Lycidas,› the life of Gray was unsympathetic and inadequate; but the chief lives, such as those of Cowley, Addison, Dryden, Swift, Pope, and Savage, left little to be desired, and many of the minor sketches were intelligent, to the point, and, not infrequently, humorous in a somewhat grim fashion. In short, the book well deserves the place it has secured as an 18th century classic.

After its publication Johnson aged rapidly, and what with the loss of friends (like Thrale in 1781, and Levett in 1782), and with his dread of death and his increasing infirmities of gout and asthma, the last three years of his life were very painful. A break with Mrs. Thrale in consequence of her attachment to the Italian Piozzi, whom she married in 1784, led to his going back to his house in Fleet street, to recriminations and bad temper trying both to him and to her, and finally to his last letter to her, which is pathetic in the extreme. In the summer of 1783 he had a paralytic stroke; recovering, he tried, more or less in vain, to forget his miseries in his clubs, old and new. He visited Oxford with Boswell; plans were formed to get him to Italy, but failed; and in November 1784 he entered upon his last illness. Physicians and friends served him with the utmost kindness, his fears of death subsided, and after bravely undergoing operations and giving many proofs of his unfeigned piety, he died peacefully on 13 Dec. 1784. Seven days later he was buried in Westminster Abbey.

Johnson's massive figure and disfigured face, his swaying backward and forward, his muttering prayers to himself, his touching all the posts he passed, his bad manners at table, his 25 and less cups of tea, his slovenliness, his near-sightedness — all his moral and physical peculiarities are known wherever Boswell is read. We do not so frequently recall his generosity in making advances after a quarrel, his love of children, his chivalry toward women, his loyalty to his friends, his charity to the poor, his hatred of tyranny in every form. We remember his prejudices and superstitions without recalling the fact that he inherited them in large measure. By insisting upon his eccentricities we tend to overlook his splendid triumph over bodily infirmities and social drawbacks that would have quelled a less resolute spirit. Johnson at bottom was of heroic mould — courageous, tender, large-minded, sound-hearted. His peculiarities make him picturesque; study of his character and his career reveals him to have been truly great as a man. As a man of letters he is also great, through his influence upon the literature of his period, through his services to lexicography, through the solid intelligence and morality of his essays and ‹Rasselas,› through the sanity of his best criticism, and through the vitality of his biographical sketches. But as a writer of books that are judged solely on their intrinsic merits of style and substance Johnson can scarcely be termed great. His complete works have been but rarely reprinted in the past 80 years and are little read. As an essayist and letter-writer, and poet, he is not in the highest class; ‹Rasselas› is found to be heavy reading by most people; the ‹Lives of the Poets› are perused in their entirety by but few. Boswell does much more to preserve Johnson's fame than the great Doctor's own writings; but the value of these is easily underestimated, and Boswell's biography would not have been such a great book if Johnson had not been such a great man.

Bibliography.— The best edition of Boswell's ‹Life of Samuel Johnson› is that by G. Birkbeck Hill (6 vols., 1887). Other editions of importance are those by Malone (6th edition of the work, 1811), Croker (11th edition, 1831; revised, 1835), Percy Fitzgerald (1874), Rev. Alexander Napier (1884). Other sources of information are the biography by Sir John Hawkins (1787), Arthur Murphy's ‹Essay on the Life and Genius, etc.› (1792), Mrs. Piozzi's ‹Anecdotes› (1786), and her ‹Autobiography› (1861), the Diary of Mme. D'Arblay (1841, now edited anew by Austin Dobson), and, in general, books dealing with the chief men of the time, Goldsmith, Reynolds, Burke, etc. See also the short lives by Leslie Stephen (‹English Men of Letter,› 1879), and Col. F. Grant (‹Great Writers,› 1887). The chief critical essays are by M. Arnold, Birrell, Carlyle, Macaulay, and Leslie Stephen. Consult also Birkbeck Hill's ‹Dr. Johnson and His Friends› (1878), and ‹Johnsonian Miscellanies› (1897), and Whitwell Elwin's ‹Some Eighteenth Century Men of Letters› (1902). Johnson's works were edited by Hawkins in 1787 in 11 volumes (to which two volumes edited by Stockdale were added later). Several editions by Arthur Murphy followed (1792, 1796, etc.), then two by Chalmers (1810, 1816), and finally in 1825 came the best, the Oxford edition in 11 volumes, edited by F. P. Walesby and containing the Parliamentary Debates. Johnson's ‹Letters,› save those included in Boswell, were edited by Birkbeck Hill in 1892 (2 vols.). Reprints of separate works have been very numerous, of late chiefly for school use. The best editions of ‹Rasselas› are those by Birkbeck Hill (1887), and O. F. Emerson (1895). The ‹Lives of the

Poets' were edited by Peter Cuningham in 1854, by Mrs. Napier in 1890, and by Arthur Waugh in 1896; but these have been superseded by the monumental edition of Birkbeck Hill (3 vols., 1905). Matthew Arnold edited six of the lives in 1878.

William P. Trent,
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Johnson, Samuel, American preacher and author: b. Salem, Mass., 10 Oct. 1822; d. North Andover 19 Feb. 1882. He was graduated from Harvard in 1842, and from the Harvard Divinity School in 1846. He joined no religious denomination, and save for one year with a Unitarian church in Dorchester, was not settled as a minister until 1853, when he established in Lynn, Mass., an independent society, with which he remained till 1870, then withdrew to complete studies of many years, the results of which appeared later in his publications. With Samuel Longfellow (q.v.) he compiled a 'Book of Hymns' (1846) and 'Hymns of the Spirit' (1864). Some of his own inspiring hymns in these books are now found in the collections of various denominations. His critical study 'The Worship of Jesus' (1868), written in accordance with his views of universal religion, is described by O. B. Frothingham as «perhaps the most penetrating and uplifting essay on that subject in any language.» He printed notable essays on religion, reform, etc., in 'The Radical' and other periodicals. His great work 'Oriental Religions,' including 'India' (1872), 'China' (1877), and 'Persia' (1885) — the last containing an introduction and a critical estimate of Johnson by O. B. Frothingham — represents what Johnson himself calls his «purely humanistic point of view.» His philosophy was highly transcendental; but being versed in many languages, he was acquainted with all schools, and with the results of history, literature, science, and criticism in every department. 'Oriental Religions,' in the task of writing which scholars have compared his competence, patience, and thoroughness with the same qualities in Darwin, has taken its place among the most learned and liberal contributions to the study of comparative religion and civilization. Prof. E. J. Eitel, the German Orientalist, wrote of «Johnson's preeminent merits as the historian of universal religion,» and F. Max Müller paid him tribute as the finder of «a religion behind all religions.» His 'Theodore Parker' (1890) is a profoundly spiritual interpretation of that preacher and reformer, whose work on the intellectual side was surpassed by Johnson's, while on the moral side, as in the anti-slavery conflict, they stood as equal comrades. A little volume of Johnson's hymns, with other poems, was published in 1899. Consult Longfellow, 'Lectures, Essays, and Sermons by Samuel Johnson, with a Memoir.' This volume contains some of Johnson's best papers, including brilliant lectures on 'Switzerland' and 'Florence,' the outgrowth of searching observations in Europe, 'Equal Opportunity for Woman,' 'Labor Parties and Labor Reform,' and an illuminative essay on 'Transcendentalism.'

Johnson, Samuel Frost, American painter: b. New York 1835. He received his art education in New York, Düsseldorf, Antwerp, and Paris, in which last place he was a pupil at the Ecole des Beaux Arts. He afterward went to Ecouen and worked under the direction of Edouard Frère, the celebrated painter of children. He produces genre, still life and portraits. Among his genre subjects may be mentioned 'Caught at It'; 'Study of an Interior'; 'Roasted Chestnuts'; 'Good Night'; and 'A Thirsty Party.'

Johnson, Samuel William, American chemist: b. Kingsboro, N. Y., 3 July 1830. He studied at Yale Scientific School and the Universities of Leipsic and Munich. In 1856 he became professor of analytical and agricultural chemistry in the Sheffield Scientific School of Yale and since 1896 professor emeritus. He has published 'Essays on Peat Muck and Commercial Manures' (1859); 'How Crops Feed' (1870); etc.

Johnson, Thomas, American statesman: b. St. Leonard's, Md., 1732; d. 1819. He studied law at Annapolis, was elected to the first Continental Congress (1774), was again sent to Congress in 1776, and in the latter year became brigadier-general of Maryland militia. In 1777 he was chosen governor of Maryland, remaining in office until the close of 1779. In 1780 he entered the provincial congress and the house of delegates, in 1781–7 was in the Continental Congress, in 1791 became an associate justice of the United States Supreme Court, and later declined the office of chief justice.

Johnson, Tom Loftin, American capitalist and politician: b. Georgetown, Ky., 18 July 1854. He was clerk in a street railway office (1869–75), and invented several street railway devices; became owner of a street railway in Indianapolis and later acquired large interests in Cleveland and other cities; he was also interested in the iron manufacture in Cleveland. He has been prominent in politics as a member of the Democratic party, and is known as an advocate of the single tax (q.v.), and public ownership of public utilities. Though opposed to the free coinage of silver, he supported Bryan in 1896 and 1900, and the State convention which he controlled unanimously endorsed the Kansas City platform. He was a member of Congress from 1891–5. In 1901 he was elected mayor of Cleveland, and was reelected in 1903 and 1905. In this position he has been an advocate of three cent street railway fares. In the fall of 1903 he was Democratic candidate for governor of Ohio, but was defeated by a large plurality.

Johnson, Virginia Wales, American novelist: b. Brooklyn, N. Y., 28 Dec. 1849. Since 1875 she has lived in Florence, Italy. Her publications include: 'Kettle Club Series' (1870); 'Travels of an American Owl' (1870); 'Joseph the Jew' (1873); 'A Sack of Gold' (1874); 'The Catskill Fairies' (1875); 'The Calderwood Secret' (1875); 'A Foreign Marriage' (1880); 'The Neptune Vase,' her finest work (1881); 'The Fainalls of Tipton' (1885); 'Tulip Place' (1886); 'Miss Nancy's Pilgrimage' (1887); 'The House of the Musician' (1887); and other fictions, and several descriptive works, such as 'Genoa, the Superb'; 'The Lily of the Arno'; 'Lake Como.'

Johnson, Walter Rogers, American chemist: b. Leominster, Mass., 21 June 1794; d. Washington, D. C., 26 April 1852. He was graduated from Harvard in 1818, taught for many years in Framingham, and Salem, Mass., and in

Philadelphia, and was professor of physics in the University of Pennsylvania, 1839–43. He was the first secretary of the Association for the Advancement of Science, and published 'Use of Anthracite' (1841); 'Report on Coals' (1844); 'Coal Trade of British America' (1850); etc.

Johnson, Sir William, British superintendent-general of Indian affairs in North America: b. Smithtown, County Meath, Ireland, 1715; d. near Johnstown, N. Y., 11 July 1774. His uncle, Sir Peter Warner, offered his nephew the management of his entire property in New York, if the latter would undertake its improvement and settlement. Johnson accepted the offer, and in 1738 established himself upon a tract of land on the south side of the Mohawk, about 25 miles from Schenectady, which Sir Peter had called Warrensburgh. In addition to the settling and improving of the country, he embarked in trade with the Indians, whom he always treated with perfect honesty and justice. He became a master of their language, speaking many of their dialects as perfectly as they did themselves, and was thoroughly acquainted with their beliefs and customs. He was adopted by the Mohawks as one of their own tribe, chosen a sachem, and named Wariaghejaghe, or Warraghiaghy, «he who has charge of affairs.» In 1744 he was appointed colonel of the Six Nations, in 1746 commissioner of New York for Indian affairs. In 1750 he became a member of the provincial council. In 1754 he attended as one of the delegates from New York the congress of Albany, and also the great council held with the Indians on that occasion, at which they strongly urged his reappointment as their superintendent. At the council of Alexandria, 14 April 1755, he was sent for by Braddock and commissioned by him «sole superintendent of the affairs of the Six United Nations, their allies and dependents.» He was also, pursuant to the determination of that council, created a major-general, and commander-in-chief of the provincial forces destined for the expedition against Crown Point. At the head of these forces, in September 1755, he defeated Baron Dieskau at Lake George. This victory saved the colony from the French, and Johnson received the thanks of parliament for his victory, was voted £5,000, and on 27 Nov. 1755, created a baronet of Great Britain. On his arrival at Lac St. Sacrement a few days before this battle, he gave to it the name of Lake George, «not only in honor of his majesty, but to assert his undoubted dominion here.» In March 1756 he received from George II. a commission as «colonel, agent, and sole superintendent of the affairs of the Six Nations, and other northern Indians.» He held this office for the rest of his life. In 1758 was present with Abercrombie at Ticonderoga. General Prideaux led the expedition against Fort Niagara in 1759. Johnson was second in command, and upon the death of Prideaux, before that fort, succeeded to the command in chief. With upward of 1,000 Indian allies he continued the siege with great vigor and cut to pieces the French army. He led the same Indian allies the following year in the Canadian expedition of Amherst, and was present at the capitulation of Montreal and the surrender of Canada to the British arms in 1760. The war was now at an end, and the king granted to Sir William for his services a tract of about 100,000 acres of land, north of the Mohawk. In 1764, the country being at peace, and the Indians perfectly contented, Sir William erected Johnson hall, a large wooden edifice still standing. The village of Johnstown, with stores, an inn, a court-house, and an Episcopal church, was soon laid out. In 1772 it became the shire town of Tryon County. Johnson lived in the style of an old English baron of former days, and exercised a liberal hospitality. In 1768 he concluded the treaty of Fort Stanwix. Consult the 'Life' by Stone (1865).

Johnson, William Henry, American historical novelist: b. Beaufort, S. C., 29 March 1845. He studied for the Episcopal ministry in the Theological Seminary of Virginia, served in the Confederate army during the Civil War, and in 1872 took orders in the Episcopal Church. In 1886 he withdrew from the Episcopal Church to enter the Unitarian, and was pastor for several years of a Unitarian church at Wilmington, Del. He has published 'The King's Henchman' (1898); 'King or Knave: Which Wins?' (1899); 'The World's Discoverers' (1900).

Johnson, William Samuel, American jurist: b. Stratford, Conn., 7 Oct. 1727; d. there 14 Nov. 1819. He was graduated from Yale in 1744, was admitted to the bar, practised in the New York and Connecticut courts, in 1761 and 1765 represented Stratford in the Connecticut general assembly, or lower house, and in the latter year was a Connecticut delegate to the Stamp-act congress at New York. In 1766 he became a member of the governor's council, or upper house of the Connecticut legislature, in 1766–71 was in England as special agent for the colony in defense of its title to land obtained from the Mohegan Indians, in 1771 re-entered the council, and for a time in 1772 was a judge of the superior court of the colony. After Lexington, he was a member of a committee sent to General Gage on the unsuccessful mission of inquiring into possible means of peace. Opposed to the Revolution, he remained in private life during its progress, but in 1784–7 was a member of the Continental Congress, in 1787–9 sat in the Connecticut assembly, in 1787–1800 was president of Columbia College, and from 1789 to 1791, when he resigned, was the first United States senator from Connecticut. His letters to the governors of Connecticut during his residence in Great Britain have been published in the 'Collections' of the Massachusetts Historical Society, 5th series, Vol. IX. (1885).

Johnson City, Tenn., city in Washington County, on the Southern railroad, 106 miles north of Knoxville. Its elevated location and picturesque mountain scenery make it a favorite summer resort for Southern people. Here is located the mountain branch of the National Soldiers' Home. The manufacturing interests include iron furnaces, rolling mills, machine shops, tanneries and brickmaking plants. The city was settled in 1870 and is governed under a charter of 1897, by a mayor and council elected biennially. Pop. (1890) 4,161; (1900) 4,645.

Johnson Grass. See GRASSES IN THE UNITED STATES.

Johnson's Island, Ohio, an island located at the mouth of Sandusky Bay, overlooking Lake Erie, about a mile long and a mile and a half wide. The island was used during the Civil War as a prison for captured Confederates. It was an ideal spot for a prison post. No prisoner was ever known to escape from it. The grounds were enclosed within a fence 12 feet high, with a platform top, upon which sentinels paced to and fro day and night. To the north Lake Erie stretches away for 50 miles; on the east, separated by three miles of water, lies Sandusky, while west and south of the island are broad stretches of Sandusky Bay. The island was used almost exclusively as a prison for officers, the total number confined there from first to last aggregating over 15,000. The first prisoners were taken there in April 1862, and in September 1865 the last of them were sent to Fort Lafayette, and Johnson's Island was abandoned as a prison post. The men confined on Johnson's Island represented the flower of the chivalry of the South. They were largely professional men and planters, among them being many who were prominent in science, literature and art.

Johnston, jŏn-stôn, **Albert Sidney,** American general: b. Mason County, Ky., 3 Feb. 1803; d. Shiloh, Miss., 6 April 1862. General Johnston had but a brief career in the Confederate army, and the first part of that career was one of great disaster and consequently of severe criticism; but he fell «on the field of glory» at Shiloh, and not a few endorse the opinion of President Davis that he was the greatest general whom the war produced. Descended from a long line of illustrious ancestors, he obtained his literary education at Transylvania University, and was graduated at West Point 30 June 1826, being number eight in a brilliant class of which Jefferson Davis was a member. He was brevetted second lieutenant in the 2d infantry, transferred to the 6th infantry in 1827, was regimental adjutant from 1828 to 1832, aid to General Atkinson a year, and acting assistant adjutant-general to Illinois volunteers during the Black Hawk War — in all of which positions he showed the qualities of an accomplished soldier. He resigned his commission in the United States army 31 May 1834, having determined to settle in Texas and cast in his fortunes with the «Lone Star» Republic.

The battle of San Jacinto was fought 21 April 1836, and soon after Johnston arrived in Texas and enlisted as a private soldier in the Texan army. His merit soon brought him promotion, and he was made adjutant-general of the Army of Texas, and not long after brigadier-general and chief commander of the army in the place of General Felix Houston. As a result of jealousy growing out of this promotion there was an unfortunate duel between Houston and Johnston, in which the latter was wounded. He continued in command of the Texan army until 1838, when he was made secretary of war of the Republic of Texas. In 1839 he led an expedition against the hostile Cherokee Indians, and in a battle on the Neches, defeated and routed them with great slaughter. He used all of his abilities and wide influence in bringing about the annexation of Texas to the United States, and promptly enlisted when the Mexican War broke out, being colonel of a regiment of Texas volunteers. He was distinguished in various battles, especially at Monterey, where he had three horses shot from under him, and was highly complimented by General Butler on whose staff he was serving.

On 31 Oct. 1849 he was appointed by President Taylor paymaster in the United States army, with the rank of major, and when the 2d cavalry regiment was formed he was appointed, 3 March 1855, its colonel on the recommendation of his old classmate and lifelong friend, Jefferson Davis, who was at that time the able and efficient secretary of war. In 1857 he was put in command of an expedition to Utah to force the Mormons to submit to the laws of the United States Government, and overcame great difficulties and showed such ability and tact in the delicate mission that he was made brevet brigadier-general. When the War between the States broke out General Johnston was in command of the department of the Pacific, but he very promptly resigned his commission, and with a small party made his way across the plains, passing through New Orleans and reached Richmond on 2 September, where he had a cordial reception and was made a full general, and assigned to the command of the department of Kentucky, whither he went at once, beginning the able and efficient discharge of his duties there.

It could not be published at the time that he had a force barely 20,000 to defend that long line against overwhelming numbers of the enemy, and he was severely criticised in the newspapers for not being more aggressive, and when Forts Henry and Donelson fell, and he was compelled to fall back and abandon to the enemy so large a section of Confederate territory that abuse and severest criticism were heaped upon him, he was denounced as incompetent and his removal from command was demanded. President Davis calmly said: «If Albert Sidney Johnston is not a general, then I have none to put in his place.» He wrote his old friend a noble letter, and Johnston replied in the same spirit, concluding with this sentiment: «The test of merit in my profession, with the people, is success. *It is a hard rule, but I think it right.* If I join this corps to the forces of General Beauregard (I confess a hazardous experiment), then those who are now exclaiming against me will be without an argument.» He alluded to his plan of uniting with Beauregard to strike Grant before Buell and Mitchel could join him, and in pursuance of which plan he marched from Corinth, Miss., on 3 April, intending to attack Grant at Pittsburg Landing, or Shiloh Church, twenty miles off, on 4 April. There was delay on the part of some of the troops so that the attack could not be made until the morning of the 6th, but with his 40,000 men Johnston attacked Grant's 50,000 with such impetuosity, skill, and dash, that the Federals were driven back at every point, were huddled together at Pittsburg Landing, and there seemed to be lacking at 2.30 P. M. only one more vigorous advance to annihilate Grant's army. But just at this moment the great commander who had just remarked to one of his staff: «The victory is ours. We shall soon water our horses in the Tennessee River,» was struck by a minie ball in his leg, and bled to death in 15 minutes. In the confusion which followed, the advance was not made. Beauregard (who had been ill in his ambulance all day and did not appreciate the real situation) ordered the Confederate lines to fall back. Buell and Mitchel came up that night with 55,000 fresh troops, and thus the fruits of Johnston's great victory were lost, and the next day the Confederates were compelled to fall back to Corinth.

No nobler eulogy could be pronounced on Albert Sidney Johnston than that of President Davis in a special message to the Confederate Congress, in which he said: «Without doing injustice to the living, it may safely be said that our loss is irreparable. Among the shining hosts of the great and good who now cluster around the banner of our country, there exists no purer spirit, no more heroic soul than that of the illustrious man whose death I join you in lamenting. In his death he has illustrated the character for which, through life, he was conspicuous — that of singleness of purpose and devotion to duty with his whole energies. Bent on obtaining the victory which he deemed essential to his country's cause, he rode on to the accomplishment of his object, forgetful of self, while his very life blood was fast ebbing away. His last breath cheered his comrades on to victory. The last sound he heard was their shout of victory. His last thought was his country, and long and deeply did his country mourn its loss.»

It is scarcely extravagant to say that had Albert Sidney Johnston lived the victory at Shiloh would have been complete, the whole character of the campaign in the West would have been changed, and with Lee in Virginia and Johnston in the West, the result of the War might have been different. The monument to Albert Sidney Johnston in New Orleans is one of the most beautiful in the country; he is buried in Austin, the capital of his adopted State, and Texas proposes to honor herself by erecting to his memory a fitting monument.

J. Wm. Jones,
Author and Lecturer.

Johnston, Alexander, American historian: b. Brooklyn, L. I., 29 April 1849; d. Princeton, N. J., 21 July 1889. He was graduated from Rutgers College, N. J., in 1870, studied law and was admitted to the bar in 1876. He did not practise, however, and was professor of jurisprudence and political economy at Princeton University from 1883 till his death. He was the author of 'History of American Politics' (1879); 'Connecticut: a Study of a Commonwealth-Democracy' (1887); 'History of the United States for Schools' (1886); and 'The United States: its History and Constitution,' reprinted from the 'Encyclopædia Britannica' (1887).

Johnston, Alexander Keith, Scottish cartographer: b. Kirkhill, Edinburgh, Scotland, 28 Dec. 1804; d. 10 July 1871. His first important work, the 'National Atlas,' was published in 1843. At the suggestion of Humboldt, he visited Germany and gathered material for his 'Physical Atlas of Natural Phenomena' (1847–9), and his 'Royal Atlas of Geography' (1861) was one of the most beautiful and minutely accurate atlases ever published up to that time. His son of the same name (b. 1846; d. 28 June 1879) continued his father's enterprises.

Johnston, Gabriel, American colonial governor of North Carolina: b. Scotland 1699; d. 1752. Very little is known of his personal history. He was educated at the University of St. Andrew's, with a view to the medical profession, which he seems not to have practised. He was for a while professor of Oriental languages at St. Andrew's, and then removed to London, where he was engaged with Pulteney and Bolingbroke in writing for the 'Craftsman.' By the influence of the Earl of Wilmington he was appointed governor of North Carolina, and took the oath of office at Brunswick 2 Nov. 1734. He was the ablest and most successful of all the colonial governors, holding the reins of power up to the time of his death.

Johnston, Harriet Lane, American gentlewoman: b. Mercersburg, Pa., 1833; d. Narragansett Pier, R. I., 3 July 1903. She was the niece of James Buchanan, afterward President of the United States, and on the death of her mother, Buchanan's sister, in 1839, was brought up under the care of her uncle. When the latter was minister to Great Britain, the niece presided over the hospitalities of the legation in London, and during his occupancy of the White House was its mistress, receiving among other distinguished guests the Prince of Wales, now Edward VII. On the occasion of his coronation in 1902 she was among the specially invited guests in recognition of the courtesies extended to him at the White House so long before. In 1866 she was married to Henry Eliott Johnston of Baltimore.

Johnston, Sir **Harry Hamilton,** English traveler: b. London 12 June 1858. He was educated at King's College, London, and the Royal Academy of Arts, traveled in North Africa, 1879–80, and Portuguese West Africa, and the Kongo region, 1882–3. He commanded a scientific expedition to Mount Kilimanjaro in 1884 and has held various consular posts in Africa. He has published 'Essays on the Tunisian Question' (1880–1); 'The River Congo' (1884); 'Kilimanjaro' (1885); 'History of a Slave' (1889); 'Life of a Livingstone' (1891); 'British Central Africa' (1897); 'History of the Colonization of Africa by Alien Races' (1899); 'The Uganda Protectorate' (1902).

Johnston, Henry Phelps, American historical writer: b. 1842. He is professor of history in the College of the City of New York, and has published 'The Battle of Harlem Heights'; 'Loyalist History of the Revolution'; 'The Yorktown Campaign'; etc.

Johnston, James Steptoe, American Episcopal bishop: b. Church Hill, Miss., 9 June 1843. He was educated at the University of Virginia, served as 2d lieutenant in the Confederate cavalry during the Civil War, subsequently studied law and was admitted to the bar. After practising for a short time he took orders in the Episcopal Church in 1869 and after holding rectorships at Port Gibson, Miss., six years; Mount Sterling, Ky., four years; and Mobile, Ala., eight years, became bishop of western Texas in January 1888.

Johnston, John, American Indian agent: b. Ballyshannon, Ireland, March 1775; d. Washington, D. C., 19 April 1861. He came to Cumberland County, Pa., in 1786, obtained a post in the War Department, in 1792 went to the Ohio Valley, later became a United States factor at Fort Wayne, Ind., and at the beginning of the War of 1812 was appointed Indian agent for Ohio, with headquarters at Piqua. President Harrison appointed him agent to the Senecas, with headquarters at Upper Sandusky, and in that capacity negotiated with the Senecas the treaty whereby they agreed to move westward across the Mississippi. He was president of the Historical and Philosophical Society of Ohio, and wrote: 'Present State of the Indian Tribes Inhabiting Ohio,' printed in 'Archæologia Americana' (transactions and collections of the American Antiquarian Society), Vol. I. (6 vols., 1820–74).

Johnston, Joseph Eggleston, American soldier: b. Cherry Grove, Va., 3 Feb. 1807; d. Washington, D. C., 21 March 1891. He was graduated at West Point in 1829; and served with distinction in the Black Hawk and Seminole wars. In the Mexican War he distinguished himself also and was brevetted major and colonel United States army for bravery at Cerro Gordo. He was promoted quartermaster-general of the army with the rank of brigadier-general in June 1860, but resigned his commission when Virginia seceded. He was then made major-general of Virginia volunteers and later full general in the Confederate service, taking an active part in the first battle of Bull Run, 21 July 1861, where he personally led a charge with the colors of the 4th Alabama regiment in his hands. At the battle of Fair Oaks, 31 May 1862, Johnston was severely wounded and was disabled for service for several months. In November he again reported for duty and was assigned to the Military Department of Tennessee. In the operations of Grant before Vicksburg he did everything possible to prevent the shutting up of General Pemberton in Vicksburg, telegraphing him May 2: "If Grant crosses, unite all your troops to beat him. Success will give back what was abandoned to win it." Although similar orders were repeatedly sent to Pemberton, they were disregarded; Pemberton allowed himself to be shut up in Vicksburg, and the siege and surrender on 4 July followed. In December of the same year he took command of Bragg's army at Dalton, Ga., and by the spring of 1864 brought it to a state of efficiency which it had not previously had, though it contained only 45,000 men against Sherman's 98,797. The campaign from Dalton to Atlanta, a distance of 100 miles, was a series of severe engagements without a general battle, Johnston's friends claiming "the retreat had been the masterpiece of Johnston's life, and one of the most skilful and successful that had ever been executed." On 17 July 1864 Johnston was superseded in this command by General Hood. In the early part of 1865 he was several times defeated by Sherman, to whom he surrendered at Durham Station, N. C., on 26 April, the terms of capitulation resembling those granted to Lee at Appomattox. After the war Johnston engaged in business, and was member of Congress 1876–8. He was United States Commissioner of Railways 1885–9, and the author of 'A Narrative of Military Operations During the Late War' (1874). Consult: Hughes, 'General Johnston' (1893).

Johnston, Mary, American novelist: b. Buchanan, Botefourt County, Va., 21 Nov. 1870. In 1898 she became suddenly famous through her 'Prisoners of Hope: a Tale of Colonial Virginia,' and her next book 'To Have and to Hold' (1900) was even more popular. She has since published 'Audrey' (1902).

Johnston, Richard Malcolm, American author: b. Powelton, Ga., 8 March 1822; d. Baltimore, Md., 23 Sept. 1898. He was graduated at Mercer University in 1841; was admitted to the bar in 1843; and began practice in Sparta, Ga., the same year. He was professor of literature in the University of Georgia in 1857–61 and served as colonel in the Confederate service during the Civil War. At its close he established a boys' boarding school at Sparta, which he removed in 1867 to Baltimore, and of which he was the head for many years. His publications include: 'Historical Sketch of English Literature'; 'Life of Alexander H. Stephens' (1883); 'Dukesborough Tales' (1883); 'Old Mark Langston'; 'Ogeechee Cross-Firings' (1889); 'Mr. Absalom Billingslea and Other Georgia Folk' (1887); 'Studies Literary and Social' (1891–2); 'The Primes and Their Neighbors'; 'Mr. Billy Downs and his Likes.' The usual theme of his longer as well as his shorter fictions is the life of the middle class Georgian in the ante-bellum period.

Johnston, Samuel, American lawyer and statesman, nephew of Gabriel Johnston (q.v.): b. Dundee, Scotland, 15 Dec. 1733; d. near Edenton, N. C., 18 Aug. 1816. His father, John, came to North Carolina in 1736, became surveyor-general, and acquired large landed estates. The son chose the profession of the law, and was clerk of the superior court in Chowan County for five years from 1767, and served there also as naval officer under the crown. Elected to the assembly in 1769 from the first he espoused the popular side, and in 1773 the assembly placed him on its standing committee of inquiry and correspondence, the organ by which it sought to co-operate with the other provinces. This was the first decisive step toward revolution taken by the legislature of North Carolina. He was an active member of the first two provincial congresses in this province. The 3d and 4th met at his summons, and he presided over the deliberations of both. In the 3d, August 1775, the political organization of the province was decided on, and the supreme executive authority was entrusted to a provincial council, of which he was made the chairman, and so virtually the governor of the province. In September 1775 he was chosen treasurer for the northern district of North Carolina. In 1781–2 he was a member of the Continental Congress. In 1787 he was elected governor of the State, and in 1788 presided over the convention which rejected the Federal Constitution, which, however, he supported with all his influence. He was United States senator 1789–93, and judge of the superior court 1800–03.

Johnston, William Preston, American educator: b. Louisville, Ky., 5 Jan. 1831; d. Lexington, Va., 16 July 1899. He was a son of A. S. Johnston (q.v.) and was graduated at Yale in 1852 and from the Louisville Law School in 1853. He served as colonel and aide-de-camp to Jefferson Davis in the Confederate army during the Civil War, and soon after its close became professor of history and literature at the Washington and Lee University, remaining there till 1877. In 1880 he became president of the Louisiana State University, and after its union with Tulane University, New Orleans, in 1884, was president of that institution till his death. His publications include: ‘Life of General Albert Sidney Johnston’; ‘The Johnstons of Salisbury’; ‘The Prototype of Hamlet’; and ‘Seekers after God’ (poem).

Johnstown, jŏnz'town, N. Y., city and county-seat of Fulton County, on Cayadutta Creek, and on the Fonda, J. & G. railroad, 44 miles northwest of Albany. In 1771, a few years after its settlement, it was named after its founder, Sir William Johnson, whose mansion, built here 10 years earlier, still stands almost as it was left by him. In 1808 Johnstown was incorporated as a village, and in 1895 it received a city charter. The court-house and jail, built by Sir William Johnson in 1772, occupy with Johnson Hall an interesting place in local history. The city has a public library building which was the gift of Andrew Carnegie. The industries of Johnstown include a variety of important manufactures, chief among which are those of gloves and mittens, knit goods of different kinds, leather, gelatin, lumber, grist-mill and machine-shop products, etc. The municipal government is well supported by public spirit, and the city's affairs are efficiently managed. The people elect the water board and the school board, and the waterworks are owned and operated by the city. Pop. (1890) 7,768; (1900) 10,130.

Johnstown, Pa., city, Cambria County; on the Conemaugh River, and on the Baltimore & O. and the Pennsylvania R.R.'s; about 80 miles east of Pittsburg. The Little Conemaugh River and Stony Creek unite at Johnstown and form the Conemaugh River. The area of the city is about five square miles, and the valley in which it is located is about 1,200 feet above sea-level. Johnstown was settled about 1790, was incorporated as a borough in 1831, and as a city in 1889. Its situation, in a coal and iron ore region, combined with its great water power, has made it an important manufacturing centre. Fire-clay and limestone are also found in the vicinity. Some of its industrial establishments are the Cambria Steel Company works, where about 16,000 men are employed, the Lorain Steel Company, iron and steel works, iron-plate mills, street-car rail factory, planing-mills, cement works, furniture factories, potteries, breweries, brick-yards, machine-shops, foundries, furnaces, wire works, leather, and woolen goods. Some of the noted public buildings are the Cambria Free Library, the Conemaugh Valley Memorial Hospital, several churches, the city hall, and the high school. The number and arrangement of the parks add to the beauty of the place. In Grand View Cemetery are the graves of 777 unidentified dead who perished in the «Johnstown Flood.» This disastrous flood occurred on 31 May 1889, and was the result of the destruction of a dam across South Fork, a small branch of the Conemaugh River. Heavy rains had fallen and the mountain streams of the vicinity had become roaring torrents. The dam kept back the waters of Conemaugh Lake, about two and one half miles long, one and one half miles wide, and averaging over 50 feet in depth; in some places the water of the lake was 100 feet in depth. The direct distance from the city was about 12 miles, but along the river the distance was five or six miles longer. In a very short time after the dam had burst, the valley was flooded and Johnstown and several small villages were under water. The loss of lives was 2,205, and the loss of property was estimated to be about $10,000,000. Aid for the sufferers came from all parts of the country; and the city was soon rebuilt, and its industries re-established. Pop. (1890) 21,805; (1900) 35,936.

Joint, in anatomy, an articulation or connection between bones. Many of the immovable joints are so close in their union that the two bones practically become one, as in the dovetailed sutures of the skull. In the make-up of a movable joint there are the two bones, and covering the surface of each a layer of tissue of rubbery consistency called cartilage; binding the bones together are firm inelastic bands of tissue called ligaments. Over the surface of the cartilage and the inner surfaces of the ligaments there is a thin smooth layer of tissue, the synovial membrane, which is kept constantly moist with an oily fluid to prevent friction. Joints are classified according to the variety of motions they allow: the freest is the ball-and-socket joint, as seen in the hip and shoulder.

Diseases of Joints.— Joint-diseases are distinguished by names that indicate the principal structure involved and the causes of disease. Where the cause is a specific disorder, as tuberculosis, rheumatism, syphilis or gonorrhœa, the name of that particular malady is given to the inflammation. The only structure of a joint that is apt to be involved alone is the synovial membrane, and inflammation of this structure is called synovitis. Inflammation of all the joint-structures is called arthritis, and where the bone is the primary seat of the trouble, or is principally involved, the name osteo-arthritis is used.

Synovitis.— This condition results from injuries (sprains, bruises, and wounds), from overuse, acting as an injury, and from poisons circulating in the blood. The joint is painful, moves with greater pain, and may be red outside. Blood-serum is poured out, and the synovial sac is distended. (This condition constitutes «water on the knee.») The general symptoms and severity depend on the cause of the trouble. Absolute rest of the joint and pressure by a snug bandage hasten recovery. When such injuries are repeated, or when the inflammation is slight but persistent, painting with iodine tincture may be of value. When the condition of inflammation reaches the suppurative stage all the structures of the joint are involved, and the condition is considered under the term «arthritis.»

Arthritis (*non-specific*).— This is due to the extension of disease of contiguous bone, or it may result from wounds or in the course of various diseases. The joint becomes swollen, red, very painful, and the general symptoms are severe. When the poison is sufficiently virulent, suppurative arthritis results, and the pus collects in the synovial sac. (See INFLAMMATION.) In this condition the joint becomes «boggy,» and the poisoning of the entire system is so severe as to warrant the most radical measures for relief. Opening the joint and allowing the escape of the pus, with thorough cleansing, may be sufficient, or the limb may have to be sacrificed. See ARTHRITIS; ARTHRITIS DEFORMANS; GOUT; RHEUMATISM; SYPHILIS.

Knock-knee.— This is a deformity of the legs, consisting in the angular projection of the knee inward, and is sometimes called in-knee. It arises in children learning to walk who are affected with rickets (q.v.). The deformity is due to the faulty growth of the bones which enter into the joint. In early life, correction of it may be secured by splints and braces; but when the bones become less pliable, the femur, the tibia, or both may have to be severed by chiseling and the bones held in the normal line by plaster casts until union has taken place.

Charcot's Disease.— The peculiar form of arthritis thus named occurs in the course of locomotor ataxia, the knee-joint usually being the one affected. The joint swells painlessly, the structures are worn away, and the function of the joint is lost.

Injuries of Joints.— See DISLOCATION.

Sprains.— These are wrenches resulting in more or less stretching or laceration of ligaments, hemorrhage in and around the joint, and sometimes the displacement of tendons. The part usually swells at once, and movement causes severe pain. This injury may closely resemble a joint-fracture. Absolute rest of the joint must be insisted upon, as synovitis may follow. Alternating hot and cold applications, if started early, lessen the damage. The joint should then be snugly bandaged and kept so until swelling and tenderness disappear.

Wounds of Joints.— Injuries of this nature may cause damage directly to the structures or by infecting the joint and producing arthritis. Penetration into the synovial sac is indicated by an escape of the viscid fluid.

Floating Cartilages.— These are rarely seen except in the knee-joint, where they are ordinarily due to a small portion of cartilage being bitten off between the bones; this piece then floats around in the synovial sac, and causes trouble when the bones lock together on it. When this occurs, the patient falls to the ground because of the severe pain. The synovial membrane is injured, and is apt to be mildly inflamed. These bodies may sometimes be felt through the skin, and can be held, by holding the joint in the same position, until an opening is made; but ordinarily when the attacks become so frequent as to be unbearable the joint has to be opened and searched.

Joint or **Knot Grass.** See GRASSES IN THE UNITED STATES.

Joint-snake. See GLASS-SNAKE.

Joint Tenants, persons who hold or own lands jointly, by title created expressly by one and the same deed or will. It has been uniformly held by the courts that a unity of possession derived by several and distinct conveyances does not constitute a joint tenancy, but rather a tenancy in common. Joint tenants must have the same interest, derived from the same conveyance, commencing at one and the same time, and held by a united possession. The duration of the estates must be alike in both, and also the interest. Should one hold under the conveyance for a term of years, and the other for life, the possession even for a term of years would not be a joint tenancy. The estate must vest in each tenant at the same time. In the case of a will which gives one an interest to commence at a day named and another an interest to commence a year later, no joint tenancy is created thereby. Should one receive an interest absolute and another an interest for life, the relation of joint tenants would not be created. The doctrine of survivorship is the distinguishing incident of title by joint tenancy. In the event of the death of one of the joint tenants, the survivor is entitled to the whole property, and the full title immediately vests in him. This is not an incident of tenancy in common. Many of the States of the Union have abolished title by survivorship in joint tenancy by constitutional provisions or by express statute enactments. In other States acts have been passed abrogating the distinction between joint tenants and tenants in common; and inheritance by survivorship not being an incident of tenancy in common, such acts are construed by the courts as abolishing such inheritance. Such acts do not apply to existing joint tenancies, but only to such as may be created after the enactment.

Joint-worm, the larva of chalcid flies (see CHALCIS) which make galls near the «joints» of grass-plants, and thus are sometimes of great injury to cereal crops, especially wheat and barley. See WHEAT INSECT-PESTS.

Jointure, join'tūr, a settlement of lands and tenements made to a woman in consideration of marriage, as a substitute for dower. Originally it was a joint estate limited to both husband and wife as a joint tenancy and subjected to survivorship. The wife takes nothing under the settlement until after the death of the husband, unless special provisions are incorporated, which in reality modifies the effect of a regular jointure. In some settlements, denominated jointures, provisions are inserted to the effect that they are not to exclude enjoyment of dower; but such provisions are an innovation upon the established province of jointures. A good jointure must provide that it shall take effect, in possession and profit, immediately after the death of the husband; that it shall be for the life of the wife herself, and cannot be left in trust for her use and benefit. It should be provided that it is in settlement of all dower interest, in order to maintain its distinctive features of jointure. The settlement must be executed before marriage, as marriage constitutes the entire consideration for the jointure. Such an instrument properly executed before marriage is binding on the wife and a complete bar to dower in any dowable lands owned or conveyed by the husband during the marital relations. Without the intervention and assistance of legislative action, no other form of agreement is effectual to bar dower. It sometimes happens that the wife is deprived of her jointure by lawful acts to which she is not a party, as by the lands being taken for public purposes, or in some other manner equally legitimate. In such a case the settlement does not bar her claim against the husband's estate to the extent to which she is deprived of her jointure.

Joinville, Jean, zhŏṅ zhwăn-vēl, SIEUR DE, French historian: b. Champagne 1224; d. 11 July 1317. He early entered the service of Thibaut, king of Navarre, and in 1248 raised a troop of 9 knights and 700 armed soldiers, and accompanied Louis IX. in his first crusade to the Holy Land. He rose high in favor with Louis, shared his captivity, returned with him to France in 1254, and spent much of his time at court. His ‘Histoire de St. Louis,’ which is one of the most valuable specimens of early French prose, has been often reprinted.

Jokai, yō′kä-ĭ, **Maurus,** Hungarian novelist: b. Komorn 19 Feb. 1825; d. Budapest 5 May 1904. In 1846 he received his advocate's diploma, but never practised, and from a very early age devoted himself to literary work. In 1842 he produced a drama, ‘The Jew Boy,’ in 1846 his first novel, ‘Work-days,’ was published, and in 1847 he issued a collection of stories entitled ‘Flowers of the Desert.’ His ‘Revolution and Battle Pictures’ appeared in 1849, and after that he devoted himself with extraordinary energy to journalistic and literary work, producing in all more than 300 volumes. He was a member of the Hungarian parliament and the recognized leader of the Liberal opposition since the restoration of the constitution, and in 1897 was appointed a life member of the House of Magnates. He was a successful newspaper editor continuously from 1858 till his death, his last paper being the ‘Nemzet’ (Nation). He is best known by his numerous romances and novels. Among the latter are ‘Transylvania's Golden Age’ (1851); ‘The Man with Two Horns’ (1852); ‘The Turks in Hungary’ (1852); ‘A Hungarian Nabob’ (1854); ‘Kárpáthy Zoltan’ (1855); ‘Political Fashions’ (1861); ‘The New Landlord’ (1862); ‘Dr. Dumany's Wife’ (Eng. trans. 1891); ‘In Love With the Czarina’ (Eng. trans. 1894); ‘The Nameless Castle’ (Eng. trans. 1891); ‘The Green Book’ (Eng. trans. 1897); ‘The Lion of Janina’ (Eng. trans. 1897); ‘The Poor Plutocrats’ (Eng. trans. 1899); ‘Debts of Honor’ (Eng. trans. 1900); ‘The Baron's Son’ (Eng. trans. 1900); ‘The Day of Wrath’ (Eng. trans. 1900). His best plays are: ‘King Kolomon’ (1855); ‘Manlius Sinister’ (1856); ‘Georg Dózsa’ (1858); ‘The Martyrs of Szigetvár’ (1859); and ‘Milton’ (1878). His ‘Political Poems’ appeared in 1880. Consult Nevai, ‘M. Jokai’ (1894).

Joliet, jō′lĭ-ĕt, Fr. zhō-lē-ā, **Louis,** American explorer: b. Quebec 21 Sept. 1645: d. Canada May 1700. He was educated at the Jesuit College of Quebec, and subsequently engaged in the fur trade on the western frontier, thereby becoming familiar with the missionaries and tribes. He was selected by the governor Frontenac to ascertain the direction and mouth of the Mississippi, a few of whose affluents had already been visited by missionaries and traders. Starting with his companion, the illustrious Father Marquette (q.v.), and five other Frenchmen, from Green Bay in June 1673, he ascended the Fox River, and descended the Wisconsin to its confluence with the Mississippi, down which they sailed as far as the country of the Chickasaws, below the entrance of the Arkansas. Having ascertained with tolerable accuracy the general course of the stream, they returned to Green Bay, by the way of Illinois River, Chicago, and Lake Michigan, whence Joliet started alone for Quebec. The whole route traveled by them is estimated at 2,500 miles. He lost his journal and other papers in the rapids above Montreal, but wrote out from recollection a few pages of manuscript, which agree with the narrative of Marquette. In the same manner he prepared a map of the region explored. The French government inadequately rewarded him for his services with the Island of Anticosti at the mouth of the St. Lawrence, where he built a house and fort for his family, intending to embark in trade. He appears, however, to have been subsequently employed in the West. In 1691 his island was captured by a British fleet and his property destroyed. In 1697 the seignory of Joliet, Canada, was assigned to him. Joliet, the capital of Will County, Ill., is named after him. Consult: Parkman, ‘La Salle’ (1869); Winsor, ‘Narrative and Critical History of America’ (1884–7).

Joliet, jō′lĭ-ĕt, Ill., city, county-seat of Will County; on the Des Plaines River, and on the Chicago, R. I. & P., the Michigan C., the Atchison, T. & S. F., the Elgin, J. & E., the Lake Shore & E., and the Chicago & A. R.R.'s; about 30 miles southwest of Chicago. The first permanent settlement was made in 1831 and the city was chartered in 1859. The places was named in honor of Louis Joliet, a Canadian navigator and one of the party who with Marquette visited this place in 1673. The Illinois and Michigan Canal and the Joliet River supply the city with good water power. The city is situated in a rich agricultural region, and large limestone quarries are in the vicinity. Its chief manufacturing establishments are the American Steel and Wire Company works, the Illinois Steel Company factory, the American Tin Plate Company, machine-shops, agricultural implement works, foundry and furnace products, breweries, flour-mills, boot and shoe factories, and furniture factories. Some of the public institutions are the State penitentiary, Silver Cross and Saint Joseph's hospitals, Saint Mary and Saint Francis academies, and a public library which contains about 16,000 volumes. The Illinois Steel Company Athenæum, a club-house for workingmen, is a fine institution. The city owns and operates the waterworks. Pop. (1890) 23,264; (1900) 29,353.

Joliette, or **Industry Village,** Canada, town and county-seat of Joliette County, Quebec; on the L'Assomption River, at the junction of a branch of the Canadian Pacific with the Great Northern Ry. of Canada; 40 miles north of Montreal. It is an important market town, has fine water power, and has a good trade in lumber and farm products. It has large foundries, saw, paper, and grist mills, and manufactories of woolen goods, leather, boots and shoes, biscuit, agricultural implements, carriages, and tobacco and cigars. Limestone for building is quarried in the vicinity. It has two churches, a college, hospital, convent, orphan asylum, and mechanic's institute; an industrial school, banks, and weekly newspapers. The municipality controls the waterworks and electric light. Pop. (1901) 4,220, almost entirely French Canadian.

Jolly Balance, a spring balance devised by Prof. Philipp von Jolly, of the University of Munich, for determining the specific gravities of small objects. In its usual form it consists essentially of a long spiral spring of fine wire, to the lower end of which two pans are attached, one above the other. The lower pan is kept immersed in water, while the upper one remains in the air. The object whose specific gravity is to be determined is placed in the upper pan first, and the extension of the spring due to the weight of the object in the air is noted. The specimen is then transferred to the lower pan (where it will be under water), and the extension of the spring under these new conditions is also noted. The specific gravity of the specimen is then obtained by dividing the extension of the spring when the object is in the air by the difference between the two extensions as observed for air and water, respectively. The extension of the spring is observed by means of a graduated scale engraved upon a mirror that is placed back of the spring, and parallel to it. In taking a reading, the eye is brought into such a position that the image of the pupil is seen in the mirror directly behind the image of the pointer at the lower end of the spring. In this way errors of parallax are avoided in the readings. The Jolly balance is chiefly used for the rapid determination of the specific gravities of minerals and similar objects, where great precision is not essential.

Jonah, jō'na̧, a Hebrew prophet: b. Gath-Hepher, Galilee. He flourished in the early years of Jeroboam II., king of Israel, who acceded to the throne 781 B.C. In 2 Kings xiv. 20 we are told that Jonah predicted to Jeroboam his victories over the Syrians. In the narrative of this so-called prophecy of Jonah we see the son of Amittai despatched on an errand of unique importance. He is to go to Nineveh to warn the inhabitants of the destruction of their city, which is to follow within 40 days. The Assyrians at that time were in a reduced condition, their power was broken, and they were inclined to heed the warning. A fast was proclaimed and the threatened judgment was thus averted. Chapter 1st of the book tells the story of Jonah's refusal to obey the command to go to Nineveh; his flight westward, his miraculous arrest, ending in his imprisonment in the belly of a large fish. Then follows a psalm of thanksgiving for deliverance from the fish. The 3d chapter relates to the preaching of Jonah and the repentance of the Ninevites followed by the reprieve of their city. Finally Jonah is rebuked for his anger at the sparing of Nineveh, by which his prophetic reputation ran the risk of being discredited. The book is in no proper sense a prophecy, but is intended to rebuke the haughty exclusiveness of Israel. The Jews were inclined to rejoice at the calamities of the heathen, and the present reprimand is all the more severe because the Assyrians had been and were afterward again to be the most powerful and dangerous foe to the peace of Palestine.

Jonah Crab, a crab of southern New England (*Cancer borealis*) related to the common edible species, but more robust, and with a thicker, harder shell. It is eaten locally.

Jo'nas, Benjamin Franklin, American lawyer and politician: b. Williamston, Ky., 19 July 1834. He was graduated from the law department of the University of Louisiana in 1855, and on the outbreak of the Civil War entered the Confederate army as private and rose to the rank of adjutant. In 1865 he was elected to the Louisiana legislature, to the State senate in 1872, and was then chosen city attorney of New Orleans. After a second term in the State legislature, he was elected to the United States Senate from Louisiana and served from 1879 to 1885. He was appointed by President Cleveland collector of the port of New Orleans (1885–9).

Jonas, yō'näs, Justus (originally Jobst Koch), German religious reformer: b. Nordhausen, Saxony, 5 June 1493; d. Eisfeldt 9 Oct. 1555. He accompanied Luther to the diet at Worms, assisted him in translating the Old Testament, took part in the Marburg Conference as well as in drawing up the so-called articles of Torgau and was present at the Diet of Augsburg. He did good service to the cause of the Reformation not only by his preaching but by his vigorous translations into German of the Latin works of Luther and Melanchthon.

Jon'athan, son of Saul, king of Israel. He carried on the war against the Philistines for some time with victorious success, but in the battle of Gilboa (1033 B.C.) was slain. His friendship for David is one of the most beautiful incidents in Old Testament history, and the elegy or dirge composed by David on his death—'The Song of the Bow'—is in the highest strain of Hebrew poetry.

Jonathan. See Brother Jonathan.

Jones, Alexander, American inventor and journalist: b. North Carolina about 1802; d. New York 25 Aug. 1863. He studied medicine in Philadelphia, entered practice in Mississippi, there became interested in cotton cultivation, and made important improvements in the cotton-gin. He invented also a street-sweeping machine. He became an agent of the Associated Press in 1850, and subsequently commercial reporter of the New York *Herald*. His published volumes are: 'Cuba in 1851' (1851); 'Historical Sketch of the Electric Telegraph' (1852); and 'The Cymri of '76' (1855).

Jones, Alfred Gilpin, Canadian statesman: b. Weymouth, Nova Scotia, September 1824; d. Halifax, 15 March 1906. After a secondary education, he entered mercantile life, opposed confederation in 1865, sat in the Dominion Parliament for Halifax in 1867–72 and again in 1874–8, was a member of the privy council, and in 1878 was minister of militia. In 1887–91 he was a third time in Parliament. In 1900 he was appointed Lieutenant-Governor of Nova Scotia. At first a Conservative, he later identified himself with the Liberals, and favored a trade-union with the United States.

Jones, Amanda Theodosia, American poet: b. East Bloomfield, Ontario County, N. Y., 19 Oct. 1835. Some of her war songs were very popular. She published: 'Ulah and Other Poems' (1860); 'Atlantis and Other Poems' (1866); 'A Prairie Idyl, and Other Poems' (1882).

Jones, Anson, last president of the Republic of Texas: b. Great Barrington, Mass., 20 Jan. 1798; d. Houston, Texas, 7 Jan. 1858. He commenced the study of medicine in Litchfield, Conn., in 1817, and in 1820 was licensed to practise. He established himself in 1833 in Brazoria, Texas, and upon the outbreak of the troubles between Texas and Mexico, became one of the earliest advocates of the severance of the two countries. In the succeeding war of independence he served as a private soldier, and as surgeon in the Texan army. In 1837–8 he was a representative in the Texan congress from Brazoria County; in 1838 was sent as minister to Washington, where he endeavored, though unsuccessfully, to secure the annexation of Texas to the United States, and on his return to Texas took his seat in Congress as senator from Brazoria, and in 1841 was appointed by President Houston his secretary of state, which office he filled three years. In September 1844 he was elected President of Texas for three years from the ensuing December, and held that office until the annexation of Texas to the United States. He succeeded in maintaining a footing of equality in negotiations with England, France, and the United States; and by the intervention of the two former powers the government of Mexico was induced to acknowledge the independence of Texas.

Jones, Charles Colcock, Jr., American author: b. Savannah, Ga., 28 Oct. 1831; d. 19 July 1893. He was graduated at Princeton (1852), at Harvard Law School (1855), and was admitted to the bar in 1856. He served as colonel of artillery in the Confederate army during the War for the Union, and on the return of peace removed to New York, where he practised law. In 1877 he returned to Georgia and devoted his time to the study of the history and archæology of that State. He wrote: 'Negro Myths from the Georgia Coast, Told in the Vernacular' (1888); 'The History of Georgia' (1883).

Jones, David Phillips, American naval engineer: b. Philadelphia 1841; d. Pittsburg 30 Jan. 1903. He entered the navy in 1862, during the Civil War took part in the operations on the James (Va.) and the St. John's (Fla.), and was present at Bermuda Hundred, and in 1889 attained the grade of chief engineer. In 1874–9 he was instructor in steam engineering at the Naval Academy, Annapolis, and from 1889 to 1892, when he was retired, was on duty at the naval training-station at Newport, R. I. He was chief inspector of steel for the district at Pittsburg during the Spanish-American war.

Jones, Edward Franc, American soldier and manufacturer: b. Utica, N. Y., 3 June 1828. He was colonel of the 6th regiment of Massachusetts volunteers, which he led through Baltimore at the opening of the Civil War, and which was attacked by the mob. He was subsequently brevetted a brigadier-general of United States volunteers. He was a member of the Massachusetts Legislature in 1865, but removed to Binghamton, N. Y., the same year. He was lieutenant-governor of New York 1886–91, and originated the phrase, «He pays the freight.» He published 'The Origin of the Flag'; etc.

Jones, Henry Arthur, English dramatist: b. Grandborough, Buckinghamshire, England, 28 Sept. 1851. After a secondary education, he took up writing as a means of livelihood, and in 1879 appeared as playwright with 'A Clerical Error,' performed by Wilson Barrett at the Court Theatre. He followed this by a series of comedies of modern life, clever in dialogue and stagecraft, which have been very popular, particularly with English audiences. They include: 'Silver King' (1882); 'Saints and Sinners' (1884); 'Middleman' (1889); 'Judah' (1890); 'The Dancing Girl' (1891); 'The Tempter' (1893); 'The Masqueraders' (1894); 'The Triumph of the Philistines' (1895); 'The Rogues' Comedy' (1896); 'The Liars' (1897); 'The Manœuvres of Jane' (1898); 'Carnac Sahib' (1899); 'The Princess' Nose' (1902); 'Chance, the Idol' (1902); 'Mrs. Dane's Defense' (1904).

Jones, Inigo, English architect: b. London July 1573; d. there 21 July 1652. He was the son of a clothworker and began life as a carpenter, but showing a taste for painting, William, earl of Pembroke, supplied him with the means of visiting Italy for the purpose of studying landscape painting. At Venice, the works of Palladio inspired him with a taste for architecture. He was appointed first architect to Christian IV., king of Denmark, but in 1605 he returned to his native country. After being employed for a time as a scenic and stage artist, he was appointed in 1610 surveyor of the works to Henry, Prince of Wales. After the death of the prince he again visited Italy, and extended his knowledge and improved his taste from the examination of the models of ancient and modern art. The banqueting house at Whitehall is a monument of his skill and science. At Winchester Cathedral he erected a screen in the style of classic antiquity. Like Wren he seems not to have duly appreciated the Pointed style of building. He built the front of Wilton House, in Wiltshire, for Philip, earl of Pembroke, and was much employed by the court and by many of the nobility and gentry. He also designed the scenery and decorations for masks — a species of dramatic entertainment fashionable in the early part of the 17th century. In these pieces the dialogues and songs were composed by Ben Jonson, who quarreled with Jones, and abused him in epigrams and satires. Being a Roman Catholic, and a partisan of royalty, he suffered in the civil war, and in 1646 was forced to pay a heavy fine as a malignant or cavalier. As an author he is known by a work on Stonehenge, composed by command of King James I., in which he undertook to prove that Stonehenge was erected by the Romans, and was a hypæthral temple dedicated to the god Cœlus. He was the reviver of classical architecture in England, but he blended Gothic elements with the Italian style. Among his works besides those mentioned are the Greenwich Hospital, the old London Exchange, and the portico of St. Paul's Church, and Earl Pembroke's house.

Jones, Jacob, American naval officer: b. near Smyrna, Del., March 1768; d. Philadelphia 3 Aug. 1850. He entered the United States navy in 1799 as a midshipman and while serving in the war with Tripoli, was captured in 1803 and held a prisoner for 18 months. In 1812 he became commander of the Wasp and with her captured the English brig Frolic 18 Oct. 1812, but on the following day encountered the English war vessel Poictiers, 74 guns, by which both the Wasp and its prize were taken. He was released on parole at Bermuda and for his victory over the Frolic was voted a gold medal by Congress, and $25,000 was granted to him and his crew in payment of the personal loss they had sustained. He subsequently commanded squadrons in the Mediterranean and the Pacific.

Jones, Jenkin Lloyd, American Unitarian clergyman: b. Llandyssil, Cardiganshire, Wales, 14 Nov. 1843. He came to America with his parents while an infant, served in a Wisconsin regiment during the Civil War, and was graduated from the Meadville (Pa.) Theological Seminary in 1870. He was pastor of All Souls Unitarian Church, Janesville, Wis., 1874–83; was secretary of the Western Unitarian Conference for nine years, and since 1883 has been pastor of All Souls Church, Chicago. He has been prominent among the more radical members of the Unitarian body, and has published: ‘The Faith that Makes Faithful,’ with W. C. Gannett (1886); ‘Practical Piety’ (1890); ‘Word of the Spirit’ (1897); ‘Bits of Wayside Gospel’ (1899); etc.

Jones, John, American surgeon: b. Jamaica, L. I., 1729; d. 1791. He studied medicine in Europe, and, returning to America, practised in New York, becoming professor of surgery in King's College, and, with Dr. Bard, founding the New York Hospital in 1771. After the occupation of New York by the English Forces in 1777 he removed to Philadelphia, there being one of the physicians of the Pennsylvania Hospital, and in 1787 vice-president of the College of Physicians. He was the friend and physician of both Washington and Franklin, attending the latter in his last illness. He published ‘Plain Remarks upon Wounds and Fractures’ (1775).

Jones, John Paul, the first of the great American sea fighters, and not the least splendid in the long line, was born John Paul — the name Jones being a subsequent assumption — on 6 July 1747 on the estate of Arbigland, in the parish of Kirkbean, in the County of Kircudbright, Scotland. His family was obscure, his circumstances narrow, his advantages meagre, his opportunities limited. At the age of 12 he became a sailor. Genius rose superior to adverse circumstances, however, and before he died he was one of the most accomplished officers who ever served the United States. The greatest men of America and France took pleasure in his society and were proud of his friendship.

He progressed rapidly in his chosen career. At 19 he was chief mate of a slaver, a legitimate occupation in his day, but one that filled him with disgust. At 21 he was captain of a trader. In 1773 he came to America, forsook the sea, and settled in Virginia.

He was still poor and obscure when on 7 Dec. 1775 he was appointed a lieutenant in the new Continental Navy, and was ordered to the Alfred, a small converted merchantman, Commodore Hopkins' flagship, on which, in the latter part of December, he had the honor of hoisting with his own hands the first naval flag of an American squadron. This was the famous yellow silk banner with a rattlesnake, and perhaps a pine tree, emblazoned upon it, with the significant legend, “Don't tread on me!”

Hopkins made an abortive expedition to New Providence, in which Jones had but one opportunity to distinguish himself. At the peril of his commission, when the regular pilots refused to do so, he volunteered to take the Alfred through a difficult and dangerous channel. Needless to say, he succeeded — he always succeeded!

His first independent command was the little brig-ship Providence, of 70 men and 12 4-pound guns. In the fall of 1775 he made a notable cruise in this vessel; he skirmished with, and escaped from, by seamanship and daring, two heavy frigates, the Solebay and the Milford; in four months he captured 16 vessels, 8 of which were sent in as prizes, 5 burned, 3 returned to certain poor fishermen; and he destroyed property aggregating $1,000,000.

Later, in command of the Alfred, with a short crew of 150 when he should have had 300, he made another brilliant cruise in which he burned several British transports, captured one storeship laden to the gunwales with priceless munitions of war and supplies, cut out three of the coal fleet from under the guns of the Flora frigate, and had another smart brush with the Milford.

He was commissioned captain in the navy on 10 Oct. 1776, and on 14 June 1777, in the same resolution that established the form of the American flag, he was ordered to the Ranger, a small ship-rigged corvette of 300 tons and 18 6-pounders. In her, at Portsmouth, N. H., on 4 July, he hoisted the first Stars and Stripes that ever flew from the peak of an American man-of-war. Sailing for European waters, he carried to France the official despatches announcing Burgoyne's surrender, which brought about the Franco-American alliance.

In Quiberon Bay, late on the evening of 14 Feb. 1778, in the Ranger, he received the first formal recognition ever given by a foreign fleet to the United States in a salute to the American flag. As it was after sunset when the salutes were exchanged, in order that there should be no mistake about it, the next morning, 15 February, Jones transferred his flag to the Independence, a small privateer, and deliberately sailed through La Motte Piquet's fleet of battleships, saluting and receiving salutes again.

In April 1778, still on the Ranger, he left Brest on a cruise in British waters, which took him around Ireland. During this cruise he made daring but abortive attempts to burn the shipping at Whitehaven, and to capture the Earl of Selkirk at Saint Mary's Isle. On the evening of 24 April, off Carrickfergus, he fought the British sloop-of-war Drake, of equal force and larger crew, to a standstill in an hour and five minutes. When the Drake struck her flag, her rigging, sails, and spars were cut to pieces. She had 42 killed and wounded — more than one fifth of her crew — and was completely helpless. The Ranger lost 2 killed and 6 wounded.

In 1779 Jones hoisted his flag on the Duc de Duras, a condemned East Indiaman, which would have been broken up had he not turned her into a makeshift frigate by mounting 40 guns in her batteries — 14 12-pounders, 20 nines, and 6 eighteens. This, in honor of Franklin, he renamed the Bon Homme Richard. Accompanied by the fine little American-built frigate Alliance, 32, commanded by Pierre Landais, an incompetent and unbalanced French naval officer in the American service, the French corvette Pallas, 30, Captain de Cottineau, with the brig Vengeance, 12, and the cutter Cerf, 16, Jones cruised around England and Scotland, taking many valuable prizes and striking terror all along the shore, in spite of constant mutiny and insubordination among the ships, officers, and men of his heterogeneous squadron.

On the evening of 23 September, off Flamborough Head, he fell in with the valuable Baltic convoy. He was accompanied at the time only by the Alliance and the Pallas. The Baltic convoy was protected by the Serapis and the Scarborough. The Serapis was a brand-new double-banked frigate of 800 tons, carrying 20 18-pounders, 20 nines, and 10 sixes. Inasmuch as the 18-pounders on the Richard burst and were abandoned after the first fire, the Serapis could and did discharge nearly twice as many pounds' weight of broadside as the Richard — say 300 pounds to 175. The Pallas grappled with the Scarborough — a more equal match — and Jones attacked the Serapis, which was not unwilling — quite the contrary — for the fight.

The battle was one of the most memorable and desperate ever fought upon the ocean. The Richard was riddled like a sieve. Her rotten sides were literally blown out to starboard and port by the heavy batteries of the Serapis. Jones had several hundred English prisoners on board. The master-at-arms released them, but with great readiness and presence of mind Jones, who was brilliantly supported by Richard Dale, his first lieutenant, sent them to the pumps while he continued to fight the English frigate, his own ship kept afloat by their efforts.

Captain Pearson, of the Serapis, was a brave man, but no match for the indomitable personality of the American commander. After several hours of such fighting as had scarcely been seen before on the narrow seas, he struck his flag. The Alliance, commanded by a jealous and incapable Frenchman, had contributed nothing to Jones' success. Indeed, she had twice deliberately poured her broadsides into the Richard in spite of frequent warning. The American vessel was so wrecked alow and aloft that she sank alongside, and Jones had to transfer the survivors of his crew to the English frigate. The aggregate of the two crews was nearly 700, of which about 350 were killed or wounded. The Scarborough was captured by the Pallas after a smart action.

Jones took his prizes into the Texel, when, after showing himself as vigorous and able in statecraft in maintaining American honor in diplomatic intrigues as he was at sea in battle, he was forced to turn over the Serapis and Scarborough to France.

The poverty of America did not permit Jones to get to sea in adequate ships thereafter, although he subsequently commanded successively the Alliance and the Ariel, a small sloop-of-war, in which he caused the British letter-of-marque Triumph to strike her flag after a brief action, from which she escaped by a clever ruse, he performed no other conspicuous service.

After the Revolution, he took service under Catherine of Russia, carefully reserving his American citizenship. In her service, in June and July 1788, he fought four brilliant actions in the Black Sea, in which he had to contend with the usual discouragement of indifferent personnel and wretched material, and in which he displayed all his old-time qualities, winning his usual successes, too.

Worn out in unrequited service, disgusted with Russian court intrigues of which he was the victim, resentful of the infamous Potemkin's brutal attempts at coercion, he asked leave of absence from Catherine's service and went to Paris, where in the companionship of his friends and in the society of the beautiful Aimée de Telison, the one woman he loved, he lived two years, and died of dropsy on 18 July 1792, at the age of 45.

Besides the memory of his battles, Paul Jones left a collection of immortal sayings, which are the heritage of the American navy and the admiration of brave men the world over.

> "I do not wish to have command of any ship that does not sail fast, for I intend to go in harm's way!"
>
> "I have ever looked out for the honor of the American flag."
>
> "I can never renounce the glorious title of a citizen of the United States."

Last, but not least, the curt phrase which comes ringing through the centuries like a trumpet call to battle; the words with which he replied to the demand of the astonished Pearson, who saw the enemy's ship beaten to a pulp, and wondered why he did not yield:

"I have not yet begun to fight!"

Never in his long career did Jones have a decent ship or a respectable crew. His materials were always of the very poorest. His officers, with the exception of Richard Dale, were but little to boast of. What he accomplished he accomplished by the exercise of his own indomitable will, his serene courage, his matchless skill as a sailor, and his devotion to the cause he had espoused. After his death, among his papers, the following little memorandum of his services, written in his own hand, was found:

> In 1775, J. Paul Jones armed and embarked in the first American ship of war. In the Revolution he had 23 battles and solemn rencontres by sea; made 7 descents in Britain and her colonies; took of her navy two ships of equal, and two of superior force, many store-ships, and others; constrained her to fortify her ports; suffer the Irish volunteers; desist from her cruel burnings in America, and exchange, as prisoners of war, the American citizens taken on the ocean, and cast into prisons of England, as "traitors, pirates, and felons!"

Paul Jones was accused of being a pirate. The charge was a long time dying, but it is to-day generally withdrawn. His status was clear and unequivocal. He was a regularly commissioned officer in the navy.

In person Jones was a small, slender, well-made man, about 5 feet 7 inches high. His complexion was dark, his features were regular, and his eyes black and brilliant. He had acquired a charming manner, especially with women, and not a little education and polish in his varied career. He wrote and spoke fluently, and, like Nelson, sometimes amused himself by making indifferent verse. His chief fault was his vanity. In morals he was rather above the custom of the time and the society in which he mingled. He had one child by Aimée de Telison, which died in infancy.

As a strategist, tactician, and fighter he stands high among naval captains. Louis XVI. conferred on him the Order of Military Merit and presented him with a magnificent sword; the Empress Catherine appointed him a rear admiral and created him a knight of Sainte Anne, and Congress formally thanked him and awarded him a gold medal for his services. He was accorded the honor of a public funeral by the French Assembly, and was buried in a Protestant cemetery at the corner of the Rue de la Grange aux Belles and the Rue des Ecluses Saint Martin, in Paris. In the spring of 1905, through the efforts of Gen. Horace Porter, American ambassador to France, his remains were discovered and identified and brought to America in the armored cruiser Brooklyn, flagship of Rear Admiral Charles D. Sigsbee's accompanying squadron. They are interred at the United States Naval Academy at Annapolis, Md., awaiting the completion of a suitable resting place for them.

There is one mystery connected with Jones' life which has never been cleared up. No one knows why John Paul assumed the name Jones. There have been two attempts at explanation: one that he took it in testamentary succession to his brother, William Paul, who had taken the name Jones to inherit property from one William Jones, a Virginia planter. This is now disproved, and the prevailing theory is that the name was assumed by John Paul out of respect and affection for the Jones family of North Carolina, from whom he had received much kindness.

Consult: Brady, 'Commodore Paul Jones'; Buell, 'John Paul Jones, the Founder of the American Navy'; Hapgood, 'Paul Jones'; Laughton, 'Studies in Naval History'; etc.

Cyrus Townsend Brady.

Jones, John Percival, American politician: b. Herefordshire, England, 1830. He came to the United States in 1831, was educated in the schools of Cleveland, Ohio, in the early days of California gold-mining went to that State where he acquired mining interests, and in 1863–7 was a member of the State senate. In 1867 he removed to Nevada, where he became a proprietor and the superintendent of the «Crown Point» silver mine, through which he realized a fortune. He was elected to the United States Senate from Nevada in 1873, and this office he held by re-election until 1903. He was originally a Republican, was elected to the Senate as a «Silverite» in 1897, and from 1900 was a «Silver» Republican.

Jones, John William, American Baptist clergyman and author: b. Louisa, Va., 25 Sept. 1836. He was graduated from the University of Virginia in 1859 and from the Southern Baptist Theological Seminary, and during the Civil War served as private and then chaplain in the Confederate army. He was pastor of a Baptist church in Lexington, Va., 1865–71, and chaplain of Washington College during Lee's presidency, and since the last named date has been successively agent of various Southern institutions, chaplain of the University of Virginia, and pastor of several churches. Besides editing 14 volumes of the 'Southern Historical Papers' he has published 'Personal Reminiscences, Anecdotes and Letters of R. E. Lee' (1874); 'Christ in the Camp, or Religion in Lee's Army'; 'Memorial Volume of Jefferson Davis'; 'School History of the United States'; etc.

Jones, Joseph Stevens, American playwright: b. 1811; d. Boston, Mass., 30 Dec. 1877. After his graduation from the Harvard Medical School in 1843, he practised medicine for several years; but was subsequently proprietor and manager of the Tremont, Old National, and other theatres in Boston at various times. Among the nearly 200 plays of which he was the author may be named: 'Solon Shingle'; 'The Liberty Tree'; 'The Siege of Boston'; 'Moll Pitcher'; 'The Last Dollar'; 'The People's Lawyer'; 'Paul Revere'; 'The Silver Spoon.'

Jones, Leonard Augustus, American jurist: b. Templeton, Mass., 13 Jan. 1832. He was graduated from Harvard in 1855 and from Harvard Law School in 1858. He was admitted to the Suffolk bar in 1858 and since 1884 has been one of the editors of the 'American Law Review.' Among his many legal works are: 'Law of Mortgages and Real Property' (1878–94); 'Law of Mortgages of Personal Property' (1881–94); 'Law of Easements' (1898). He was appointed judge of the court of land registrations in 1898.

Jones, Owen, English architect: b. London 15 Feb. 1809; d. there 19 April 1874. In 1834 he traveled in Spain and studied the art monuments of Granada, after which he visited Egypt. On returning to England he published his great work on the Alhambra. In 1851 he undertook the decoration of the Crystal Palace at the first Universal Exhibition. He also furnished the various courts of different architecture, notably the «Alhambra Court.» His researches and publications had a wonderful influence on the decorative art of England, especially his 'Grammar of Ornament,' in which he illustrated the decorative devices of all nations. He published 'Plans, Elevations, Sections and Details of the Alhambra' (1845).

Jones, Samuel M., American manufacturer and politician: b. 3 Aug. 1846 in Wales; d. Toledo, Ohio, 12 July 1904. He came to the United States with his parents when three years old; at 18 he was working in the oil-fields of Titusville, Pa. In 1893 he invented improved oil-well apparatus and set up the Acme Sucker Rod Factory in Toledo, Ohio. Here he introduced reforms in the condition of his employees, fixed a minimum wage, gave an eight-hour day, and introduced a system of profit-sharing; he also opened a pleasure ground adjoining the factory, known as «Golden Rule» Park. In 1897 he was nominated for mayor of Toledo by the Republican party and elected; but his subsequent advocacy of municipal ownership of public utilities and of the abolition of the system of private contract in doing city work alienated the support of his party. His administration was, however, very popular, and he was re-elected as independent candidate in 1899 and 1901. In 1900 he was non-partisan candidate by petition for governor of Ohio, but was defeated.

Jones, Samuel Porter, commonly known as Sam Jones, American Methodist revival preacher: b. Chambers County, Ala., 16 Oct. 1847; d. 15 Oct. 1906. He was admitted to the Georgia bar in 1869, but his drinking habits put an end to his career as a lawyer. Becoming converted in 1872 he was admitted to the ministry of the Methodist Church South, and afterwards devoted himself to evangelistic work, his marked eccentricities of speech and manner probably contributing somewhat to his popularity. He has published: 'Sermons and Sayings'; 'Music Hall Sermons'; 'Sam Jones' Own Book'; etc.

Jones, Thomas ap Catesby, American naval officer: b. Virginia 1787; d. 1858. Having entered the navy in 1805, he was employed in police duty in the Gulf, saw service in the latter part of the War of 1812, and was unsuccessful in an attempt to prevent the passage of Vice-Admiral Cochrane's fleet across Lake Borgne. In 1826 he was sent to the Hawaiian Islands to settle the difficulties arising through the efforts of a local party to make the islands a British dependency. Upon the declaration of war between the United States and Mexico, he feared that the British man-of-war Dublin intended the annexation of California, and imprudently landed at Monterey and took possession. He was therefore removed temporarily from his command.

Jones, Sir **William,** English lawyer and Oriental scholar: b. London 28 Sept. 1746; d. Calcutta 27 April 1794. He was educated at Harrow and Oxford, and early acquired a reputation as a linguist, Hebrew, Persian, Arabic, and even Chinese, besides German, Italian, French, Spanish, and Portuguese, being among his acquisitions. In 1770 his translation (in French) of the life of Nadir Shah from the Persian appeared; in 1771 his grammar of the Persian language; in 1774 his 'Poeseos Asiaticæ Commentariorum Libri Sex,' and in 1781 his translation of the seven Arabic poems known as the 'Moallákat.' He had been called to the bar in 1774, and in 1783 was nominated judge in the supreme court of judicature, Bengal, and knighted. Here he did much for the furtherance of Oriental studies, being one of the first Europeans to study Sanskrit, founding the Royal Asiatic Society, in 1784 translating the Sakuntala, the Ordinances of Manu, besides tales, poems, extracts from the Vedas, etc. He also undertook a digest of the Hindu and Mohammedan laws, which he did not, however, live to complete.

Jonesboro, jōnz'bŭr-ō, Ark., city, county-seat of Craighead County; on the Kansas City, Ft. S. & M., the St. Louis S. W., and the Jonesboro L. E. R.R.'s; about 120 miles northeast of Little Rock. It was first settled in 1870, although some settlements had been made earlier on farms in the vicinity. It was incorporated in 1882. It is situated in an agricultural and lumbering region, and the railroad facilities make it the trade centre for quite an extent of country. The chief manufactures are flour, lumber, staves and headings, boxes, and wagons. In addition to the manufactures there is considerable trade in grain, live stock, and some dairy products. Pop. (1890) 2,065; (1900) 4,508.

Jonesboro, Ga., city, county-seat of Clayton County; on the Central of Georgia railroad; about 16 miles south of Atlanta. It is situated in a fertile agricultural region, but its nearness to Atlanta and lack of water power are hindrances to manufacturing. Its chief trade is in fertilizers, cotton, and farm products. At this point, August 1864, was fought a hotly contested battle with Gen. Howard of Sherman's army, in command of the Federal troops, and Gen. Hardee of Hood's army, in command of the Confederates. See Jonesboro, Battle of.

Jonesboro, Battle of, and Fall of Atlanta. After the battle of Ezra Church (q.v.), 28 July 1864, Gen. Sherman, unable fully to invest Atlanta, drew the Fourteenth corps and Schofield's Army of the Ohio from the left, and extended his lines on the right nearly to East Point, about six miles below Atlanta, the junction of the two railroads leading from the south, upon which the city and Hood's army depended for supplies. Hood made a corresponding movement to cover the roads, meeting Sherman's advance with strong, well-intrenched lines, and, 6 August, severely handling two of Schofield's brigades that had crossed Utoy Creek, killing and wounding over 300 men and taking two colors. To compel Sherman to relinquish his movement and raise the siege of Atlanta, Hood, 10 August, sent Wheeler with about 5,000 cavalry to operate upon his line of communication with Nashville. Wheeler moved promptly, struck and destroyed the railroad near Marietta, Calhoun, Adairsville, and Dalton, captured over 1,000 head of beef-cattle and other supplies, and, after demonstrating on Dalton and Resaca, was driven into East Tennessee. Sherman had issued an order, 16 August, for a general movement on the 18th upon the West Point and Macon railroads, for the purpose of forcing Hood from Atlanta, but hearing of Wheeler's raid, he suspended the order, and directed Gen. Kilpatrick, with 5,000 cavalry, to move on the night of the 18th against the West Point and Macon roads and destroy them completely. Kilpatrick started from near Sandtown, crossed the West Point road at Fairburn, and struck the Macon road a short distance north of Jonesboro, some 26 miles from Atlanta, where he encountered Ross' brigade of cavalry, which was driven through Jonesboro. But little of the railroad had been destroyed when Jackson's brigade of cavalry and an infantry brigade, coming up from the south, compelled Kilpatrick to retreat. Making a circuit, he again struck the railroad at Lovejoy's, about six miles south of Jonesboro, and encountered a Confederate force, through which he cut his way and reached Decatur, near Atlanta, on the 22d. As Sherman was satisfied that Kilpatrick had not greatly damaged the railroad, he renewed his order for the movement of the whole army. On the night of the 25th the siege of Atlanta was raised. The sick and wounded, spare artillery, and surplus transportation were sent back to the Chattahoochee bridge; Stanley's Fourth corps drew out from the left and moved to the right, closing up with the Fourteenth near Utoy, and the Twentieth corps fell back to an intrenched position covering the Chattahoochee bridge and the hospitals. On the night of the 26th the Army of the Tennessee (Gen. Howard) drew out, rapidly made a wide circuit, and came up on the right of the Army of the Cumberland, under Gen. Thomas, along Utoy Creek, facing south. The Army of the Ohio remained in position, now on the extreme left. On the 28th, making a general left wheel, pivoting on Schofield's army, both Thomas and Howard reached the West Point road extending from East Point to Red Oak and Fairburn, Schofield closing in upon the left of Thomas, but a short distance from the Confederate works covering the junction of the road at East Point. The next day was devoted to the railroad, of which nearly 13 miles was destroyed, and on the 30th the entire army moved eastward for the Macon railroad. Schofield, on the left, approached it near Rough and Ready, and presented a bold front toward East Point; Thomas, in the centre, reached Couch's, on the Fayetteville and Decatur road, with but little opposition; and Howard, on the right, driving before him the enemy's cavalry, saved the bridge over Flint River after a sharp engagement, then, crossing part of his command, halted at night within half a mile of Jonesboro. On the morning of the 31st Howard, finding himself in the presence of a large force, disposed the Army of the Tennessee for battle and intrenched: Logan's Fifteenth corps on the left, Ransom's Sixteenth corps on the right, and Blair's Seventeenth corps in rear of Logan's left. When Sherman began his movement on the night of the 25th S. D. Lee's corps of Hood's army covered the railroad from near Atlanta to a place nearly a mile south of East Point. Hardee's corps was on Lee's left, while Hood held Atlanta with Stewart's corps and the Georgia militia. Hood had been deceived; he knew of Sherman's earlier movement, but misinterpreted it as preliminary to a retreat across the Chattahoochee; but when undeceived on the 30th, he ordered Hardee with his own corps and Lee's to move rapidly to Jonesboro and crush Howard on the morning of the 31st. Hardee, who was near Rough and Ready, four miles below East Point, began moving about 4 P.M., followed later by Lee, and at noon of the 31st both were in Howard's front. At 3 P.M. Hardee attacked with Lee's corps and part of his own, under Cleburne, with the expectation of driving Howard into the river, and for two hours the fighting was severe, but Hardee was repulsed. Lee, who, on the Confederate side, bore the brunt of the fight, says: «The attack was a feeble one and a failure, with a loss to my corps of about 1,300 men killed and wounded.» Hardee's entire loss was about 1,700. The Union loss was 179 killed and wounded, almost entirely of Logan's corps.

When Sherman heard the noise of this battle he was with Thomas, who, with Schofield, had reached and was destroying the road from Rough and Ready southward. Thomas and Schofield were marched to the assistance of Howard, and Kilpatrick was sent down the western bank of the Flint to strike the road south of Jonesboro. Davis' Fourteenth corps joined Howard's left at noon of 1 September, relieving Blair, who was disposed to support Kilpatrick. Lee's corps had gone, but Hardee's was still in position and intrenched, covering Jonesboro on the north. At 4 P.M. Davis charged Hardee's works and, after a hard fight, carried parts of them, capturing Gen. Govan and the greater part of his brigade and two batteries of four guns each. Stanley and Schofield reached the field too late to take part in the engagement. During the night Hardee retreated to Lovejoy's station, and next morning Sherman started in pursuit. The Union loss 1 September was 223 killed, 946 wounded, and 105 missing. The Confederate loss is not fully known; of the three divisions engaged Cleburne's sustained a loss of 55 killed, 197 wounded, and 659 missing. There is no return of losses in the other two divisions.

The result of the battle of Jonesboro was the fall of Atlanta. Six hours before Hood heard of the result of Hardee's attack 31 August, he sent an order to Lee to return in the direction of Atlanta, to make a movement on Sherman's flank, or to cover the evacuation of the city. Lee received the order at midnight, and was halted next morning about six miles from Atlanta. Meanwhile Hood had heard of the result of Hardee's attack; its «failure necessitated the evacuation of Atlanta.» Lee was ordered to join Hardee, which he did on the 2d, and at 5 P.M. of the 1st Hood marched out of the city with Stewart's corps on the McDonough road; the Georgia militia was sent to Covington, and at night the rear-guard blew up some abandoned ammunition-trains. Slocum's Twentieth corps entered the city on the morning of the 2d. Sherman received the news on the 4th, and, turning his back on the Confederates at Lovejoy's, marched his army to East Point and Atlanta.

The campaign for Atlanta, which began 6 May 1864, was marked by brilliant flanking movements, on both sides, by almost uninterrupted skirmishing, growing at times to the dimensions of a battle, and by many heavy engagements, most of them of a desperate character. The Union losses in the entire campaign were 4,423 killed, 22,822 wounded, and 4,442 missing, a grand aggregate of 31,687. The Confederate losses were 3,044 killed and 18,952 wounded. Add to this the number of prisoners captured, 12,938, makes a grand aggregate of 34,979. Consult: ‘Official Records,’ Vol. XXXVIII.; Cox, ‘Atlanta’; Van Horne, ‘History of the Army of the Cumberland,’ Vol. II.; ‘Life of Gen. George H. Thomas’; Bowman, ‘Sherman and his Campaigns’; Sherman, ‘Personal Memoirs,’ Vol. II.; the Century Company's ‘Battles and Leaders of the Civil War,’ Vol. IV.

E. A. Carman.

Jonesville, jōnz′vĭl, Va., the scene of a Civil War action. On 1 Jan. 1864 Major Beeres, who had been operating with a battalion of the 16th Illinois cavalry and a battery, near Cumberland Gap, attacked and drove a small Confederate cavalry force from Jonesville and occupied the place. On the morning of the 3d he was attacked by Gen. W. E. Jones' cavalry brigade and, after a spirited resistance, continuing nearly the entire day, in which he lost 10 killed and over 40 wounded, was finally surrounded and obliged to surrender. The Confederates reported that he surrendered 383 officers and men, 45 of whom were wounded, 3 pieces of artillery, and 27 wagons. The Confederate loss was about 30 killed and wounded. Consult ‘Official Records,’ Vol. XXXII.

E. A. Carman.

Jonge, yŏng′e, **Johannes Cornelius de**, Dutch historian: b. Zierikzee, 9 March 1793; d. Zeeland, 11 June 1853. He was educated at Leyden and in 1831 succeeded Van Wijn, whose assistant he had been, as keeper of the Dutch archives. The most important of his historical works are: ‘Verhanderling over dem oorsprong der Hoeksche en Kabeljaauwsche twisten’ (1817); ‘Het derde Staat in de Statenvergaderingen’ (1824); and ‘Geschiedenis van het Nederlandsche Zeewezen’ (1833–48, 2d ed. 1858). He also published a biography of Van Wijn in 1832.

Jonkoping, yön′chö-pĭng, Sweden, a town located at the southern end of Lake Wetter, about 170 miles southwest of Stockholm. The town has a beautiful situation in a valley between Lake Wetter and two smaller lakes known as the Rocksjö and Munksjö, and is backed by pine-clad hills. The chief buildings are the Church of Saint Christina, the supreme court, the town hall, barracks, theatre, and school. The manufacturing industries of the town are of considerable importance; the largest single industry is match-making, the safety-matches made here being used throughout the world. There are also manufactures of machinery and arms, perfumes, cigars, snuff, paper, and wood-pulp, etc. The maritime trade was greatly increased by the completion of the Göta Canal in 1832, connecting the Baltic and North seas (Göteborg with Stockholm), thus making Jönköping a seaport. The town's history dates back to legendary times; it is named in history in the early part of the 13th century; and in 1284 received its town charter. In 1357, 1439, and 1599 parliament met here; in 1448 occurred the conference of the Swedish and Danish plenipotentiaries; in 1612 the town was destroyed by order of Gustavus Adolphus to prevent it from falling into the hands of the Danes, but was soon afterward rebuilt; and in 1809 a peace treaty was signed here between Denmark and Sweden. Pop. 23,143.

Jonquil, jŏn'kwĭl. See NARCISSUS.

Jonson, Ben or **Benjamin,** English poet and dramatist, contemporary and friend of Shakespeare: b. 1573; d. 6 Aug. 1637. According to his conversations with Drummond, his father was a gentleman, who lost his estate under Queen Mary and then turned minister. Benjamin was born after his father's death, and his mother afterwards married a bricklayer, an occupation in which Ben Jonson was engaged for some time, and with which he was frequently taunted by his enemies. He was educated at Westminster School under the instruction of William Camden, whose scholarship and friendship he afterwards praised in the highest terms. He proceeded to Cambridge but remained there for only a short time, later receiving the degree of Master of Arts from both Universities «by their favour, not his studies.» After his return to London, he seems to have worked for a time at his father's trade, then to have served as a soldier in the Low Countries, after which he returned to England, married, and by 1595, became an actor and playwright.

In 1598, his famous comedy 'Every Man in His Humour' was acted by the Lord Chamberlain's servants (Shakespeare's company). This play marks the full beginning of his dramatic career; it is the first of his long series of humoristic comedies, and is the first outcome of his life-long effort to infuse into the drama critical consciousness and painstaking art. In the same year Jonson quarreled with a well known actor, Gabriel Spenser, and killed him in a duel on 22 Sept. Jonson escaped serious penalty by pleading benefit of clergy; and in the following year his 'Every Man Out of His Humour' was acted before the queen. Jonson's quarrelsome temper was apparently little abated by his recent imprisonment, for his 'Cynthia's Revels,' acted 1600, satirized Marston and Dekker, and 'The Poetaster,' 1601, provoked by retorts actual or intended, continued the attack in unmistakable terms. Dekker retorted in the same year with his 'Satiromastix, or the Untrussing of the Humourous Poet.' But this «war of the theatres» shortly subsided.

The accession of James I. in 1603 brought a great improvement in Jonson's circumstances through the patronage of the court, exhibited in various employments, honors, and eventually a pension. Henceforth he counted among his friends and patrons the most distinguished men of the time, and he was able to devote his prodigious energies to scholarship and poetry without leaning too heavily upon the stage for pecuniary aid. His immediate access to royal favor seems to have been maintained by his success in writing masks. These musical and spectacular entertainments assumed an elaborate form at the court of James, and Jonson at once became the chief literary purveyor to this fashion, a position which he maintained until his quarrels with Inigo Jones and the supersedence of the literary by the scenic elements of these shows put an end to his employment. The first half of the reign of James was also the time of Jonson's dramatic masterpieces. His tragedies, 'Sejanus' and 'Catiline' were acted in 1603 and 1611, and the greatest of his comedies came in the same period, 'Volpone,' 1605, 'The Silent Woman,' 1609, 'The Alchemist,' 1610, and 'Bartholomew Fair,' 1614. During the same years, Jonson was maintaining many friendships with scholars and poets, with Camden, Selden, and Bacon, with Chapman, Beaumont, Fletcher, and Shakespeare; and he was becoming the recognized chief of the wits whose gatherings have made the Mermaid Tavern famous in literature.

Jonson's life, however, was by no means free from vicissitude. In 1605 he was imprisoned along with Marston and Chapman on account of a passage reflecting on the Scotch in 'Eastward Hoe,' a play on which they had collaborated. He had become a Roman Catholic in 1598, but after twelve years returned again to the Protestant faith. In 1613 he was in France as tutor of the son of Sir Walter Raleigh; and in 1618 he made a pedestrian expedition to Scotland. Here he was received with honors and banquets, and entertained for several weeks by the poet, William Drummond, at his seat, Hawthornden. Drummond's notes of his conversations with Jonson furnish us with most interesting and valuable records of Jonson's character and opinions, but it must be remembered that Jonson was talking with great freedom and with no idea of being reported, and that the reports were doubtless colored by the temper and prejudices of the reporter. Some of Jonson's weaknesses as well as his host's sourness of temper, are to be found in Drummond's well-known postscript: «He is a great lover and praiser of himself; a contemner and scorner of others; given rather to lose a friend than a jest; jealous of every word and action of those about him (especially after drink, which is one of the elements in which he liveth); . . . . he is passionately kynde and angry; careless either to gain or keep; vindictive, but, if he be well answered, at himself.»

From 1616 to 1625 Jonson wrote no plays for the public stage but he wrote numerous masks and remained in high favor at court. After the death of James he seems to have fallen on unprosperous days; his occupation as a writer of masks ceased, and he turned again to the stage. His 'Staple of News' was acted in 1625, and 'The New Inn' 1629, the latter proving an utter failure. He had suffered an irreparable loss in the burning of his library which included many manuscripts of his incompleted works as well as a notable collection of books in which he had a scholar's pride. Want and disease added to his troubles, and we have many appeals for aid addressed by him to his noble patrons. Fortunately these met with response, and King Charles increased his annuity. The few plays and entertainments composed at this time give evidence of his failing powers; and give force to the conjecture that the beautiful pastoral drama, 'The Sad Shepherd,' left unfinished at his death, must have been written at a much earlier date. In old age and sickness, however, Jonson held his place at the head of English men of letters. 'The Mermaid' had given place to 'The Devil Tavern,' and the old friends to a set of young disciples who sealed themselves "of the tribe of Ben." But his literary dictatorship was recognized outside of this intimate circle, and contemporary literature abounds in tributes of respect and admiration. The most famous of these is the brief epitaph carved on the stone that marks his grave in Westminster Abbey: "O rare Ben Jonson."

Jonson's character is better known to us than that of any of his literary contemporaries. Combative, arrogant, opinionated, outspoken, and generous, he drank deeply, swore freely, learned his Latin thoroughly, wrote his plays carefully, went to prison for his friends, and fought every fight to the finish. His failings were due to excess not weakness; his virtues were full-grown; whatever he did, he did vigorously, ponderously perhaps, but always wholeheartedly. To scholarship, to criticism, to poetry and the drama, he brought this vehement positiveness and this whole-hearted laboriousness. His personality is stamped on all his work, but in the enjoyment of some of its salient manifestations, one must not lose sight of the range and power and fineness of his literary achievement as a scholar, a critic, a translator, and a lyric poet as well as a dramatist, nor the great importance of his forty years of activity in the development of the drama and the history of literature. His non-dramatic work includes an 'English Grammar,' 'Discoveries,' a prose tract treating among other matters of literary and dramatic criticism, 'The Forest,' a collection of his epigrams and other poetry, and 'Underwoods,' another collection of minor poems and translations. His dramatic work comprises masks, tragedies, and comedies, three forms that Jonson kept distinct.

His influence upon the drama was in large part that of a critic and a reformer. He began his important work at a time when, through the efforts of Shakespeare, Marlowe, Lyly, and others, the popular drama had already attained eminence as a form of literature; and Jonson was ardent to advance and secure this eminence. In the preceding drama he saw much that was crude and absurd, and from the start he urged an abandonment of the incongruities of the chronicle plays and the romantic comedies, and the adoption of fixed rules and more regular models. In the reliance of the dramatists upon the applause of unlettered audiences, he saw a menace to the highest development of the drama; hence he constantly advocated the appeal to the taste of the more judicious through an elevated purpose and a conscientious art. Recognizing that the English drama had already attained greatness under conditions so different from those of antiquity that they forbade the rigid application of the precedents of the classic drama, he nevertheless believed that improvement could be secured by intelligent adoption of classic rules and models. He insisted therefore upon the discrimination between tragedy and comedy and the recognition of the purpose and function of each species according to the precepts of Aristotle, protesting pedantically enough, not only against the incongruities of the old histories but also against such combinations of comedy and mask as Shakespeare's 'Tempest.' A more coherent construction and the application of the unities of time and place, so far as the English stage would permit, were other articles of his theory which he supported by precept and practice. Still farther, he contended that characterization should not depend on an impossible plot or a hap-hazard collocation of heroism, sentiment, and nonsense, but upon a careful representation of certain types as illustrative of human motive, such as the tyrant or the conspirator in tragedy, or the braggart soldier, the gull, or the cheat in comedy. In opposition to the extravagant romanticism that had prevailed up to 1600, Jonson stood for a comedy that should attempt the realistic portrayal of manners. In dramatic criticism and practice Jonson was consequently at most points on the other side from Shakespeare, though he bore splendid testimony to his appreciation of Shakespeare's friendship and genius.

His masks and entertainments, so famous in their day, have little interest now, except as they illustrate the curious literary fashion, or as they exhibit Jonson's charming lyrics. Of the 34 complete, some of the most notable are, 'Hymenæi,' 'The Mask of Queens,' 'The Penates,' and 'The Metamorphosed Gypsies.' His two tragedies, 'Sejanus' and 'Catiline,' are thoroughgoing attempts to present a scholarly and accurate view of history, a penetrating study of historical characters, and to retain as much as possible of classical decorum while conforming in the main to the form of tragedy established by his great Elizabethan predecessors. But his genius found its best field in comedies. Though modeled on the comedies of Plautus and Terence, they fulfil his promise to show an image of his own times, its fads and follies, or "humours"; and though their plots are constructed overelaborately, their artificiality is redeemed by an abundance of humor. The 'Alchemist' with its extraordinarily skilful structure, and 'Bartholomew Fair' with its broad and lively presentation of the London of the day are perhaps the greatest English masterpieces of the strict comedy of manners. Jonson's example turned comedy for a while from romantic to realistic, and satirical themes and treatment; and the influence was potent at least into the 18th century. In humor and the delineation of character, Jonson ranks first of English dramatists after Shakespeare.

His plays, excluding masks, are 'Every Man in His Humour,' 'Every Man Out of His Humour,' 'Cynthia's Revels,' 'The Poetaster,' 'Sejanus,' 'Volpone,' 'Epicæne,' 'The Alchemist,' 'Catiline,' 'Bartholomew Fair,' 'The Devil Is An Ass,' 'The Staple of News,' 'The

New Inn,’ ‘The Magnetic Lady,’ ‘A Tale of a Tub,’ ‘The Case is Altered’ (unavowed by Jonson and perhaps an early play), ‘The Sad Shepherd’ (incomplete), ‘The Fall of Mortimer’ (a fragment). See Drama; Elizabethan Literature—Drama.

Bibliography.—Jonson edited a folio of his works which appeared in 1616; a second folio in 1640. The standard edition is that of Gifford, 1816 (9 vols., frequently reprinted). The separate plays have often been reprinted, and recently with extended introductions and notes in ‘Yale Studies in English.’ For criticism consult Swinburne's ‘Study of Ben Jonson’; Fleay, ‘A Biographical Chronicle of the English Drama’; E. Koeppel, ‘Quellen-studien zu den Dramen Ben Jonson's,’ etc. (Leipsic 1895; Woodbridge, ‘Studies in Jonson's Comedy’; Ward, ‘History of Dramatic Literature’ (vol. II.).

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Jop'lin, Mo., city and one of the county-seats of Jasper County, in the southwestern portion of the State. It is the metropolis of the richest zinc and lead mining camp in the world and the largest city in Jasper County or southwest Missouri. The county of Jasper, in which it is located, is the richest county in the State of Missouri in surplus products, having produced during the year ending June 1904 a surplus of all products amounting to about $15,000,000, which was about four times the surplus product of any other county in the State of Missouri, except one, and was more than double the surplus produced by that county. The larger portion of this surplus was derived from the zinc and lead mines in and around the city of Joplin. Joplin is only six miles from the eastern line of the State of Kansas and about ten miles north of the Indian Territory. It was first settled in 1870 by native American citizens, and was organized as a city in 1873. The city government is composed of a mayor and city council, who are alternately elected annually; the mayor being elected every two years. There are four railroads entering Joplin at the present time as follows: Missouri Pacific; St. Louis & San Francisco; Missouri Kansas & Texas, and the Kansas City Southern; the Arkansas, Missouri & Kansas Ry. is now under construction and is expected to be in operation during 1905. There are six banks, four of which are State banks, and the other two national banks, all having a combined capital of $400,000, with deposits amounting to $2,500,000 annually. The chief business of the city is zinc and lead mining. There are a number of large foundries and other industries supported by the zinc and lead industry. Joplin has a very fine system of public schools, consisting of a high school and 14 other graded schools. It has a Carnegie public library (cost about $50,000); a United States government building (cost $150,000); a county circuit court-house, a Y. M. C. A. building, and a public hospital, and is well supplied with churches. Pop. (1900) 26,023; (1904 est.) 30,000.

Horace Merritt.

Jop'pa. See Jaffa.

Jo'ram, or **Jehoram,** name of two Hebrew kings, one of Israel (851-842 B.C.) and the other of Judah (848-844 B.C.). (1) Jehoram king of Israel was the second son of Ahab, and succeeded his brother Ahaziah. He revived the worship of Jehovah, and repressed the worship of Baal. He joined with the king of Judah in a war with the Moabites. In his reign Benhadad king of Damascus invaded Israel, and besieged Samaria, but retreated to meet a hostile invasion in his own country. In a battle with Hazan king of Syria Jehoram was wounded and retired to Jezreel, where he was slain by Jehu whom Elisha had anointed king over Israel.

(2) Joram king of Judah was the son and successor of Jehosaphat and for four years from 848 B.C. had a luckless reign. The Edomites revolted in the land and Libna joined them, while Bedouin tribes of Arabia sacked Jerusalem and carried off the wives and son of the king, who died horribly of an intestinal disease, as had been foretold by the prophet Elisha.

Jordaens, Jacob, yä'kōb yŏr'däns, Flemish painter: b. Antwerp 19 May 1593; d. there 18 Oct. 1679. From his early boyhood in 1607 he was the pupil of Van Noort, whose daughter he afterward married, and in 1615 was made master in the Guild of St. Luke at Antwerp. He was the most eminent painter of the Flemish school next to Rubens. The most renowned among his religious pictures are ‘The Last Supper’ in the Antwerp Museum; and ‘The Martyrdom of St. Apollonia’ in the church of the Augustines, Antwerp.

Jordan, Camille, French politician: b. Lyons 11 Jan. 1771; d. Paris 19 May 1821. He was a pupil of the Oratorians at Lyons and when still young became imbued with Royalist principles, later developing into an active opponent of the French Revolution. When only 20 years of age he published a pamphlet satirizing the Constitutional Church, entitled ‘Histoire de la conversion d'une dame parisienne.’ When Lyons fell in October 1793, Jordan was proscribed by the Directory for his participation in the insurrection and fled to Switzerland, subsequently passing six months in England. In 1796 he returned to France and in 1797 was sent by Lyons to the Council of Five Hundred. In the revolution of 4 Sept. 1797 Jordan escaped to Basel and later went to Germany. In 1800 he returned and in 1802 exposed the schemes of Bonaparte in a pamphlet ‘Vrai Sens du Vote National pour le Consulat à Vie.’ From that time till 1814 he devoted his time in retirement to literature but at the Restoration was made a councillor of state by Louis XVIII. and from 1816 till his death represented Ain in the chamber of deputies. Besides the above mentioned works he wrote ‘Lettre à M. Lamourette’ (1791); ‘La Loi et la Religion Vengées’ (1792); ‘Adresse à ses Commettants sur la Rêvolution du 4 Septembre 1797’ (1797); ‘Sur les Troubles de Lyon’ (1818); ‘La Session de 1817’ (1818).

Jordan, jôr'dan, **Conrad N.,** American financier: b. New York 20 April 1830; d. there 26 Feb. 1903. He entered a printing office, but soon exchanged this for a banking establishment, was cashier of a New York bank in 1864-80, and in 1880-4 was treasurer of the New York, Ontario, and Western railroad. In 1885-7 he was treasurer of the United States, and introduced in the accounts of the treasury a revised

DAVID STARR JORDAN.

PRESIDENT LELAND STANFORD JUNIOR UNIVERSITY.

SCENE ON THE JORDAN RIVER.

form of debt and cash statements. He was an organizer of the Western National Bank of New York and for a time its president. In 1893 at the recommendation of all important New York banks, he was appointed assistant United States treasurer in New York, and this post he held until his death.

Jordan, David Starr, American college president and naturalist: b. Gainesville, N. Y., 19 Jan. 1851. He was graduated from Cornell University in 1872 and was instructor in botany there 1871–2. He was professor of natural history at Lombard University, Ill., 1872–3, and taught the same subject in the Indianapolis High School, 1874–5. From 1875 to 1879 he was professor of biology at Butler University, Indianapolis; professor of zoology at Indiana University 1879–85, and president of the last named institution, 1885–91. Since 1891 he has been president of Leland Stanford Junior University. Beside innumerable scientific monographs and reports, among which may be named ‘Synopsis of the Fishes of North America’ with C. H. Gilbert (1882); enlarged in 1896 with title ‘Check List of the Fishes and Fish-Like Vertebrates of North and Middle America’; and ‘Report of Fur Seal Investigations’; he has published ‘Science Sketches’ (1896); ‘Footnotes to Evolution’ (1898); ‘Imperial Democracy’ (1899); etc. He was president of the California Academy of Sciences 1896–8 and 1901–3, and has been commissioner in charge of the United States Fish Commission investigations in the Pacific Ocean from 1901, and of the salmon investigations for Alaska from 1903.

Jordan, Elizabeth Garver, American journalist: b. Milwaukee, Wis., 9 May 1867. She is editor of ‘Harper's Bazaar’ and has published ‘Tales of the City Room’ (1898).

Jordan, Jules, American composer: b. Willimantic, Conn., 10 Nov. 1850. He is the author of several cantatas, including ‘Barbara Frietchie’ and ‘Wind Swept Wheat’; and many sacred and secular songs.

Jordan, Thomas, American soldier: b. Luray, Va., 30 Sept. 1819; d. New York 27 Nov. 1895. He was graduated from West Point in 1840; and distinguishing himself in the Mexican War, was promoted captain in March 1847. He was stationed on the Pacific coast in 1856–60, during which time he introduced steam navigation above the Dalles, on the Columbia River. He served in the Confederate army during the Civil War and was promoted brigadier-general for gallantry at the battle of Shiloh. In 1869 he went to Cuba, where he was made chief of the general staff of the insurgent army and soon afterward commander-in-chief of the revolutionists, winning a battle at Guarmaro, in January 1870. In the following year he resigned and settled in New York, where he became editor of ‘The Financial and Mining Record.’ He published ‘Campaigns of Lieutenant-General Forrest’ (with J. B. Pryor, 1868).

Jordan, William George, American journalist: b. New York 6 March 1864. He was graduated at the College of the City of New York; and became managing editor of the ‘Ladies' Home Journal’ in 1897, and was editor of ‘The Saturday Evening Post’ in 1898–9. He has published ‘Mental Training by Analysis, Law and Analogy’; ‘Mental Training a Remedy for Education’; ‘The Kingship of Self Control’; and ‘The Majesty of Calmness.’

Jordan, the largest river of Palestine, and one of the most celebrated in the world. It rises from three main sources at the foot of Hermon, and these upper streams unite in Lake Huleh, the ancient Waters of Merom. From this point it sinks with a rapid current in a narrow rocky bed below the level of the sea, and falls after a course of 9 miles into the Lake of Galilee. Shortly after leaving the south end of this lake it enters a broad valley called by the Arabs Ghôr, and in the Bible «the plain»; and continuing a singularly crooked course of about 65 miles direct distance, or 200 including windings, falls into the north end of the Dead Sea, having received the Zerka or Jabbok and numerous smaller affluents. The Ghôr expands at Bethlehem and Jericho into a wide plain, but elsewhere is from three to five miles across. The upper part of the valley of the Jordan is hilly, arid, and barren, but it becomes more level and fertile as it approaches the Zerka. The river is muddy and full of small fish. In the dry season it is shallow, with an average width of from 30 to 50 yards. At its mouth it is about 180 yards broad and about 3 feet deep. It is subject to great inundations during the winter season. The valley of the Jordan forms one of the most remarkable depressions in the world, the Dead Sea being 1,312 feet below sea-level, and the total fall of the river being about 2,300 feet.

Consult: ‘Official Report’ (Washington, 1852); ‘Survey of Western Palestine’ (London, 1859); Smith, ‘Historical Geography of the Holy Land’; Molyneux (in the ‘Journal’ of the Royal Geographic Society 1848); Lynch, ‘Narrative of the United States Expedition to the River Jordan and the Dead Sea’ (1849); McGregor, ‘Rob Roy on the Jordan’ (1870); Costello, ‘Gospel Story’; Macmillan, ‘Guide to Palestine and Egypt’; Thomas, ‘Two Years in Palestine.’

Jorullo, hō-rool′yō, a volcano of Mexico in the State of Michoacan, 160 miles southwest of Mexico, and 80 miles from the Pacific. The district had continued undisturbed from the discovery of the New World when, in June 1759, earthquakes occurred, followed 29 September by one more violent. On the line of a chasm which was made, six volcanic cones were formed, the loftiest, Jorullo, 1,600 feet above the plain. The total height of the volcano above the sea is 4,265 feet. It shows but few signs of activity at present.

Joseffy, yō-sĕf′ĭ, **Rafael,** Hungarian-American pianist: b. Miskolcz, Hungary, 1853. He was a pupil of Moscheles at the Leipsic Conservatory and of Tausig at Berlin, won distinction in a concert tour of Holland and Germany, and later appeared with large success throughout Europe and the United States. For several years he was a professor in the National Conservatory at New York, where he resided from about 1880. As a virtuoso he evinces great facility and technical finish, and won particular recognition through his interpretations of Chopin. His compositions include: ‘Ungarisches Album’ (6 works for pianoforte); ‘Die Mühle’ (op. 23); a ‘Marche Turque’; and ‘Conzert-Studien nach Chopin.’

Joseph, Saint, the husband of Mary the mother of Jesus Christ, was a descendant of the house of David, born at Bethlehem, but resident at Nazareth, where he practised the trade of a carpenter. Tradition and art represent him as an old man at the time of Christ's birth and he is said to have died before the beginning of Christ's public ministry. His day in the Roman Catholic calendar is 19 March.

Joseph, a son of the patriarch Jacob by his favorite wife Rachel. His father's preference for him and his own relation of dreams which predicted his future exaltation above those of his household drew upon him the envy of his brothers, who sold him to Ishmaelitish and Midianite slave-dealers, by whom he was sold to Potiphar, a captain of the guard in Egypt. The story of his condemnation to prison on the false accusation of Potiphar's wife, of his release and subsequent elevation to the position of vice-regent of Egypt and the final settlement there of his father and brothers is related in the Book of Genesis. Authorities still differ as to the period in Egyptian history to which Joseph's life belongs, but the majority agree in placing it under the Hyksos or shepherd kings.

Joseph of Arimathæa, member of the Jewish Sanhedrim, who believed in Jesus, but had not the courage to make profession of faith. He was born in Rathaim, a city of Benjamin, near Lydda. After the crucifixion he went to Pilate, begged the body of Jesus, wound it in fine linen and buried it in his own new tomb. According to tradition he came as apostle to Glastonbury, England. His day is 17 March in the Roman Catholic calendar, and 31 July in the Greek Church.

Joseph I., emperor of Germany: b. Vienna 26 July 1678; d. 17 April 1711. He succeeded his father, Leopold I., and was employed for nearly the whole of his reign in war. With England and Holland he continued the war against France, to seat the Archduke Charles on the throne of Spain. The great victories gained by the allies under Marlborough in the Low Countries, and Prince Eugene on the Rhine, made the reign of Joseph especially noteworthy. He was equally triumphant in Italy and Hungary; in the latter kingdom driving the revolted Bagotski from the country, and forcing him to seek safety in Turkey; while in the Italian peninsula, great cities from Mantua to Genoa were laid under heavy contributions.

Joseph II., German emperor, son of Francis I. and Maria Theresa: b. Vienna 13 March 1741; d. there 20 Feb. 1790. He was elected king of the Romans in 1764, and on the death of his father, 1765, German emperor. His mother declared him co-regent in the hereditary states of the house of Austria, and gave him the command of the army; but the real authority remained in her hands. In the earlier part of his reign he employed his time in traveling and becoming acquainted with his states. In 1780 Joseph came into the possession of full dominion over his hereditary states. He allowed a greater freedom of the press, put an end to the connection between Rome and the religious orders, diminished the pensions, placed the Jews on a better footing, abolished bondage, suppressed all nunneries, and many monasteries, particularly those of the purely contemplative orders. All branches of the government, public education, the police, and the peasantry, were reformed. By a new code of laws capital punishments were abolished. On 9 Feb. 1788 he declared war against the Turks. By the defeat at Lugos (20 Sept. 1788) the army was obliged to retreat, but in the following year fortune favored the Austrian arms, and Belgrade surrendered. With the tax law, introduced in November 1789, nobility and peasantry showed themselves equally dissatisfied, and the signal was given for open rebellion. The Netherlands declared themselves independent, and expelled the imperial forces from all the provinces, and Luxemburg alone remained in the possession of the imperial troops. The Hungarians also rebelled, and demanded the restoration of their ancient rights and constitution. Joseph, in January, 1790, declared all the acts of his government in that country revoked, even to the edict of toleration (22 June, 1781). Joseph was a man of considerable ability, but arbitrary and despotic. Whatever his own reflections or his knowledge of other countries showed to be useful, he wished to introduce. But he did not sufficiently consider that he had to do with men who would not see things in the same light as himself; and that long habit rendered it difficult to change, at once, usages sanctified by time. Being a freethinker he often grossly overrode the rights of the Church. Consult Gross-Hoffinger, ‹Lebens- und Regierungs-Geschichte Josephs II.› (1835–7); Brunner, ‹Joseph II.› (1885); Schlitter, ‹Pius VI. und Joseph II.› (1894).

Josephine (Fr. zhō-zĕ-fēn), empress of the French: b. Trois Islets, Martinique, 24 June 1763; d. Malmaison, near Paris, 29 May 1814. She was the daughter of Lieutenant Tascher de la Pagerie, and was married in 1779 to Vicomte Alexandre Beauharnais, by whom she had two children, Eugène and Hortense. In 1794 her husband, who had been commander of the army of the Rhine, was executed by order of the Convention. She herself had a narrow escape, having been included in the list of proscription. After the fall of Robespierre she paid a visit to Napoleon to thank him for restoring the sword of her husband, and so pleased him that he soon after married her (1796). When Napoleon became emperor in 1804 she was crowned with him. But the fact that the union was childless stood in the way of Napoleon's ambition to become the founder of a dynasty, and accordingly in 1809 Josephine was divorced, retiring to her seat of Malmaison, with the title of empress-queen-dowager and an annual grant of two million francs. Consult: Aubenas, ‹Histoire de l'Impératrice Josephine› (1859); Welschinger, ‹Le Divorce de Napoléon I.› (1889); Ober, ‹Josephine, Empress of the French› (1901).

Josephus, jō-sē'fus, **Flavius** (Jewish name, JOSEPH BEN MATTHIAS), Jewish historian: b. Jerusalem 37 A.D.; d. about 95 A.D. He was carefully educated and in 64 A.D. he made a journey to Rome. On his return he found his countrymen preparing to throw off the Roman yoke, and having tried in vain to persuade them of the hopelessness of such a struggle, accepted the post of defending the province of Galilee, and actually held the fortified town of Jotapata against the whole Roman army for 47 days. He was captured at the fall of the city, was afterward present in the Roman army at the destruction of Jerusalem (70 A.D.), and went with Titus to Rome, where, assuming the family name of his patron, Flavius, he lived in learned leisure. Here he wrote (in Greek) 'The History of the Jewish War' and 'The Antiquities of the Jews,' giving a history of the Jews from the earliest times to the reign of Nero.

Josh Billings. See SHAW, HENRY WHEELER.

Joshua, the leader of the Israelites after the death of Moses. He was the son of Nun, of the tribe of Ephraim, and upon him fell the task of conducting the people over the Jordan, and commanding their armies in battle against the heathen they were ordained to dispossess. He succeeded in ravaging a large portion of Palestine, and dividing it among the people. He died at the age of 110 and was buried at Timnath-Serah, in Mount Ephraim.

Joshua, Book of, a historical book of the Old Testament, sometimes classified as the last division of a Hexateuch, and containing an account of Joshua's leadership in Israel from the death of Moses until his own death. While it has many resemblances in style and arrangement to the Pentateuch, or first five books of Moses, it must have been early separated from them, if ever it was included in the same series, for the Samaritans, though they have had the Pentateuch since the 8th century before Christ, have never acknowledged the Book of Joshua. The contents of the book may be divided into three parts: the conquest of Canaan; the partition of the land among the 12 tribes; and the parting address made by Joshua to the assembled people. The first part is a narrative of the manner in which Joshua prepared to cross the Jordan at the head of the Israelites. The miraculous passage of the Jordan is accomplished, circumcision is performed, and the Passover observed on the soil of the Promised Land. Jericho and Ai are captured; the covenant confirmed at Ebal and Gerizim; the Gibeonites secure a treaty of peace through guile. The decisive battle of Bethhoron ends in the rout of the leagued kings. The second part is topographical and statistical, gives a general view of the land, with some account of its apportionment, and the setting aside of the Cities of Refuge. The third and concluding section is in the style of Deuteronomy. The people are exhorted to remain faithful to Jehovah, to eschew idolatry, and at Shechem, to which place the bones of Joseph had been brought, the covenant is renewed. The death and burial of Joshua and Eleazar make up a narrative which closes the book.

Josiah, king of Judah. He succeeded his father Amon (638 B.C.). He is said in the Scriptures to have done «that which was right in the sight of the Lord.» He took an active part in the reform of temple worship, and in the abolition of idolatry throughout the land, and commenced the restoration of the temple, during the progress of which the high-priest Hilkiah discovered the book of the law, that is, the book of Deuteronomy. In his 30th year he marched out against Pharaoh Necho, king of Egypt, who was on his way to attack the kingdom of Assyria. Josiah was slain in the battle at Megiddo where he had attempted to check the northward march of the Egyptians.

Josiah Allen's Wife. See HOLLEY, MARIETTA.

Joss, the penates of the Chinese; every family has its joss. A temple is called a joss house. The joss is an idol, usually of wood and decorated in colors, mostly in gold and red. There are three large joss houses in San Francisco, one in Chicago and two in New York. A Chinese upon entering the presence of a joss falls upon his knees, and touches his forehead thrice upon the floor, as a preliminary of worshipping the joss. See CHINESE; IDOLATRY; IMAGE WORSHIP.

Jo'tham, king of Israel and Judah, who succeeded (735 B.C.) Uzziah, his father. He ascended the throne at the age of 25 and reigned 16 years.

Joubert, yow'bĕrt, **Petrus Jacobus,** Boer military officer: b. Cape Colony 1831; d. Pretoria 27 March 1900. After an elementary education he settled as a farmer in the Wakkerstroom district of the Transvaal, about 1863 was elected for that district to the Volksraad, and in 1870 became attorney-general of the South African Republic. During the visit of President Burgers to Europe in 1874 he was acting president. In 1880 he became commander-in-chief of the Boer forces at the outbreak of the war with England, and three times defeated the British, at Laing's Nek, Ingogo, and Majuba Hill, the last battle (27 Feb. 1881) deciding the war in favor of the Boers. He was again acting president during the absence of President Kruger in Europe in 1883–4. He twice unsuccessfully contested the presidency with Kruger, the vote being 7,881 to 7,009 in 1893 and 12,858 to 2,001 in 1898. In the second Boer war also he was commandant-general, and directed the campaign in northern Natal which resulted in a succession of disasters for the British. He became ill early in 1900, however, and was obliged to withdraw from active service. He was the ablest of the Boer military leaders.

Jouett, jow'ĕt, **James Edward,** American naval officer: b. Lexington, Ky., 27 Feb. 1828; d. Sandy Spring, Md., 1 Oct. 1902. He entered the navy in 1841, served during the Mexican War, was graduated from the United States Naval Academy in 1847, in 1861 with a detachment of marines entered Galveston harbor and destroyed the Confederate war-vessel Royal Yacht, and for his services was appointed to the command of the United States steamship Montgomery. As lieutenant-commander, he was prominent in Farragut's entrance of Mobile Bay (August 1864), and in 1885, when in command of the North Atlantic squadron he opened the transit across the Isthmus of Panama, closed by the rebels. He was promoted rear-admiral in 1886, subsequently president of the Board of Inspection and Survey, and in 1890 was retired.

Jouffroy d'Abbans, Claude François Dorothée, klōd frāṅ-swä dō-ro-tā zhoo-frwä däb-bäṅ, MARQUIS DE, French inventor: b. Franche-Comte 30 Sept. 1751; d. Paris 1832. He is claimed by the French as the inventor of steam navigation. He served in the army, and in 1783 succeeded in propelling a small paddle-wheel steamboat up the Rhone at Lyons — the connection between piston and paddle-wheel axle being rack-and-pinion.

Joule, James Prescott, English physicist: b. Salford, Lancashire, 24 Dec. 1818; d. Sale, Cheshire, 11 Oct. 1889. He was chiefly his own educator, but received special instruction in physics from John Dalton (q.v.). While associated in business with his father, a brewer, he early developed an enthusiasm for original scientific research, and described in the 'Annals of Electricity' (January 1838) an electromagnetic engine he had invented. While it was afterward found that this invention was impracticable as a substitute for the steam-engine, the further investigation to which it led brought to light many important facts concerning the laws of heat, its electrical and mechanical nature and evolution, chemical affinity as related to heat, etc. The mechanical equivalent of heat (see HEAT) was first ascertained by Joule, who also, in 1847, announced the doctrine of the correlation and conservation of energy, in a paper read at Manchester which failed at the time to impress men of science, as did also an address of like import before the British Association, but which was taken up by William Thomson (Lord Kelvin), by whom its momentous significance was brought home to the scientific world. No principle of science is now more fully established than Joule's law for determining the energy developed by an electric current in overcoming the resistance of a circuit, a law which he verified by experiment. He received the highest honors of scientific bodies and universities, and in 1873 was made president of the British Asociation for the Advancement of Science. His writings are to be found mainly in the proceedings of scientific societies and in English periodicals, but in 1885 and 1887 appeared, in two volumes, his 'Scientific Papers.'

Journalism. Journalism is a comprehensive term which signifies the business of producing a public journal. In a general way it is applied to the vocation of making newspapers. Broadly speaking it is both a business and a profession, though the name of journalist as commonly understood is limited to those who are engaged on the editorial or news or literary side of the production rather than on the business side. While editor and journalist are not strictly synonymous — the former meaning the head of a paper or a department and the latter any literary worker on a newspaper — they are often used as convertible terms.

In a large sense the subject involves the functions of journalism as collector and purveyor of news and as leader and exponent of public opinion; the ethics of journalism in its various fields of political, religious, literary, social and commercial aim and representation; the relations of the counting room to the editorial department; the training and qualifications of the journalist; in short, the mission, methods, responsibilities and obligations of journalism. All of these general phases are deeply affected by the physical conditions of the business. Within the last twenty-five years these conditions have been practically revolutionized. In the mechanical facilities of production, in the cheapening of white paper and in the instrumentalities of news collection there has been an extraordinary advance. This great change in the material factors has wrought a corresponding change in the scope and character of journalism. Not only as a business enterprise but as a public influence it takes on new aspects.

The remarkable development of later years touches every side of the material production of a newspaper. The old, limited, slow-moving printing press has been transformed into the ingenious and gigantic quadruple or octuple which converts the plain white roll into complete, folded papers, at the rate of thirty to forty thousand an hour. The number of pages may be determined at will, even at the last moment before going to press, thus responding to the exigencies of the news; and the application of the half tone and of color at undiminished speed permits pictorial effects. Simultaneously with this improvement in the printing press has come the linotype which substitutes machine type setting for hand composition. A third vital advance has been the perfection of the process of making paper out of wood-pulp which has vastly increased the supply and greatly decreased the cost of white paper.

These radical changes in the elemental business factors have largely modified the conditions of journalism. They have opened the way to unlimited production and have enormously cheapened the cost of the single copy. Penny and two-cent papers have become the prevailing rule. Immense circulations have thus been rendered possible, and where twenty-five years ago the edition even of the most widely read papers was comparatively limited, not a few now issue scores and even hundreds of thousands of copies a day. At the same time the initial cost of the newspaper plant with its expensive machinery and the magnitude of the daily transactions require a far larger outlay than in the earlier time and the business has come to be one demanding much greater capital.

All of these circumstances have inevitably and powerfully moulded the course and character of journalism. They have given increased importance to its business side, and have tended to make business considerations in the publication still more dominant. The effect has been two-fold and somewhat contradictory. The great capabilities of the business with the reduced cost of telegraphing have stimulated and quickened journalistic enterprise and have broadened the range of the journalistic field. The scope of journalism has been enlarged and in many cases its standard has been elevated. Within a sphere, perhaps too limited, the best and worthiest effort is accepted as the best business. But, on the other hand, the competition for great circulations has bred sensationalism and a pandering to the taste for personal and piquant matters. There is an eager and feverish struggle for the unusual, the dramatic and the spectacular, a constant straining for effect, a lavishness of "scareheads" and garish pictures, a studied and persistent search for objects of criticism and attack. The appetite for the effervescent grows by what it feeds on, and must be met by new excitation. This rivalry of explosive and paroxysmal journalism is carried on with too little sense of responsibility and verification, and while the notable manifestations are exceptional, and it would not be just to say that the infection has extended through journalism, it is nevertheless true that its injurious influence is widely perceptible.

In one important and conspicuous respect the development of journalism as a business has palpably improved its character. It has produced a greater degree of independence than ever distinguished it before. In the earlier days political and official advertising might be a large item in the income of a newspaper. Its monetary value gave it potency in controlling editorial policy. But in the expansion of the business under modern conditions official patronage is unimportant compared with general commercial advertising, and its relative decline in value has greatly reduced its power of influencing newspaper expression. The favor of the public is far more advantageous than that of the party manager. It brings popular circulation and consequently business advertising, and there is less concern about the crumbs that fall from the official table. Even party journalism has greatly advanced in independence. While standing as the recognized exponents of party principles and policies the important party papers have become much more free in their judgment of men, methods and measures. A more critical standard is applied and a more rigorous public accountability is enforced under which there has been a visible improvement in general civic administration.

Under the same influences distinctive independent journalism has increased. It professes to have no connection with any party and disclaims a representative party position. Its theory is that it addresses itself not to party sentiment but to independent public judgment, and its claim for support is based on its journalistic quality without regard to political association. It is the extraordinary advance of newspaper-making as a business that has rendered independent journalism on a large scale possible. A quarter of a century ago it would have been difficult to name more than two or three important examples in the United States. Now there are many conspicuous and successful papers which are thus classed, and even more significant of the change in journalism is the greater independence of the party journals already referred to. Indeed, in essential independence, which consists of free judgment and candid expression on public questions, the line of demarcation between the better class of party papers and the professedly independent papers is scarcely perceptible and it would be hard to distinguish between them.

There has been a signal advance in other directions. Against the false and meretricious tendencies to sensationalism which have been indicated must be placed a higher and broader treatment of all the varied interests of life. In news collection the journalism of to-day is as much ahead of that of 25 years ago as the railroad express is ahead of the stage coach. It spares no expense, reaches everywhere, sends its correspondents to all parts of the world, employs the best experts and specialists, caters equally to the lover of literature and the lover of sports, keeps pace with scientific discovery and development, rivals the best periodicals in commanding the most famous writers and artists, makes its own special missions of public service, reports all business, social, educational, philanthropic and religious movements, and, in short, treats whatever concerns mankind as within its boundless domain. Its range, enterprise and comprehensiveness are a constant marvel. With all its faults the breadth, fullness and accuracy which are combined with so much celerity of action attest a thoroughness of organization and extent of resources never before equalled.

There are marked differences, however, in its development in different lands. Continental journalism in Europe is of a type quite distinct from English journalism, and that again is unlike American. In Paris the news is not the conspicuous feature of the newspapers. It holds a subordinate place and is limited in its quantity. Literary and dramatic criticism and political discussion command the first rank, and the feuilleton is a popular and important part. Literary excellence with a flavor of characteristic French wit is the dominant trait. The Parisian type with variations, generally soberer and heavier, is the prevailing continental model. English journalism is weightier and more enterprising in news. It covers the field of international politics and war with special thoroughness. It lacks the variety and vivacity of American newspapers, but within its chosen and more limited range it is more complete. Its reports of parliamentary proceedings and of important political, social and scientific meetings are copious and intelligent, and its discussions are distinguished by sobriety and information.

In life, spirit, minuteness of news gleaning, emphasis of display, and preponderance of personal flavor American journalism far outstrips all others. It does not surpass, oftentimes does not equal, British journalism in the presentation of great events, but in the multiplicity of its news of all sorts not only from its own country, but from all the world, there is no approach to it elsewhere. Its dominant tone is a light and airy freedom. There is a manifest tendency even on the part of the most respectable newspapers to avoid being heavy. The general aim is to be breezy, pungent and picturesque, and this often leads to the flippancy which is remarked in American papers. Perhaps the public taste which is thus indicated and cultivated will serve to explain in part why there are no serious and masterful weekly journals of literary and political discussion in the United States like the ‹Spectator› and the ‹Saturday Review,› and why even the monthly periodicals run chiefly to fiction and light matter. There are excellent trade journals of a high grade, showing a demand for the searching and careful treatment of special interests, but outside of these immediate respresentatives of the stupendous material enterprises of the land, the trend is towards the lighter vein.

Somewhat analogous is the explanation of the fact that journalism has grown more impersonal in its sources and impress. It is no longer distinguished by the great overshadowing personalities which marked it a generation ago. No editorial chief puts his individual stamp on a paper as Horace Greeley did, with his controversial power, his moral earnestness and his incisive force, which seemed to make the whole paper breathe his spirit and speak his voice. There are no successors to Raymond, Bennett, Weed, Bowles, and Dana. Henry Watterson is perhaps the only survivor of the old school of journalists. The difference is due, however, not so much to the lack of men as to the change of conditions. In its immeasurably wider range and larger demands the great journal of to-day is the product of no single mind, but of a vast organization and of a whole galaxy of stars. The elder journalism was largely political pamphleteering. The later journalism is the complete mirror of daily life, and no individual throws so great a shadow across its comprehensive face.

It is a question much mooted whether journalism has declined in influence. It never was as universally read as now; it never was so much a common practice to read several newspapers; and whether in this multiplicity of reading and frequent contrariety of representation as serious an impression is made as when the appeal was more earnest and less divided may well be doubted. The editorial page has not actually fallen off in interest and importance; on the contrary, it is all in all better written, more varied and more instructive than when it had more of a polemic character. But in the broad development and great advance of the news departments the editorial page has receded in relative importance, and the drift to the light treatment of topics has tended to detract from its distinct and superior position. The greater absorption of the public mind in multiplied interests operates in the same direction. In the stress of modern business life and in the variety of diversions the body of readers have less time to follow public discussion. If it be true, as it often is, that the favorite journal does the thinking for its readers on current questions, it is equally true that many of the questions take less hold than when life was more simple and feeling more tense. When the press is in substantial accord on any public matter, except where party tradition rules, it generally carries the public judgment, and united expression makes it invincible; but when there is a discord of journalistic voices little heed is apt to be paid to any. The power of the press in its aggregate force, in the sweep of its activities and in a certain apprehension of its publicity, has steadily augmented; but at the same time the impression that it is too intrusive, too little restrained, too little governed by a just sense of responsibility, has grown and has impaired the influence it would otherwise exert.

It remains true, however, and probably grows more true with the decadence of other influences, that the press is the most effective force in protecting the moral and social well-being of the community. It is the belief of many observers that under our modern conditions the weight of mere authority is declining. In the intense strife and eagerness of the times the efficacy of the old standards in enforcing true principles and restraining wrongdoing grows weaker. With this advance of individual assertion and independence the power of public opinion is becoming the surest defence of social and business morality. The blaze of publicity gives a protection which nothing else furnishes. In the financial and social world there is a wide margin along the shadowy and undefined line between law and lawlessness, between ethical duty and questionable interest, where the search-light of exposure is the only security. Much would be done under cover of darkness which fears the light. Despite a freedom which often degenerates into license the press is thus recognized not only as the most effective safeguard against political and administrative debauchery but as the best bulwark against that social and business misconduct which becomes a public offence.

The relation of the counting-room to the editorial department involves both the business and the ethics of journalism. The business side cannot be disregarded. In its ultimate purpose it is a commercial proposition. Newspapers are published to make money. The counting-room considers both income and outgo. It adjusts expenditures to receipts. It properly studies to augment revenue in every legitimate way. But while newspapers are business enterprises they are such with recognized limitations and obligations. They are not simply business undertakings but public representatives, and the former object, while consistent with the latter, is subordinate to it. The foundation of the newspaper is the confidence of the public. It is the history of yesterday and the interpreter and teacher of to-day. In the very nature of the relation it assumes distinct obligations. It is bound to give the news and to treat public questions in absolute good faith. The counting-room is warranted in doing business in every way compatible with the fulfillment of that duty, but in all legitimate journalism it is a fundamental rule that editorial opinion and news publication must be beyond the reach of any questionable influence. The editorial department must be entirely free from commercialism. Public confidence and moral power depend on full faith that editorial and news conduct is honest, fearless and upright. The publication of a newspaper, like any other enterprise, is founded on business principles; its sphere or field of operations, whether general, political, literary or other, is chosen; the relation of counting room and editorial room in organizing and maintaining it on a sound business basis is of the most intimate character; but when the general lines of the enterprise are determined, the independence and integrity of the editorial management and fidelity to its declared aim as a public representative within its chosen sphere are absolutely indispensable. This rule lies at the foundation of the whole ethical code of journalism.

The question of the training and qualifications of the journalist has assumed new interest and importance both through the general growth of the profession and through special movements for its advancement. Schools or chairs of journalism have been established in a few instances and in a limited way, and the munificent endowment by Mr. Pulitzer of a College of Journalism in Columbia University — the first large and distinct project of the kind — has presented the proposition in a practical and definite form. There are two systems of thought on the subject. The first holds that the best and most efficient school of journalism is the newspaper office. It believes that the true journalist is born, not made; that knack, aptitude, native talent, the sense of news and proportion lie at the foundation of success; and that the most useful training is that of actual experience. It does not dispute that broad education and culture are essential to the journalist, and recognizes that particular studies, like history, political economy, the fundamentals of law, social science, and kindred matters, may be followed with special advantage. But it urges that these may be gathered from the general college course, and that the college or university has no distinctive professional knowledge to teach journalists in the special sense that it has to teach lawyers or physicians. The technicalities of the newspaper art — a suitable style, phonography, proof reading, the treatment of news and the like — are best acquired in practice, and the rest is the quickest and surest application of knowledge which is power, and of instinct or intuition which in dealing with public intelligence and currents is no less power, to the activities of the world.

The other system of opinion is represented in the scheme and scope of Mr. Pulitzer's College of Journalism. It is based on the theory that the journalist can be prepared for his vocation, like the lawyer, by a special course of study adapted to its requirements. Its aim and its tendency are to elevate and dignify the profession, and to establish a higher standard both of obligation and of performance. It seeks to teach not merely the technical necessities in newspaper-making but the true ideals of public service to which the newspaper should be dedicated, and the wide range of knowledge with which the journalist should be equipped. This includes style, ethics, law, literature, history, sociology, statistics, and particularly the principles and methods of journalism. It embraces an examination and comparison of existing newspapers by experts, an exposition of the functions of editor, correspondent and reporter, and the production of an experimental journal under the necessary limitations with its practical application of the instruction. In its main features this plan is an enlargement of the ordinary academic course directed to a particular end, and it is claimed that the establishment of such a college with liberal endowment would not only provide a large body of trained journalists but would set a standard for the profession.

On the whole, notwithstanding the faults of the "new journalism," the position of the press in the public estimate is increasing. One evidence of this truth is the more liberal character of libel legislation. In some States the greater license has prompted efforts at more restrictive measures, but the general trend of legislation has been toward reasonable liberality with just accountability. The prevailing movement has been to provide reparation for any wrong or injury that may be done, to assure just restitution for actual damages, but not to permit punitive damages or trammel the free expression of opinion. Journalism is advancing and is acquiring a higher position and recognition as a distinct profession. With the enlightened spirit of the age and with the marvellous agencies of instant and united expression the power of public opinion steadily grows, and the journalist is its medium and prophet. See American Newspapers; Periodical Literature.

Charles Emory Smith,
Editor 'The Press,' Philadelphia

Journalism, School of, a college of journalism, endowed by a gift of $2,000,000 by Joseph Pulitzer, editor and proprietor of the New York *World,* to Columbia University, New York, in 1903. With the advance of civilization and general culture and intelligence the demands upon the journalists of the present day are constantly becoming greater, and this college is the recognition of the importance and place of journalism as a profession, and a practical endeavor to equip those who adopt it, by a course of thorough instruction for its exacting and laborious duties. Mr. Pulitzer considers the creation and rendering effective of public opinion (see Public Opinion, Power of) a task of which the press alone is capable of successfully accomplishing. The College of Journalism will therefore be a means to an end — to raise the character and standing of journalism, to increase its power and prestige, and to attract to the profession men of the highest capacity and the loftiest ideals, who, because of special training, will advance the professional to a higher standard of thought and action. This school is the first institution of the kind in the world. See Journalism.

Joveite, jōv'īt, is a nitro-substitution explosive used in blasting, and as charges for high-explosive shells, which was invented by J. E. Blomen, Washington, D. C. It consists of nitro-naphthalenes 6 to 8 per cent, nitro-phenols, 16 to 30 per cent, and nitrate of soda 64 to 76 per cent. It is made by melting the nitro-naphthalenes in a steam-jacketed kettle, adding the nitro-phenols and continuing the heating until they are melted, and then stirring into this liquid mixture the solid nitrate of soda in a finely ground and perfectly dry condition until each of the solid particles of the nitrate is coated and impregnated with the liquid. On cooling, the particles of the nitrate are protected from deliquescence by the coating of scarcely soluble nitro-substitution compounds, while on explosion, the nitrate causes the reaction to be most complete. For blasting purposes this explosive is used in a granulated condition, but in loading armor-piercing projectiles it is poured into the shell while in the plastic condition and on cooling sets to a hard mass which completely fills the cavity except for a canal in the centre where the fuse is placed. For blasting purposes the explosive is fired by means of a mercuric fulminate detonator, but the charges in shells are fired by means of gunpowder fuses. In tests of the explosive by the United States navy, made at Indian Head, Md., in 1897, a 10-inch Carpenter armor-piercing shell containing 8.25 pounds of joveite, fired with a velocity of 1,860 foot-seconds at a Harveyized nickel-steel armor plate, 14.5 inches thick, passed completely through the plate and burst on the other side. See Explosives.

Jovianus, jō-vĭ-ā-nŭs, **Flavius Claudius,** Roman emperor: d. Dadastana, Bithynia, 17 Feb. 364 A.D. He was originally captain of the household troops of the emperor Julian, whom he accompanied in the disastrous campaign against the Persians in which Julian lost his life (363 A.D.). After Julian's death he was proclaimed emperor by the troops, but could only extricate his army by ceding to the Persian monarch the five provinces beyond the Tigris. He was succeeded by Valentinianus I.

Jovellanos, hō-vĕl-yā'nōs, **Gaspar Melchior de,** Spanish statesman and writer: b. Gijon, Spain, 5 Jan. 1744; d. Vega, Spain, 27 Nov. 1811. He was educated at the universities of Oviedo, Avila, and Alcalá, became in 1770 a member of the Royal Academy, in 1778 chief justice of the criminal court at Madrid, and in 1780 a member of the council of state. Subsequently he was for a time minister of justice, but in 1801, through the agency of his enemy, Don Manuel Godoy (q.v.), was imprisoned at Majorca. Released at the French invasion (1808), he joined the patriots, and became a member of the supreme junta. His writings are various, including treatises on political economy, a dissertation on English architecture, a ‘Memoir on Law Applied to Agriculture,’ the tragedy ‘El Pelayo,’ and ‘El Delincuente Honrado’ (‘The Honorable Delinquent’), a comedy.

Jow′ett, Benjamin, English scholar and educator: b. Camberwell, London, 1817; d. Oxford 1 Oct. 1893. He studied at Oxford, was ordained in 1842, and became regius professor of Greek in 1855. In 1855 he published a notable commentary on the Epistles of St. Paul. In 1860 he contributed an essay ‘On the Interpretation of Scripture’ to the celebrated volume ‘Essays and Reviews,’ for which he was tried on a charge of heresy before the chancellor's court, but was acquitted. In 1870 he became master of Balliol College, and in 1871 published his most important work, a translation of the ‘Dialogues of Plato,’ of which a fifth edition was issued in 1892. He subsequently published translations of Thucydides (1881) and the ‘Politics’ of Aristotle (1885). He was vice-chancellor of the university in 1882–6.

Joy, Charles Arad, American chemist: b. Ludlowville, N. Y., 1823. He was educated at Union College and the Harvard Law School, and after a few years spent as professor of chemistry at Union, became in 1857 professor of chemistry at Columbia, where he remained for 20 years. In 1866 he became president of the Lyceum of Natural History and was long one of the editorial staff of the ‘Scientific American.’

Joy, George William, English painter: b. Dublin, Ireland, 1844. He was educated at Harrow, and studied art at Kensington, at the Royal Academy, and under Charles Jalabert and Bonnat, at Paris. He has won gold medals at Paris, Munich and Berlin. His principal pictures are ‘Domenica’; ‘Chess Players’; ‘Laodamia’; ‘Young Nelson's First Farewell’; ‘Wellington at Angers’; ‘Prince Charlie and Flora Macdonald’; ‘The Death of General Gordon’; ‘Princess Alice of Albany’ (for Queen Victoria); ‘Reverie’ (for the New Zealand Government); ‘Truth’ (German Government); ‘Joan of Arc’ (bought by French Government); ‘Lear and Cordelia’; etc.

Joy, Thomas, American colonist: b. Norfolk, England, 1610; d. Boston 1678. Upon emigrating to America in 1635 he established himself in Boston as an architect and builder, and in 1657 erected the Townhouse of Boston, the earliest civic structure of any note in New England. In 1646 for his share in the ‘Child Memorial,’ protesting against both the civil and ecclesiastical government of the Bay Colony, he was fined and imprisoned.

Joyce, Robert Dwyer, Irish poet and physician: b. in County Limerick, September 1836; d. Dublin 23 Oct. 1883. In 1866 he came to the United States and practised medicine for several years in Boston, Mass., contributing during that period to the ‘Pilot’ and other Irish journals. He published ‘Ballads, Romances, and Songs’ (1872); ‘Deirdré,’ a much admired epic poem, which appeared anonymously as one of the ‘No Name Series’ (1876); Legends of the Wars in Ireland’ (1868); ‘Fireside Stories of Ireland’ (1871); ‘Blanid,’ a poem (1879); ‘The Squire of Castleton’; etc.

Joyeuse Entrée, zhwä-yėz ŏṅ-trā, the name given to the important privileges of the estates of Brabant and Limburg, with Antwerp, which the dukes were obliged to swear to maintain before they were allowed to enter the ducal residence, from which circumstance the name was taken. The most important of these privileges was that the people were released from an allegiance whenever the duke should attempt to violate their rights. So important were these privileges considered that many women went to Brabant to be confined there, that their children might enjoy the rights of a citizen of Brabant.

Joynes, Edward Southey, American educator: b. Accomac County, Va., 2 March 1834. He was educated at the University of Virginia and at Berlin, in 1858 was appointed professor of Greek at William and Mary College, in 1866–75 was professor of modern languages at Washington College (now Washington and Lee University, Lexington, Va.), and subsequently held chairs in Vanderbilt University and the University of Tennessee. In 1882 he became professor of modern languages in South Carolina College (Columbia). He published text-books of French and German, most important of which is the ‘Joynes-Meissner German Grammar’ (1887).

Juan Fernandez, joo′ạn fĕr-nän′dēz (Sp. hoo-än′ fĕr-nän′dĕth), so called from the name of its discoverer, also sometimes Más-á-Tierra, an island in the South Pacific Ocean, about 350 miles west of the coast of Chile, to which it belongs. It is 12½ miles long and 5 miles broad at the broadest part, mountainous, and of rugged aspect. Parts of it are fertile, producing various kinds of timber, peaches, figs, grapes, cherries, etc. There are excellent fish. The island is inhabited by a few settlers, whose chief occupation is the providing of fresh vegetables, water, and wood for the whaling or other vessels that call here. Defoe is said to have founded his ‘Robinson Crusoe’ on the history of the solitary residence here for over four years (1704–9) of a Scotch sailor, Alexander Selkirk.

Juan de Fuca, joo′ạn dĕ fū′kạ (Sp. hoo än′ dā foo′kä), **Strait of,** an ocean passage between the State of Washington and Vancouver Island. It connects the Pacific with the Strait of Georgia on the north and Puget Sound on the south. It is 100 miles long and about 15 miles wide. It contains several islands, some of which were at one time in dispute between the United States and Great Britain.

Juarez, Benito Pablo, bā-nē′tō päb′lō hoo-ä′rĕth, Mexican statesman: b. San Pueblo Guelatao, Oajaca, 21 March 1806; d. Mexico 18 July 1872. He was admitted to the bar in 1834; became a judge of the civil court in 1842; in 1847–52 was governor of the state of Oajaca, in which post he greatly improved provincial conditions; and after a period of exile (1853–5) joined the revolutionists under Alvarez, by whom he was later made minister of justice and ecclesiastical affairs. In 1855 he was appointed provisional governor of Oajaca by Comonfort, the successor of Alvarez, and in 1857 elected constitutional governor. He was made secretary of the interior and chief justice in the latter year (the office of chief justice being by the constitution the equivalent of a vice-presidency), and when Comonfort was driven from power (1858), duly succeeded to the presidency, was recognized by the Mexican states and the United States, but was opposed by the conservatives in a long civil war, and did not enter Mexico City until 11 Jan. 1861. In March he was elected president for a four-years' term. The bankrupt government published a decree suspending for two years the payment on the foreign debt, and an alliance of intervention was at once entered into by England, Spain, and France. On Juarez' agreement to protect the interests of foreign debtors, the English and Spanish troops evacuated the country, but France proceeded to a war of conquest. Juarez was driven to the extreme north and Maximilian assumed imperial power. Upon the interference of the United States, however, the French troops were withdrawn in 1867, and in the same year Maximilian was executed and Juarez elected president. He was re-elected in 1871. His vigorous and liberal policy was of great benefit to the nation, and he has sometimes been called the «Mexican Washington.» Consult Baz, ‹Vida de Benito Juarez› (1874); and the ‹Life› by Burke (1894).

Juarez Celman, Miguel, mē-gĕl′ hoo-ā′rĕth sāl-män′, Argentine statesman: b. Cordoba, Argentina, 29 Sept. 1844. He was graduated from the University of Cordoba in 1870 and after holding several political posts became governor of his province of Cordoba, and in 1884 a senator in the national Congress. In 1886 he was chosen president and the speculation rife during his administration, as well as the inflation of the currency and the magnitude of the public works undertaken at this time, induced a financial panic in 1890. The Celman administration was held responsible for this disaster and the president himself charged with having amassed a fortune from sums known to have been taken from the treasury. The cabinet resigned, but revolt broke out in Buenos Ayres 26 July 1890, and fighting in the streets continued for several days. On 6 August, however, the president resigned and the vice-president, Pellegrini, assumed his duties for the remainder of the term.

Juba (joo′bä) **Islands.** See DUNDAS ISLANDS.

Juba River, in eastern Africa, a large stream which flows into the Indian Ocean at about lat. 0° 5′ S. Its mouth marks the north boundary of the coast placed under British control by the agreement with Germany in 1890. The river has been explored to beyond lat. 3° N., and Cecchi identifies the Umo as its upper waters; so that it probably takes its rise in the same mountains as the feeders of the Nile.

Jubal, joo′bal, or **Jabal,** son of Lamech and Adah. According to Genesis iv. 21, the inventor of the reed-flute and harp or lyre, and the father, or predecessor, of all them who play upon such instruments, that is, the discoverer of musical science.

Ju′bilee, an observance among the Jews which recurred every fiftieth year; the land was to rest, as in sabbatical years; land and houses in the open country and in unwalled villages reverted to their original owners or the heirs of such; all slaves were to go free. The law as a whole was distinctly theocratic; it vindicated the absolutism of Jehovah; it meant that Hebrews were the servants of Him, and could not therefore continue to be the slaves of their fellow men; the land belonged to Him, and was only lent to the Hebrew tribes and families, who could not therefore be driven out by any human arrangement.

In the Roman Catholic Church a Jubilee occurs every twenty-fifth year in which the Pope proclaims a remission, from Christmas to Christmas, of the penal consequences of sin, on condition of repentance, restitution and the performance of certain pious works. The first Roman Catholic Jubilee was given in 1300.

Juch, yook, **Emma Johanna Antonia,** American opera singer: b. Vienna 4 July 1863. She came with her parents to the United States when an infant and was educated in the public schools of New York. She studied singing under Murio-Celli for three years, making her concert début in Chickering Hall, New York, and her operatic début as Felina in ‹Mignon› in London 1881. She sang for three seasons in the Mapleson opera company, and under the management of Theodore Thomas in the United States sang the part of Elsa in ‹Lohengrin› on alternate nights with Nilsson. She was the prima donna of the American Opera Company for three seasons, and has sung in the Emma Juch English Opera Company and other organizations. She was married in 1894 to Francis L. Wellman of New York.

DEPARTMENT OF JUDAISM.

1. Judaism — Its History and Principles. Judaism is the religion of the Hebrew people and of that portion of the same to-day known as Jews.[1] A religion which has been active in the world for so many centuries has naturally undergone modification as to details from age to age, both by growth from within and by adoption from without; but in essentials, Judaism has been characteristically staunch to its principles from its earliest days. The object of this article is to outline, historically and concisely, the essentials, and briefly to mention the successive secondary points of accretion and modification. There are five ages of development to be distinguished.

I. The Patriarchal Age.— Judaism's fundamental conception is its earliest:— the spiritual nature of the Deity and His consequent elevation above all human forms, methods and attributes. Though not clearly expressed in Genesis, this seems to be at bottom the lesson taught by the first Hebrew, Abraham, who, in the land of Canaan whither the divine call had summoned him from his home in Mesopotamia, built altars to the Living God and «called upon His name.» These altars, built without images, taught the first principle of the spirituality of God, not to be represented by stock or stone. What Genesis omits, Jewish legend as recorded in Talmud and Midrash, abundantly supplies, in the shape of tradition — no doubt with sufficient substratum of truth — as to how Abraham came to the conception of an invisible spiritual God, and how he preached his first convictions of the new truth by vigorous assault upon the idols of his father, an image-carver, and his neighbors. Most scholars see in the abortive «sacrifice of Isaac» (Gen. xxii.) also an object-lesson of protest against the prevalent Canaanitish practice of human sacrifices, and especially of sacrifices of children. For the rest, we have, beyond the institution of Circumcision (Gen. xvii, 9) as protest, and possibly as physical aid against the current temptations to the immoralities which formed essential features of Canaanite idolatry, no trace of any code of observance connected with this early form of Judaism; no regulations as to ceremonies or food-laws (compare Gen. xviii. 8 in contradiction to Ex. xxiii. 19), unless indeed the Noachide prohibition of blood (Gen. ix. 4) is to be understood as current among this branch of Noah's descendants.

II. The Formative National Age.—With the advent of Moses and the contact with a much more highly developed religious culture, that of the Egyptians, a more elaborate Judaism came into being. A definite central shrine as a visible mark of God's presence among men (Ex. xxv, 8), but still without any central image or idol; and above all, the direct and formal acceptance by the Hebrews of a mission of enlightenment to the nations on behalf of «the Holy God,» *i. e.* the Pure, (Ex. xix. 5, 6) prepared the way for the adoption of a somewhat complex religious ritual — cast in the universally prevailing form of animal sacrifices and burnt offerings — together with a system of fasts, feasts and holydays, food-laws and health-laws, regulations political and agricultural, the whole forming a body of legislation, set down in the later books of the Pentateuch, admirably suited both to Israel's formative desert-sojourn and to the promised period of re-occupancy of the land of Canaan, the old home of the patriarchs. Of fundamental principles we note in Moses' age, the Eternity of God (Ehyeh asher Ehyeh «I shall be what I am,» Ex. iii. 14) ; the Unity of God, in contraversion of the multitudinous, circumscribed, and mutually antagonistic gods of Canaan and Egypt; the duty of uprooting the foul idolators and idolatries of the land of Canaan (Ex. xxiii. 24, 33; Deut. vii. 1, 6) ; the fact of the divine revelation of religious and ethical fundamentals (Deut. v. 22) ; the duty of serving God by acts of love and obedience to His revealed will (Deut. x. 12) and of training children in this practice (Deut. xi. 19) ; love of the neighbor — the «Golden Ethic» — (Lev. xix. 18) ; love of the foreigner, «for strangers were ye in the land of Egypt» (Ex. xxii. 21, Lev. xix. 34, Deut. x. 19) ; etc.

III. The Age of National Independence.— In spite of the loving warnings and wise safeguards of the Mosaic legislation, the Hebrews when restored to the occupancy of Canaan, did not remain faithful to their local mission, but, to a greater or less degree, fraternized with heathen nations to the extent of adopting their idolatrous ways and principles. The prophets urged to higher conceptions, but not always successfully: a superficial ceremonialism seems to have been the highest point attained by the yet uncultured people. «To obey is better than sacrifice, and to harken than the fat of rams!» (1 Sam. xv. 22) was Samuel's reproof to Saul. It was not until David ascended the throne and brought to the national ceremonialism the element of reverential, spiritual elevation that Judaism at all approached the higher plane to which Moses inspired it. An elaborate central worship was planned and prepared for by David, with accessories of music and psalmody, and found its grand culmination in the stately Temple of Solomon (B.C.E. 1018). But although the lofty religious spirit of David and the other psalmists found expression in this elaborate public ritual and exerted due influence over the popular mind, it needed all the energy and devotion of the prophets during the reigns of Solomon's successors in the twin-kingdoms into which the Hebrews then divided, to maintain these lofty ideals. The golden age of a spirtually exalted Judaism was surely reached when its preachers held up as the religion's highest teachings God's desire that men should be just and merciful, upright and generous, in preference to being ceremonially observant and ostentatiously pious (Isa. i. 12-17, Hos. v. 14, 15, 24; Micah vi. 6-9); God's willingness to extend forgiveness to repentant sinners (Isa. lv. 7; Jer. iii. 22; iv. 1, 2; Ezek. xviii. 21-32; Hos. xiv. 2); God's exalted spiritual nature, above all picture or comparison (Isa. xl. 18-25); the ineffable superiority of His thoughts and His ways to men's thoughts and ways (Isa. lv. 8, 9); and His intimate, interested knowledge and supervision of men's deeds (Ps. xciv. 7-11; Jer. xx. 12, xxiii. 24).

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[1] The Jews known to civilization today are the descendants of only the smaller kingdom of Judah, which consisted of the two tribes of Judah and Banjamin (with a sprinkling of priests and Levites of the tribe of Levi) and which, in the year 586 B. C. E. was transported to Babylon by Nebuchadnezzar and allowed to return to Palestine by Cyrus, king of Persia in 536. The members of the larger kingdom of Israel — the Ten Tribes — were deported in the year 720 by Salmanassar, king of Assyria, to unknown regions in the interior of Asia, and have since disappeared from history.

Political independence of other nations, however, might have had the evil result of suggesting that Israel's religion was the exclusive prerogative of Israel's people. Against this narrow conception, too, the prophets contended, with their teachings of the Fatherhood of God unto all men (Isa. xlv. 22-24; Jer. x. 6, 7; Zech. xiv. 9, 16; Mal. ii. 10) and with the description of a glorious epoch to come when «many nations should go up to the mountain of the Lord, to the house of the God of Jacob, to learn of His ways and to walk in His paths» (Micah iv. 1, 2). The strongest opposition to the growth and maintenance of all such ideals centered in the political ambitions of the people, and their frequent approximations — for political reasons fundamentally — to the paganism of one or other of their powerful neighbor-states; so that the history of the Hebrews under their own kings is a record of continual relapses into idolatry and heathen immorality, together with revulsions, now and again, back to purer Judaism. The most enduring and prominent contribution to Judaism traceable to this age of religious storm-and-stress is the belief in the coming of a Messiah («anointed one, king»), who was to be a descendant of the royal house of David and, as earthly monarch over a re-united Israel, would restore the pure worship of the spiritual One God of their fathers (Isa. xi. 1-10).

IV. The Age of Exile and Oppression.— When the above-mentioned political ambitions of the sister-kindoms culminated in the destruction of both (Israel in 720 and Judah in 586), the population of the smaller one, Judah, deported to the plains of Babylon, found there leisure and inclination for a closer and more devoted attention to their religion, which resulted in the growth of a minute formalism of observance and petty precept, substantiated and elaborated upon the foundation of the Mosaic law. Its multitudinous details are collected in the Talmud (see JUDAISM — THE TALMUD), and for many generations after the Jews' return to Palestine (536), the rabbis and sages of this epoch, both in Palestine and among those remaining in Babylonia, impressed their extremist piety upon the people; not altogether, however, without protest. Not that the lofty ideals of the prophets were ignored; to the contrary, they were treasured and still further developed in many a noble dictum and many a shining example. But the popular sentiment threw itself by preference into the religion of ceremonial and observance, and when, after a brief period of independence under the Asmoneans, the Jews succumbed to the military might of Rome in 70 C. E., this ceremonial bent proved the chief source of spiritualizing strength to teachers and people alike in the ensuing centuries of exile and oppression. A most elaborate accumulation of ritual observance grew up in their new homes, in north Africa, Spain, France, Germany and Poland, codified from time to time by such Talmudical experts as Isaac of Fez, usually called «Alfazi» (died at Lucena, 1103); Moses Maimonides, lived in Spain and Egypt, 1135–1204; Jacob ben Asher, died in Spain, before 1340, author of the 'Arba Turim' ('Four Rows'); Joseph Karo, lived in Spain and Turkey (1588–1575), author of the Shulchan Aruch ('Arranged Table'). Obedience to these voluminous codes of ceremonial law constitutes today the chief difference between Jews of the «Orthodox» and «Reform» wings of modern Judaism, the former accepting, the latter rejecting, their binding force.

But while ceremonial formalism absorbed the religious thought and activities of the masses of the people in all their foreign homes, the growing culture of the ages appealed forcibly to the superior intellects of the Jews, especially in such countries as Spain (both Moorish and Christian), southern France, Italy, etc., and deep philosophical expositions became numerous (see JUDAISM — JEWISH PHILOSOPHICAL WRITERS). Their chief aim was still to maintain and fortify the doctrines of that spiritual sole God whom Abraham and Moses taught, not so much now in contravention of heathenism as in protest against the doctrines of the Christian Church. Perhaps as complete a presentation as is possible of Judaic tenets in this age may be found in the 'Credo' drawn up by Maimonides, thirteen articles of belief, which today are printed in the Orthodox Hebrew prayerbook, both in a prose version (they were written originally in Arabic), and in a metrical form composed by Daniel ben Judah Dayyan in 1404, the «Yigdal.» The modern school of Reform-Judaism adopts these in the main, likewise including the Yigdal in its ritual (see Union Prayerbook, compiled by the Central Conference of American Rabbis, Cincinnati 1894, vol. I. p. 162–3; vol. II. pp. 120–121). They include the unity, omniscience and incorporeality of God, the truth of the prophecy of Moses and the prophets, future reward and punishment, the coming of Messiah, immortality of the soul.

V. The Modern Age.— The divergences between the two wings of modern Judaism, the «Orthodox» and the «Reform,» rarely trench upon fundamental principles, but are mainly concerned with the observance or non-observance of precepts and practises that have added themselves in the course of time and in various countries of sojourn, to the ritual features of the religion. The only serious approach to a fundamental difference is concerned rather with the political side of the religion, namely, the belief in a personal Messiah to come, a factor originating, as shown above, in the age when impending loss of national independence and the stress of national politics, stirred the hope in superior minds for restoration of a Davidic kingship, with God's law of mercy and justice, coupled with complete reverence, more potently in sway than ever before. Reform Judaism deems that restored Jewish nationality in Palestine is by no means an essential feature of the Messianic age of universal peace and righteousness, and therefore looks coldly today upon such nationalistic endeavors as Zionism (see JUDAISM — ZIONISM). It does not seem attracted even to the Jewish Territorial Organization (familiarly called the Ito, from its initials), originating in 1905, having for its object the establishment of a Jewish state outside of Palestine. It agrees with Orthodoxy in refusing to make propaganda for the dissemination of Jewish principles other than by the passive policy of example and their inherent truth. In religious practice it rejects the minutiæ of ceremonial observance, household and synagogal. Reform Judaism is represented today in the matter of seminary-instruction in America, by the Hebrew Union College at Cincinnati; in Germany by the Jewish Theological Seminary at Breslau, by the Hochschule (now Lehranstalt) für die Wissenschaft des Judenthums, at Berlin, and in Austria-Hungary by the Landes-Rabbiner Schule at Buda-Pest. Orthodox Judaism counts, among others, the following seminaries: the Paris Seminaire Israelite de France, the London Jews' College, the Berlin Rabbinical Seminary, the New York Jewish Theological Seminary.

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2. Judaism—Jewish History. *I. Pre-Exilic Times.*— Although the title «Jew» is not known until Israel's return from the Exile, 536 B.C. (Ezr. 4:12), Jewish history precedes the Exile by 2,000 years. The progenitor was Abraham, who, hailing from Ur of the Chaldees, is known, not as a «Jew,» but as a «Hebrew» (Gen. 14:13). As patriarch of his tribe, he was succeeded by his son Isaac; Isaac, in turn, by Jacob, surnamed «Israel,» and Israel by his 12 sons, who, after the slavery of their descendants in Egypt, became the heads of 12 tribes, known collectively as «Israel» or «the Children of Israel» (Ex. 1:1). Among the 12 tribes, neither Levi, who was destined for the service of God, nor Joseph, who was supplanted by his two sons, Ephraim and Menasseh, is represented. With the conclusion of Egyptian servitude, the Children of Israel were formed into a nation by Moses, their liberator. Moses led Israel, by a circuitous route, through the desert, towards Canaan. Forty years were consumed in making that journey, during which time, Israel's appointment as «a kingdom of priests and a holy nation» with the establishment of a theocracy as highest aim, was made known; religious tenets, ethical precepts, hygienic laws, and social principles were promulgated; a tabernacle, with an elaborate sacrificial cult, was established; countless hardships were endured; frequent rebellions were instituted, and numerous battles were fought.

Upon his death, Moses was succeeded by Joshua, a warrior chieftain, who, crossing the River Jordan, and vanquishing many of the native tribes, divided Canaan, by lot, among the tribes, and set up the tabernacle at Shiloh. The natives who were not vanquished, proved sources of annoyance to the invading Israelites, and often made certain portions of Israel tributary to them. This condition called for the «Judges» who, by means of battle, succeeded in regaining for the Israelites their independence. Of these there are 15 most celebrated, among whom are Deborah, Gideon, Samson, and Samuel, also the first of the prophets, a class of men whose principal aim was to keep Israel free from the contaminating heathen influences of the natives, and loyal to the higher worship of the one God. It was in Samuel's days, about the middle of the 11th century B.C., that democratic Israel became a monarchy. Saul was made king. His throne did not pass over to his son, but to David, who had proved victor in many battles against the harassing Philistines. Upon the close of David's life, replete with warfare, his son, Solomon, who became the architect of a powerful kingdom, succeeded him. He beautified Jerusalem, the capital, built the first Temple, constructed palaces, extended commerce, and made many alliances with foreign nations. Although his was a golden age, it was in his time that idolatry was introduced into Israel. Upon his death (977 B.C.) a revolt broke out. Solomon had taxed the people heavily, to further his many expensive ventures. The people wanted the taxes decreased. Rehaboam, his son and successor, refused to listen to the clamors of the people. Ten tribes seceded and formed an independent kingdom, called the «Kingdom of Israel,» leaving to Rehaboam only Judah and Benjamin, termed the «Kingdom of Judah.» Israel had 19 and Judah 20 kings. Jeraboam, the first king of Israel, desirous of weaning the tribes of their attachment to Jerusalem, the common sanctuary, introduced the calf worship in Dan and Bethel. Israel, through the example of its kings, went from bad to worse, until, in 719 B.C., Samaria, Israel's capital, was destroyed, and the people constituting the 10 tribes were deported to Assyria by Shalmanezer IV., to become lost forever. Judah, too, entered upon the downward path. With the exception of occasional and temporary reforms under Asa (954), Hezekiah (720), and Josiah (627), Judah was idolatrous, always reflecting the fetichism of surrounding nations. The exhortations of such prophets as Elijah, Elisha, Jonah, Amos, Joel, Hosea, Zechariah, Micah, Isaiah, Zephaniah, Jeremiah, and others, were of no more avail with Judah than with Israel, so that in 586 B.C., Jerusalem was razed to the ground, the Temple destroyed and the people taken captives to Babylonia by Nebuchadnezzar.

II. From Exile to Dispersion.— The captivity lasted 70 years. Many of the Judeans hoped for a return to their land, and for a resurrected commonwealth. They met with encouragement at the hands of the prophets Ezekiel, the Babylonian Isaiah, and Haggai. In 538 B.C., Cyrus, King of Persia, taking Babylonia, permitted the Jews to return to Jerusalem, in order to rebuild it, and erect a temple. Only a part took advantage of the privilege to join the first pilgrims, under Zerubabel. The building of the temple was interrupted, as a result of the charges brought against the Jews by the Samaritans, Assyrian settlers of Samaria. However, in 516 B.C., the Temple was completed. In 459, Ezra, a scribe well versed in the law, who was, in course of time, followed by Nehemiah, came to Jerusalem. Nehemiah regenerated Judah physically, and Ezra culturally. Ezra was responsible for the formation of the Great Assembly, the study of the law, the rejuvenation of the literary genius, and the beginnings of the Synagogal service. With the invasion of Alexander the Great into Asia (332 B.C.), Jews came into contact with Greek thought, which did not leave them altogether unaffected. Judah had become tributary to Egypt, whither the Greek civilization was transplanted, and two parties, Hellenists and Hassidim arose; the Hellenists admitting philosophy as man's guide, and the Hassidim recognizing only the law of Moses (Torah).

While these two parties were in dispute, Syria gained control of Palestine, and, in course of time, aimed at the destruction of Israel, the confiscation of the Temple, and the destruction of Israel's faith, under Antiochus Epiphanes (168 B.C.). Thus came into existence the Maccabees. They took up arms against Syria, regained the Temple, and eventually won for the Jews national independence, so that when Judah allied itself with Rome (140 B.C.), it once more had a king in John Hyrcan (135 B.C.). It was at this time that Biblical literature, which had begun to thrive with the return of the Exile from Babylonia, flowered most luxuriantly. However, Jewish independence was not to endure very long. The Jews were divided by parties (see JEWISH SECTS), such as the Pharisees, Sadducees, and Essenes. The Idumaeans were converted to Judaism. One of their number, Herod I., obtained control of the Jewish State, and was proclaimed King by the Roman Senate (37 B.C.). In their political and religious hostilities, Rome was called in to act as arbiter, and assumed the dictatorship. Rome, the friend, soon turned enemy. It tried to get possession of Jerusalem, and succeeded in its undertaking under Titus (70 A.D.). After a long siege, the city was burned, the Temple destroyed, and thousands of Jews were carried away captives to Rome.

III. From Exile to Close of Oriental Schools. —Many foresaw the doom of the Holy City. The law of Israel had grown to be more than the Bible, and Israel's life was no longer thought to be dependent upon the possession of Palestine. An attempt was therefore made to save the law and life. Rabbi Johanan ben Saccai requested of Rome — and the request was granted — to be allowed to remove from Jerusalem to Jabneh, in order to establish there a school, whose purpose would be to keep intact the teachings which had grown up in the earlier schools of Palestine. Thousands of pupils followed the teacher, and soon the Synhedrin, the religious court of the Jews, was transplanted thither. Although Rome permitted Johanan to found a school in Jabneh, Rome did not look with favor on Israel's new lease on life. It interdicted the study of the law, the secret of Jewish preservation, and seconded its interdictions by persecutions and massacres, among which the death of the 10 martyrs, participants of the Bar-Cochba revolution, during the reign of the Emperor Hadrian, was undoubtedly one of the most bloody (135 A.D.). Unable to enjoy rest and peace on Palestinean soil, the Jews soon found their way to ever friendly Babylonia, where many of their brethren sojourned. The Rabbis, who had been forbidden to erect schools in the Holy Land, established them in Babylonia. It was in the very midst of the constantly shifting centre of Jewish gravity and the uninterrupted stream of persecution, that Rabbi Jehudah, a Palestinean rabbi (190), deemed it necessary to collect, in permanent, systematic form, all the civil, criminal, religious, and ethical principles which the new surroundings had brought into existence, calling the name of this collection «Mishnah,» which was studied and explained in all schools, so that with it as a foundation, two works were eventually produced, the Palestinean Talmud (375) and the Babylonian Talmud (550); the two Talmuds containing the discussions of the schools on the teachings of the Mishnah. (See TALMUD.) Residence in Palestine was made more and more impossible for Jews. In Palestine, beginning with the Council of Nice (325), Jews were exposed eventually to the hostilities of the Church, as well as to those of imperial Rome; whereas on the other hand, they were granted fair treatment in Neo-Persian Babylonia. In Babylonia they had a political head in the «Exilarch» and religious authorities in the «Gaons» of the academies. It was in these schools that the Bible was given its present canonical form, that the vocalization of the Hebrew text of the scriptures was fixed, that the many Midrashim were created, that additions were made to the prayer book, and that numerous ceremonies were established.

That the positions of honor held out to the Jews of Babylonia, filled the more prominent among them with ambition, goes without saying. Anan ben David (761) expected to be promoted to the Exilarchate, but was disappointed. Incensed by his disappointment, and later imprisoned for having himself proclaimed anti-Exilarch, he, as soon as released, assumed the aggressive toward the prevailing Jewish thought current of Babylonia, instituting a movement called «Karaism.» (See JUDAISM — THE KARAITES.) In justice it must be confessed that the movement was beneficial as well as detrimental to the Jews of those times, for it helped to check their imagination which had often run riot in their understanding of scriptures. Rabbinism was recast, and in its recast form, found an ardent champion in Saadia ben Joseph (892–942) who, though a native of Fayum in upper Egypt, attained to the Gaonate of Sora, because of his Biblical, Talmudical, and grammatical knowledge, and his religio-philosophical genius. As long as the school of

Sora had at its head a man like Saadia, the wrangles between the Jewish scholars of Babylonia, and the growing Mohammedan antagonism to Jews and Judaism, both disintegrating influences of the Babylonian academic life, did not make themselves markedly felt; but when once Saadia was no more, the decline of the schools of the East was inevitable. To prevent the closing of the schools, four scholars (948) Shemarya ben Elchanon, Chusiel, Nathan ben Isaac Cohen, and Moses ben Chanoch, were despatched to scattered Jewry, to collect funds for the maintenance of Sora. They embarked on the same vessel, which was captured by a Spanish-Arabic admiral, and thus became separated forever; Shemarya going to Alexandria, Chushiel to Cyrene, Nathan to Narbonne, and Moses to Cordova. Thus was the last hope of Babylonian Jewry defeated, and the Jews began to make history in European countries.

IV. From Close of Oriental Schools to Close of 16th Century.— Although Jewish history now takes us into European countries, Jews lived in Europe long before the middle of the 10th century. Already in the earliest centuries of the Common Era, Jews, who soon grew into fair-sized communities, contributing to the prosperity of the various governments, were found in all countries, in consequence of the Jewish dispersion. Welcomed upon their arrival wheresoever they settled, they did not anywhere continue to live long in the enjoyment of peace. Europe made suffering the badge of all their race. They were misunderstood and misrepresented; they were regarded unbelievers and infidels. Not only during the Crusades did they suffer, as for instance in Rouen, Treves, Speyer, Worms, Cologne, Ratisbon, Prague (1096), in South Germany and France (1147), in Toledo (1212), in Anjou and Poiton (1236), but also in times and amid conditions which held out peace to others. Time and time again, edicts restricting them, were unjustly promulgated, as, for example, by Pope Gregory VII. (1078), by the government of France (1198), by the Council of Avignon (1209), by Pope Innocent III., instituting the «Jew Badge» (1215), by the Council of Zamora (1313), by Juan II. (1412), by the Council of Basle (1434), by Eugenius IV. (1442), by Paul IV. (1555), and in Russia in 1881 and still later. Time and again they were crowded into Ghettos, as for example in Rome, Prague, Frankfort, and the Russian Pale. Time and again their literature, especially the Talmud, because not understood, was either unjustly burned, as for instance in Paris (1242), in Cremona (1559), or publicly attacked, as by the Dominicans (1507), or forbidden to be studied, as by Pope Benedict XIII. (1415). Time and again the Jews were unjustly accused of the use of Christian blood for ritualistic purposes, as in Blois (1171), all over Germany (1283), in South Germany (1431), in the case of Simon of Trent (1475), which brought a Jewish persecution in its train in Ratisbon, in Damascus (1840), and in Tiszla Eszla, Hungary (1882). Time and again they were unjustly imprisoned, as in England by King John (1210), and again in 1278. Time and time again they were unjustly banished from their homes, as from Granada (1066), from France (1254), from England (1290), a second time from France (1306), and a third time (1394), from Cologne (1426), from Spain (1492), from Portugal (1497), from Prague (1561), from the Papal States (1569), from Italian Principalities (1597), and from Worms (1615). Time and again they were unjustly persecuted and massacred by the thousands, as in London (1189), in Germany all the way from the Rhine to Vienna (1190), and again in Germany in 1298 and frequently thereafter, in France (1321), all over Europe on account of the «Black Death» (1348), in Spain (from 1391 to 1492), in Silesia and Poland (1453), in Portugal (1530), again in Poland (1648), and in Germany, Austria and Russia as late as our times, on account of anti-Semitic agitations.

That all of this suffering stunted the Jews physically is self-evident, and that it, to a certain extent, prevented the broadest spiritual unfolding, in accordance with the higher light of their religious genius, is therefore not surprising. The spiritual offspring of persecution was that mysticism known as the Cabala (see JUDAISM — THE CABALA), and the belief in such pseudo-Messiahs as Serene (720), David Alroy (1160), Abraham Abulafia (1279), Asher Lemmlein (1502), David Reubeni and Solomon Molko (1558), Isaac Luria (1569), Sabbatai Zevi (1665) and others. However, barring these vagaries, the Jews developed a phenomenal intellectual activity, not merely along religious, but along all lines of thought.

With the arrival of Moses ben Chanoch in Cordova (945) the Jews took an active part in the development of far-famed Andalusia. Apart from the celebrated Spanish seats of learning they helped to create, they also cultivated a many-sided specific Jewish literature. Versed as the Spanish Jews became in Arabic lore, and acquainted as they were with the work done by the Moors in Arabic philology, they soon began to apply the science of philology to Hebrew grammar and lexicography. Biblical criticism found in them champions. Philosophy and poetry were cultivated among them by famous men. Simultaneous with the Jews in Spain, those of France also were intellectually active. The Jews of Italy, too, were bound to grow likewise. In Germany and Poland, the specific literature produced by the Jews covered, for the most part, the ritual, Biblical interpretation, and legal codes.

V. From Settlement of Jews in Holland Until the Present Time.— Although the flowering of Spanish-Jewish life, which came to an end in the reign of Ferdinand and Isabella of Spain, through the intrigues of their chief inquisitor, Torquemada, in 1492, was noticeable in Italy and Turkey in consequence of the welcome these countries extended to the hapless fugitives, that flowering was most apparent in Holland. Holland had become the most ardent champion of the broadest liberty, from the time that it threw off the yoke of Philip II. of Spain. Thither, therefore, countless Jews, more particularly the Marranos, who were obliged to profess Christianity outwardly, and practice Judaism only secretly, found their way, and soon made of Amsterdam a second Cordova. Being unchecked and unhampered by restrictions of any kind, it was only natural that the Jews of Holland became, in due course of time, exponents of a comparative rationalism in religion, to the extremes of which, as preached by Benedict Spinoza, the Amsterdam Rabbinate, Saul

Levi Morteira, Isaac Aboab, and Menasseh ben Israel, objected. The Jews of Holland contributed no little in defining the trend of Jewish history; and yet however otherwise valuable their contribution to the happier and higher life of the Jews may have been, one event, for the occurrence of which Menasseh ben Israel is responsible, stands out in bold relief. That event is the readmission of Jews into England under Cromwell (1655), they having been forbidden to dwell there for several centuries. The rationalism of Holland Jewry may not have influenced Jewry immediately all over Europe, but it worked with telling subtlety, and effected sure results, the moment the Jews began to be treated with more justice than they had been previously accorded. Now a pseudo-Messiah like Berachyah may have deluded the people; now an enemy like Eisenmenger (1700) may have misrepresented them; and now Chassidism (an unnatural piety) may have claimed to be the ideal conduct for the Jew, as was the case at the time of Israel Baalshem (1750), the founder of the movement; still, it was a question of only a short time, how soon the bars hemming the Jews in from without, and the bolts hemming them in from within, would be broken.

The year 1729 witnessed the birth of Moses Mendelssohn (q. v.) in Dessau, Germany. Having gone from his native town to cultured Berlin, having learned the sciences, philosophy, and ethics, and having become acquainted with Lessing (q. v.), whose ‹Nathan the Wise› he became, he attempted to explain the Jew and his faith to the Jew himself and to the world, so as to prove the Jew's right to the privileges of citizenship. The first attempt he made in this direction was to translate the Pentateuch (1778) and other Biblical books into German for the Jews, in order to wean them of the jargon, which translation was soon followed by his ‹Jerusalem› and ‹Morgenstunden.› He was called upon to answer not only attacks made upon his people by non-Jews, but also those made upon him by his own people, to whom the jargon had become a sacred tongue and the narrow Ghetto life the natural Jewish life. Unwelcome as his good offices were in many quarters, they soon began to tell without and within Jewry, in France, Batavia, Westphalia, Hamburg, and Mecklenburg. (See JUDAISM, A CENTURY OF EMANCIPATION.) In the meantime, Jews were permitted to enter German gymnasia and universities. Leopold Zunz and Isaac Markus Jost availed themselves of the opportunity, with others, built on the foundation laid by Mendelssohn, and hence are the fathers of the movement which is known as the «Science of Judaism,» and has made itself felt all over the world, more especially Europe and America. Although these men and their followers worked unceasingly to place the Jew, his faith, and ideals before the world in their true light, prejudice and persecution against the Jews still continued to live. The year 1819 witnessed persecutions whose tocsin was the shout «Hep-Hep» (Hierosolyma est perdita, *i. e.* «Jerusalem is destroyed»). The Jew's rights had to be won by incessant fighting. The emancipation of the Jews of German States, won in 1848, required the constant defense of a Gabriel Riesser, Ferdinand Lasalle, Eduard Lasker, and Karl Marx in Germany, of an Isaac Adolphe Crémieux in France, of a Moses Montefiore in England, of an Alliance Israelite Universelle in the Orient, and of a Union of American Hebrew Congregations, with Isaac M. Wise as creator, in the United States. To-day the Jews live in almost all parts of the world. They number about 9,000,000, the greater part being in Russia, and 1,000,000 in the United States. Wheresoever sufficiently numerous, they worship in large and stately synagogues. Their mode of worship varies in degree of ceremonialism, ritualism, and the language of prayer, though the Hebrew is heard in all synagogues. In every country they have one or more theological seminaries, the first of the modern type having been founded at Breslau in 1854. A movement which has, in recent years, become prominent on account of Russian persecutions, but has been variously interpreted by its several factions, is «Zionism,» which primarily aimed to establish, for persecuted Jews, a legally assured home in Palestine. As a humanitarian movement, if feasible, it appeals to all Jews. As a national movement it has opponents as emphatic in their opposition, as are its champions emphatic in their propaganda. Though the Jew is justly called the «Wandering Jew,» he is not any the less justly termed, because of his life, despite persecutions and massacre, the «Eternal Jew.»

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3. Judaism—The Hebrew Language. *Origin and Name.*— Hebrew is the language of the ancient Hebrew nation. It is a Semitic language, that is to say, one of the great group of languages spoken in antiquity, and to a great extent in modern times also, in Southwestern Asia and contiguous regions by the nations descended, according to the account given in Gen. x. 21–31, from Shem, the son of Noah.[1] The Semitic tongues are divided into four great divisions or branches, the South Semitic or Arabic, the Middle Semitic or Canaanitic, the North Semitic or Aramaic and the East Semitic or Assyrio-Babylonian. The Hebrew belongs to the second or Canaanitic branch and has, as its sister dialects, the Canaanitic tongues, the Phoenician of the coast cities and the Punic of Carthage and its colonies. The name Hebrew language does not appear to have been its original designation. In Isaiah xix. 18, it is called « the language of Canaan » and in II Kings xviii. 28, Isaiah xxxvi. 11 and 13 and Neh. xiii. 24 it is called ‘Judaean’ or ‘Jewish.’[2] In the Talmud it is called ‘the language of the sanctuary’ (Sanh. 21 b. et-alia). By modern writers it is called «the language of Eber» or «Hebrew.»[3]

Old Testament Hebrew.— With the exception of parts of Daniel, Ezra and one verse in Jeremiah, Cap. x. vii., the entire Old Testament is written in Hebrew. Considering the long period of time over which the composition of the Biblical books extends one would naturally expect great variation in their linguistic and grammatical forms. As a matter of fact there is a most surprising uniformity and homogeneity. The Hebrew of the earliest is practically identical with that of the latest books. The probable reason of this is that in the Biblical writings we have the literary idiom, which is fixed, as distinguished from the spoken language, which undoubtedly varied greatly in different times and regions. The fact that the Biblical books were revered as sacred also undoubtedly contributed to this uniformity of diction. However, a progressive variation, due to historic influences, is clearly discernible also in the Biblical Hebrew. The language tends constantly to become Aramaized. The earlier writings are purest in their language, the later writings contain many Aramaic nouns, verbs and terms of expression. Such books as Ecclesiastes and the Song of Songs are closely approximate in their language to the Mishnah Hebrew. Job shows a strong Arabic influence.

Other Sources of Hebrew.— Outside of the Bible the ancient Hebrew is only preserved in some few inscriptions. These are chiefly the celebrated Mesa stone, an inscription found in 1880 near the Pool of Siloam at Jerusalem and the coins of the Maccabean princes and of the revolts against Vespasian and Hadrian.

Grammatical Structure.— The Hebrew, in its grammatical structure, exhibits in general the characteristics of the Semitic family of languages, which differs greatly from the Indo-Germanic, its most prominent neighbor. Its most striking characteristic is its root-system. All the parts of speech are derived from roots or word-stems which are almost invariably triliteral. Modifications, such as conjugation in verbs and declension in nouns, are indicated generally by internal or vowel changes. The verb has but two tenses, the uses of which vary in accordance with peculiar rules. The noun has only two genders, masculine and feminine and no direct method of indicating case relations for which purpose pronominal prefixes are usually employed. Possessive pronouns and pronominal objects of the verbs are indicated by suffixes. Compound nouns are almost unknown, except in proper nouns. The syntax is extremely simple and direct co-ordination of clauses, without periodic construction, is the rule. These facts would seem to indicate poverty and lack of development in Hebraic expression. But it rather indicates directness of grasp of ideas which are presented with the picturesque clearness of word-photography, rather than in the vagueness of involved relationships. This is strikingly exemplified by the Vav conversive or consecutive, as it is termed by modern grammarians. This peculiar usage of the conjunction, unknown in the other Semitic tongues, enables the Hebrew to picture the sequence of events, past or future, with a clearness and directness of connection impossible in other languages. Another example of the realistic directness of Hebrew speech is the fact that in it the so-called *ratio obliqua* or indirect discourse is unknown. All quotations are made in the very words of the speaker.

Relation to Indo-European.— The Hebrew grammar shows, as has been stated, no evidence of relation to the Indo-European tongues.[4] Lexicographically there is much more agreement. A great number of Hebrew word-stems agree in sound with Indo-European terms of the same sense. But these are largely confined to onomatapoetic words or to such whose similarity may be explained as merely fortuitous. They do not establish any historical or generic relation which is inconceivable without agreement in grammatical structure.

Loan-Words.— The Hebrew, even in its purest state, contains numerous loan-words, derived from the languages of the peoples with whom the Hebrews came into contact. Examples of such are: from the Egyptian, *Yeor*, « the Nile »; from the Persian, *Pardes*, « a park»; *Darkemon*, «a daric»; from the Hindustani or Malabari, *Tukiim*, «peacocks,» *Kof*, « an ape.» In the later stages of the language these foreign terms increase greatly in number. The Mishnah Hebrew, for instance, contains several hundred terms derived from the Greek and Latin. Conversely, Hebrew loan-words are found in Greek and Latin, notably the former, as for example χρύσος, gold, Heb. Harnz. Many of these terms occur in early Greek writings, thus showing contact of the two peoples at a much earlier date than it is known historically to have occurred. These Semitic terms in the classic tongues may, however, have been introduced by the Phœnicians in their commercial expeditions and not be due to direct contact with the Hebrews.

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[1] The Canaanites and Phoenicians are stated in this chapter to have descended from Ham. Their language, however, undoubtedly belongs to the stock now designated as Semitic.

[2] This mav signify either the speech of the tribe of Judah or of the whole nation which afterwards was thus called.

[3] The term Εβραϊστί Hebrew is used in the New Testament to designate the Aramaic vernacular of Palestine rather than the true Hebrew.

[4] An exception must be made in the case of the German causative verbs, produced by modification of the original vowel of the verb, e. g. *schwimmen*, to float, *schwemmen*, to cause to float, *sinken*, to sink, *senken*, to cause to sink. This is exactly in the manner of the Semitic tongues and is a peculiar phenomenon.

Mishnah Hebrew.— It is a somewhat general, but erroneous, supposition that during the Babylonian exile the Jews entirely unlearned the colloquial use of the Hebrew, and that the Hebrew of the Mishnah is an artificial tongue, the product of the schools. As a matter of fact the Hebrew continued to be a living language throughout the period of the second temple, though limited to narrowing circles of the people. Because of its being chiefly represented in the Mishnah and other Halachic works, the language of the second Jewish commonwealth is known as Mishnah or Mishnaic Hebrew. It differs greatly from the Biblical Hebrew, but these differences are only sufficient to stamp it as a different dialect, not a different tongue. The main differences are as follows: the Mishnaic Hebrew contains a much greater number of foreign terms than the Bible language, its syntax is considerably modified by Aramaic influence, the feminine future or imperfect plural forms and the Vav conversive have disappeared, the plural ending □ = *im* has become |. = *in*, the suffix □ָ = *am* is changed to | ָ = *an*, the participles are more extensively used, the particle shel = frequently preceded by the possessive suffix is often employed as a substitute for the construct state, prepositions and conjunctions are more numerous and are used differently than in the Biblical Hebrew and many new terms have been coined from existing Hebrew roots. In all this the influence of the schools was no doubt very potent. In the liturgy the language used is much closer to the Biblical model.

The Neo-Hebraic.— With the destruction of the second temple and the scattering of the Jews throughout the world influences disruptive of the Hebrew increased greatly in intensity. As a medium of spoken intercourse it almost ceased to exist, but as a literary medium it has been cultivated and used continuously up to the present day. This later form of the language is known as Neo-Hebraic or New Hebrew. It is not a uniform language but differs greatly according to the capacity of the writer and the nature of the subject treated, in some compositions being almost classic in beauty and correctness, while in others it degenerates into a mixed and corrupt jargon. At present the Hebrew is experiencing considerable of a Renaissance, principally in Russia and Palestine. Works on all possible subjects are written in it and a systematic effort is made to qualify it for all the purposes of a modern tongue by the introduction of new terms, coined mainly from the old Hebrew roots, for all modern concepts. Efforts are also made to rehabilitate it as a medium of spoken intercourse by the formation of societies whose members are pledged to speak only Hebrew with each other. In Palestine, where not only historic sentiment but the existence of diverse Jewish elements side by side have made the revival of the Hebrew not only desirable but necessary, these efforts have been most successful and the Hebrew has become again to a great extent the spoken language of the Hebrew people.

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4. Judaism—Jewish Literature. *The Hebrew National Literature to 70 A. D.*— The former belief that in patriarchal times Israel could have had no literature, is now disproven. The code of Hammurabi has established the fact that already in the age of Abraham, the art of writing was known, and records of events kept. Still, the oldest remains of Hebrew literature, are only found in fragments of ancient songs, and in parables, such as the war-song of Lemeh (Genesis iv. 23–24), and the Song of the Well, (Numbers xxi, 17–20). Collections of such songs existed, and are alluded to under the title of ‘Book of the Wars of the Lord’ (Numbers xxi, 14), and ‘Book of the Righteous’ (Joshua x, 13; 2 Sam. i, 18). At a later period, codifications of laws were begun, and still later, recollections of the history of the past, naturally overgrown with legends, were written down. It is impossible to give their date or that of the compilation in which they have been brought down to us. The nature of such investigations will always lead only to negative results with some degree of certainty. As to the positive inferences, drawn from these results, differences are bound to exist, especially as religious prejudice enters largely into this controversy.

It may be laid down as a generally accepted opinion, that the entire Pentateuch, as we have it, cannot have been written by Moses, and that the oldest part is the so-called book of the covenant (Ex. xxi–xxiv). Then follows the Jehovistic code, named so, because in it the name of God is given as Jehovah (or rather Jahveh). Then followed the Elohistic code, named from the employment of the word Elohim, for God. After that came the compilation of Deuteronomy, and finally, the Priestly code, chiefly found in Leviticus. This arrangement does not exclude the fact that some older passages are found in the younger codes, and that some of the older codes contain additions from the hands of the last compiler, who, naturally, lived after the priestly code had been written. The date of these books is always hypothetical. Still, it may be considered as the prevalent opinion, that the Jehovistic code comes from the 9th century, because it contains references to the sacred places of Bethel, which presupposes an author, who lived in the Kingdom of Israel. The Elohistic code may be dated from the 8th century. In the period, characterized by the revival of religious sentiment, under King Josiah, the book of Deuteronomy was discovered, according to the testimony of the Bible. It is therefore, to be dated from about 600. The ideals evolved during the exile, when the past of Israel was gilded with reminiscences, and the ideal of a strictly uniform ritual and an organized hierarchy were formed, were laid down in the priestly code during the 6th century, but the final adoption of the Pentateuch, with its attempts to fill some lacunæ and to harmonize some discrepancies, did not take place until about 400.

Prophetic literature began with Hosea and Isaiah, during the 8th century. Micah, Nahum, Zephaniah and Jeremiah followed during the succeeding century. Again here, the dating is difficult. One of the clearest facts is a reference to King Cyrus of Persia (Isaiah xlv, 1), which indicates, beyond a doubt, that the prophet who wrote the passage, was a contemporary with this Persian king, and therefore, lived nearly two centuries after Isaiah, who lived at the time of Ahaz. Chapter 66, which denounces the rebuilding of the Temple as something heathenish, is of still later origin.

The Babylonian exile, naturally stimulated literature in various ways, and still more so, the return of the exiles, to whom Cyrus gave permission to settle again in the land of their fathers (538). Of this time, we possess the prophesies of Haggai and Malachi, and the beautiful idyl of Ruth, with its clearly indicated polemic against Ezra's prohibition of intermarriage with the heathen. The book of Jonah, although, as the language would seem to indicate, of very late origin, clearly presents a universalistic tendency which is the opposite of the strongly nationalistic ideas expressed by Ezra and Nehemiah. From the same period, we must date a large number of the Psalms, which form the hymn book of the congregation of Israel. Here again, the dating is exceedingly difficult, as a great many of the psalms have no clear historical references. Others, such as Psalm 51, show that they have been interpolated by later hands, as the whole Psalm denounces sacrificial worship, while the last two verses pray for the restoration of the sacrifices. Some again, as Psalm 74, speaking of the destruction of the synagogues, clearly point to the time of Antiochus Epiphanes (175). Quite a number of the biblical books cannot be dated at all, except in so far as the linguistic reasons will give a vague indication of their origin. Such is the case with Canticles, Ecclesiastes, and Job, in reference to which various scholars differ widely, and only agree that Canticles and Ecclesiastes cannot have been written by Solomon, and that Job, which the Talmud places in the days of Moses, is of much later origin.

A clear indication of the origin, even to the month, is given in the book of Daniel. Here, in apocalyptic form, the world's history, as far as it affected the Jews, is reviewed, from the days of Alexander the Great to the death of Antiochus Epiphanes (164). It is evident that the author wrote under the impression produced by this important event, which he expected would inaugurate the kingdom of Heaven. Less certain, although very likely, is the assumption, that the Book of Esther was written at the same period, because its author starts from the same point of view, presenting Israel's deliverance from a cruel persecution, although his idea is just the opposite of that of his supposed contemporary. Daniel pleads for a religious solidification, and the author of Esther for an amalgamation with the non-Jewish world. It is very difficult to say when the Bible, as such, was formed into a canon. It is probable that this never took place, but that the various books, and fragments of such were collected as a library of ancient Hebrew literature, and only later on considered as divinely inspired. The collection may have taken place in the first century B.C., and the belief that these books were written under special divine guidance was more and more crystallized a century later.

The conquest of the Orient by Alexander the Great had a far-reaching influence on the spiritual life of the Jews. Through the medium of Greek, which now was generally adopted in the Orient, the Jews became acquainted with an entirely different realm of thought. This widened their horizon, and stimulated their pride, because, while the Greeks looked down upon them as barbarians, they were zealous to show that whatever was good in Greek thought was borrowed from the Jews. They conceived for the first time an idea of secular literature. There is only one book in the Hebrew bible, which could be definitely classed as secular, and this is the book of Canticles, almost certainly modeled after the Idyls of the Greek Theocritus.

The influence of Greek thought on the Jews is manifested in the so-called Septuagint, a translation of the Bible, which, according to the legend, was undertaken by 72 Jewish scholars, designated by the High Priest, upon the request of the Egyptian King, Ptolemy II. (283–87). This translation became very popular among the Jews outside of Palestine, and in some instances, superseded the Greek original, as was also the case with the book of Sirach, written in Hebrew, about 180, and translated 50 years later by the author's grandson, into Greek. The Hebrew text was entirely lost until 1896, when remnants were discovered in the garret of an old synagogue. The book of Sirach is an imitation of the biblical book of Proverbs. So is the Wisdom of Solomon, and a great many authors tried their hands at writing books after biblical patterns, and at interpolating the existing Hebrew books of the Bible. These books form the collection of Apocrypha, which means, hidden books, or, books excluded from the canon of holy writ. Some were devoted to contemporary history, as is the case with the first and second books of the Maccabees, written most probably in the first century B. C. Others were amplifications of existing biblical books, as is the case with the fourth book of Ezra, or the Book of Jubilees, and the Book of Enoch. Finally, a great number were apologetic, prompted by a desire to show to the Greek-speaking world the superiority of Jewish thought and life. To this class belong the third and fourth book of the Maccabees; the latter the work of the historian Josephus.

The desire to prove that Judaism was the only true philosophy, and tended to elevate man to the highest attainable level, prompted the writing of quite a number of Jewish books. The most prominent authors of this type are Philo of Alexandria, and his younger contemporary, Josephus Flavius of Palestine. Both wrote historical and philosophical works. Josephus is known to us as a classic historian, and is especially valuable for the history of his own time and the century preceding his days, for which he is the only complete source extant. In his book against Apion, he defends Judaism against charges preferred by a Greek author. Similar is the work of Philo, the most classic representative of the Jewish Alexandrian school, on whose work, Christian ideas are, to some extent, based. Besides theological writers, we find among the Jews a number of authors, who, prompted by the Greek classics, tried to present Jewish ideas in the poetical form, borrowed from the Greeks. The most prominent are Ezekiel, who wrote a dream based on the Exodus, and another Philo, who wrote an epic on Jerusalem. Another peculiar feature of this welding of the Jewish and Greek spirits is presented in the Sibyline oracles. Here Jewish authors adopted the mythical idea of a Sibyl, who in remotest antiquity had predicted events of later times, by putting into the mouth of the Sibyl the glorification of Israel, and the prediction of its final triumph. Christian authors have partly interpolated some of these Jewish works, and partly imitated them, making the Sibyl predict the coming of Christianity as the final solution of the world's problems.

II.— Talmudic Period.— The Maccabean revolt (165 B. C.) was undertaken by a small band of people, determined to die rather than give up their ancestral religion. When the victory was obtained, their utmost care was devoted to the preservation and the development of the visible symbol of their religion, the Law of God. Thus the Scribes, who are traced back to Ezra, became the undisputed spiritual leaders of Israel. It was one of their number who composed the 119th Psalm, arranged so that eight acrostics are devoted to every one of the 22 letters of the Hebrew alphabet, praising in 176 verses, the one all-important topic of the devotion to God's statutes, commandments, laws, ordinances, and testimonies. This devotion to the law became still stronger after the destruction of the Temple of Jerusalem (70 A. D.). The law now was the one bond which united the scattered people of Israel. The study of the law was undertaken first with a practical end in view. It was the endeavor of the Scribes to clarify all possible details, and to answer all the questions which emergency might bring before the observant Jew. This habit of going into the minutiæ of the law, whose infiniteness was a matter in which the pious scholars prided themselves, led to the habit of developing the law, for the law's sake. The most unlikely, and even impossible, consequences were discussed in the schools, because it was meritorious to devote one's life to the expounding of God's will, laid down in his Thorah. Over these hair-splitting decisions, the rabbis did not forget the spiritualizing ideas, which were the real object of their Alexandrian co-religionists.

There were two principal methods of studying the word of God. The first, looking upon the law and its practice, is called Halachah, literally, the Walk, meaning the practice. The second method is called Hagadah, preaching, and is devoted to the finding of edifying thoughts in the Bible. For a long time these studies were confined to the schoolroom, the teacher expounding the law to his pupils as he had learned it from his teachers, or as he saw fit to present it. The mass of these laws grew. Originally, some made brief notes of their lessons, called Meggillath Setarim «secret scroll,» or named after the teacher in whose school the notes were taken, as Mishnah of Rabbi Akiba, of Rabbi Meir, of Rabbi Nathan. The name Mishnah became then the technical term for a collection of rabbinical laws. The word means, the Second Law, or, more properly, although not literally, a compendium of the Law. According to reliable tradition, the first one to compile these scattered laws into one code, and to arrange them according to the subject-matter, was Judah Hanâsi, head of the school of Tiberias, 200. His compendium of what may be called, partly rabbinical law, and partly Mosaic Law, in rabbinical conception, was called Mishnah, and forms the textbook of the Jewish law, comprising the ritual, as well as the civil laws, and the penal code. The Dogma is almost entirely missing.

Judah Hanasi's first effort, stimulated others into imitation. Other codes were compiled, either following the example of the Mishnah, and arranging the text according to subject matter, or taking the Pentateuch as text, and commenting upon its laws, showing the rabbinical interpretation. A work belonging to the first class is the Tosefta (literally, addition), and to the latter class belongs the Mekilta (literally, methods, namely of scriptural interpretation), a rabbinical commentary on Exodus, Sifra (The Book), a rabbinical commentary on Leviticus, Sifre (The Books), a commentary on Numbers and Deuteronomy. Legal discussions continued even after the Mishnah had been recognized as the authorized code of laws. The disciples and successors of Judah Hanasi continued to discuss the text of the Mishnah in the same way in which the text of the Bible had been treated by their predecessors. These glosses soon greatly exceeded the text in volume, and they were called Gemara (completion). Together with the Mishnah, the Gemara formed one book, called the Talmud. (See TALMUD). With the growing influence of Christianity, the condition of the Jews in Palestine became more and more unfavorable, and a great many emigrated to the more congenial Parthian kingdom in Mesopotamia, which, from the time of the Exile, had had Jewish settlements; and so two schools were formed, one being in Palestine, notably in Tiberias, and the other in Southern Mesopotamia. Both schools used the same Mishnah as a textbook, but the glosses naturally differed, although there was a considerable interchange of ideas owing to the fact that some noted Palestine scholar would settle in Babylonia, or some promising Babylonian student, went to Palestine to continue his studies. Thus two Gemaras were compiled, one, containing the glosses of the Palestinian rabbis, called the Talmud of Jerusalem, and the other containing the glosses of the Babylonian rabbis, called the

Talmud of Babylon. The former was closed about 350, and the latter about 500. These dates, however, are not accurate, just as the tradition that Judah Hanasi compiled the Mishnah is not accurate when taken literally. All of these codes have been handled freely, and some of them have been interpolated by authors as late as the 8th century.

The fundamental conception of the Jewish student was that everything worth knowing was contained in the Bible, and notably in the Pentateuch, and so they looked to the Bible, and especially to the Pentateuch, for a confirmation of their conceptions. The controversies with Christianity, which especially affected the Jews in Palestine, produced quite a literature of homiletical explanations of the Bible. This is called the Midrash (literally, investigation). While the Midrash originally applies to both Halachah and Hagadah, it is more specifically understood with regard to the latter. The expositions of the Scripture delivered by various prominent teachers were collected, and so a vast number of Midrashim were compiled, the oldest of which is the Genesis Rabba, about 600. This literature was still more subject to arbitrary interpolations and additions, because the subject always disappeared behind the object, which was to teach the fear of the Lord. Who had first made a certain statement, and in what form he had made it, was from this point of view of no consequence.

The 6th and the beginning of the 7th century were sad times for the Jews, both of Palestine and of Babylonia. Their co-religionists, living outside of these two countries, scattered all over the northern coast of Africa, over Italy, France, and Spain, and perhaps, already over Germany, were numerically so insignificant that their spiritual life left no traces behind. The conquest of the Orient by the Mohammedans brought new impulses to the Jews. First of all the schools of Babylon were revived, and devoted themselves to talmudical literature, to the composition of a liturgy, and by and by, also to a more systematic study of theology, resulting in works on Biblical exegesis, on Hebrew grammar, on philosophy, and finally, on theosophy. The spiritual leaders of this age were the men who presided over the schools of Babylon, and were called Gaon, and therefore this period, extending from 630 to 1040, is called the period of the Geonim.

Their most important object was to codify the law, and to make their decisions in individual cases as accessible as possible. So a number of codes were composed, either arranged according to subject-matter, like the Halachoth Gedoloth of Simeon Kahira (700), or arranged according to the lessons from the Pentateuch, like the Sheeltot of Ahai. Furthermore, the authority of the famous scholars of Babylon was appealed to in difficult cases that came up for decision, in doctrinal questions, or very often for the interpretation of important talmudic passages. A copy of the replies was preserved, and as years passed by, compilations of these replies were made, and served, as in our day, the decisions of the supreme courts. These decisions were written partly in the Jewish-Aramaic dialect of those days and partly in Arabic, which, since the rise of Islam, had superseded the former dialect spoken by the Jews. Another literary activity was that which was devoted to liturgical needs. The synagogue was strictly congregational, but the desire for unity on the one hand, and the impossibility of having properly qualified congregational leaders in every small congregation on the other, created a need for a uniform liturgy. Amram (800), the Gaon of Sura, was appealed to, and compiled such an order of services. This official liturgy, however, was soon supplemented by what might be called hymns, and is technically called by a word taken from the Greek, «Piyut.» The authors of such Piyuts are called «Payetanim.» They amplified the service by dwelling on certain favorite themes, such as the sacrifice of Isaac, or by a poetical paraphrase of the official liturgy. Their activity lasted from 800 to 1200, although occasional attempts at this kind of poetry extend down to our times. Their most prominent representative is Eleazar Hakalir. They employed both rhyme and acrostic, but owing to far-fetched allusions their style is obscure and the poetical value of their productions meager.

In 760 a serious schism took place. Political conditions, combined with sectional strife and the growing propensity for the hair-splitting methods of rabbinical legislation, created a sect which rejected every authority but the Bible. The leader of this movement was Anan ben David, and his followers called themselves, Bene Mikra («Sons of the Scripture»), or Karaites. (See JUDAISM — THE KARAITES.) This movement produced quite an extensive polemical literature, and led to a deepening of exegetical studies as also to various attempts at presenting the theological conceptions of Judaism in a clear and concise form, while the doctrinal part of theology had formerly been altogether neglected out of preference for the law. The most important defender of the Karaitic doctrine is Salmon ben Jeroham, and on the side of the Rabbanites, as they were then called, Saadia, the Gaon of Sura (892–942). The latter translated the Bible into Arabic, wrote Arabic commentaries on Biblical books, and besides his activity in other directions, is noteworthy as a pioneer in what is called the Philosophy of Religion, but ought more properly to be termed, apologetics. He wrote a book in Arabic on Judaism, ‹Dogma and Philosophy.› From this time on, a decline in the spiritual life of the Babylonian Jews is noticeable. At the end of the 10th, and in the beginning of the 11th century, only the names of Sherira, and his son, Haii, are prominent as rabbinical authors. Both occupied the position of Gaon of Pumbeditha, in Babylonia. The former, especially, is noteworthy for his compilation of the history of rabbinical law, which was undertaken for apologetic purposes, in order to prove that the rabbinical law had come down in uninterrupted tradition from the days of Moses. With this decline in Babylonia, new centers of spiritual life appeared in other countries. In Morocco, Isaac Israeli (850–950) appears, whose medical treatises, written in Arabic, are considered important contributions to the medical literature of his day. He also wrote Biblical commentaries, and he was the first to present the idea that some of the passages of the Pentateuch were written after Moses' time. In the 10th century, we meet the first Jewish author known by name in Europe. He is Sabattai Donolo, who wrote on astronomy and on Cabala. Cabala, literally tradition, is the Jewish theosophy, which, while obscure in its origin, seems to go back to Neo-Platonic Philosophy, and received its first systematic presentation in the Sefer Yezirah (‘Book of Creation’), written, most likely about 850. (See JUDAISM—THE CABALA.) Before Donolo, however, there were some Jewish authors in Italy, whom we do not know by name. One of them wrote the Josippon, a Hebrew abstract of the works of Josephus. Another wrote a homiletical compilation, called the Chapters of Rabbi Eliezer, and ascribed to Eliezer ben Hyrkanos, who flourished about 100 in Palestine, but really written by a Roman Jew, about 840.

The classic period of Jewish literature in mediæval times began in the 10th century in Spain. There, under the favorable condition produced by Arabic dominion, some Jews became powerful factors at the courts of the Caliphs, and, like their Arabic countrymen, employed their wealth and their influence for the patronage of literature. Such Maecenases were Hasdai ibn Shaprut (950), and Samuel Hanagid (1050). Under their influence, a systematic study of Hebrew grammar began. The names of the most important authors on this subject are Dunash ibn Labrat, Menahem ben Saruk (10th century); who were succeeded by Ibn Ganah and Judah Hajug. Ibn Ganah wrote the first Hebrew dictionary. With such attempts, naturally, exegesis went hand in hand, and penetration into the laws of the language developed a finer taste for Hebrew style, and a better conception of the art of poetry than that which the former Payetanim possessed. Of the numerous exegetes of this period, Abraham ibn Esra (1092–1167) deserves to be mentioned. He not only employed his knowledge of grammar and the principle that the Bible must be explained from the point of view of the context, but he also claimed that the rabbinical interpretation of scripture was not infallible, and finally, he pointed out a number of passages in the Pentateuch which could not have been written by Moses. So he became the father of biblical criticism. Of the Hebrew poets of this age, two deserve very prominent mention, Solomon ibn Gabirol (1022–1070) and Judah Halevi (1080–1141). Both handled the Hebrew language not merely for the purposes of religious poetry, but for secular poetry, as well, and with a mastery which makes them classics, not merely of Jewish, but of the world's literature. Judah Halevi's Ode on Zion, has been translated into various modern languages. During this period, the Philosophy of Religion, if we may employ this traditional term, developed to its highest perfection. (See JUDAISM — JEWISH PHILOSOPHICAL WRITERS.) The first to write on this topic in Spain, was Bahya ibn Pakuda (11th century), whose work, ‘Duties of the Heart’ emphasizes the necessity of an inner religion, as contrasted with the idea of strict ritual observance. A very popular work is the ‘Kusari’ of Judah Halevi. The most important development of this class of literature is the ‘Guide for the Perplexed,’ by Moses ben Maimon (1135–1204), written like the above-mentioned works in Arabic. Like them, it was translated into Hebrew, in the course of the 12th century. While this literary activity shows a somewhat secular tendency, also evident in works on astronomy, medicine, science, etc., talmudic studies were not neglected. Maimonides wrote a code of the Jewish law, including even the sacrificial cult, and the constitutional law for Israel's kingdom, dogma and ethics, under the title, ‘Mishneh Torah.’ He had been preceded by Isaac Alfasi (1013–1103), a native of Fez, who lived, during the latter part of his life in Spain. Alfasi made an abstract of the Talmud, in order to facilitate legal decisions, and this work became a very popular code of Jewish laws, and was often commented upon.

Jewish literature developed in France, somewhat later than in Spain. There were chiefly two centers, one in the south, the Provence, and one in the east, the Champagne. The oldest name of any prominence is that of Gershom, surnamed, «The Light of the Diaspora.» He wrote talmudic commentaries, and a number of decisions and hymns. In the latter part of his life he moved to Mayence, where he established a new center of Jewish spiritual activity. He died in 1028. To the school founded by him belongs the most popular of all mediæval authors, Solomon ben Isaac of Troyes, called «Rashi,» abbreviated from the initials of his name, Rabbi Shelomoh Izhaki (1040–1105). He compiled the first complete commentary on the Babylonian Talmud, which from his time on was studied alongside of the text, and is printed with all talmudic editions. He further wrote commentaries on almost all books of the Bible, and his commentary on the Pentateuch, giving in simple, precise language the talmudic interpretations of the law and the best rabbinical homilies is the most popular work of mediæval Jewish literature, being used to-day in numerous schools and study circles. His disciples, among whom members of his own family, especially his two grandsons, Samuel and Jacob ben Meir, were most prominent, continued his work in commenting on the Talmud, and laid down their work in glosses, called Tosafot (additions). In Germany, where studies began with the 11th century, attention was almost exclusively given to the Talmud, besides which only religious poetry was cultivated, lacking, however, the true inspiration of the Spanish school.

With the death of Maimonides a marked decline occurred. With a few exceptions, exegesis degenerates into blind adherence to rabbinical authorities, philosophy becomes more and more fanciful homiletics, or gives way to theosophy, and poetry becomes punning on biblical and talmudic phrases. Exceptions are found in the cases of Joseph Kimhi, and his two sons, Moses and David (1150–1230), and Moses ben Nahman (1200–1270) whose commentary on the Pentateuch, though as a rule very sound, shows very often leanings towards fanciful mysticism. Notable, in this period, is the work of the family of Ibn Tibbon, four generations of which were engaged in the translation of Arabic works into Hebrew, and so, along with others, among whom may be mentioned Jacob Anatoli of the 13th century, helped to preserve the treasures of Greek literature, which they translated from Arabic into Latin. Among those who worked along the lines of Saadia for the harmonization of religion and science, mention must be made of Hasdai Crescas, author of ‘The Light of the Lord’, Levi ben Gershom, author of ‘The Wars of the Lord’ (14th century), and finally, Joseph

Albo (1400–1440), whose work 'Ikkarim' ('The Fundaments of Faith'), is altogether dependent on Maimonides. While this decline is noticeable in the best parts of Jewish literature, there is, on the other hand, a great activity in mystic literature. The most important work of this kind is the Zohar ('Brightness'). It is a theosophical explanation of the Pentateuch, which gives itself as the work of Simeon ben Johai, a rabbi of the 2d century, but is now generally believed to have been written by a Spanish author, Moses de Leon, about 1280. The fabrications of works of this kind, attributed to the authorities of the Talmud, and even to patriarchs, became as frequent in these days as it had been in the first Christian century, when the book of Enoch, and the Sibylline oracles were composed. The German Jews of those days confined their activity exclusively to Talmudic literature, and even in this line were frequently devoting themselves to the minutest details of ritual practice. A very prominent author of this day, and the founder of an important school, was Meir of Rothenburg, who is otherwise well known in Jewish history as a martyr, who spent seven years in prison, because he refused to allow his congregation to pay the ransom, for the exaction of which King Rudolf had imprisoned him (1286). Exceptions are found in Italy, where most noteworthy are the poets, Kalonymos ben Kalonymos, and Immanuel of Rome, the latter a friend and contemporary of Dante. Another exception are some polemical works against Christianity, amongst which mention may be made of the Nizahon, by Lipman of Muehlhausen (14th century).

III. From the Reformation to Moses Mendelssohn.— The expulsion of the Jews from Spain (1492) had an unfavorable influence on Jewish literature. The Jew, driven to the Orient and to Poland, and even expelled from all centers of culture in western Europe, became more and more spiritually isolated. On the other hand, however, rabbinical literature was more widely studied, owing to the assistance of the printing press. Talmudic studies flourished largely in the Orient and in Poland. The most important production of this time is the popular code of the law, the 'Schulhan Aruk,' by Joseph Caro (1488–1575), written in Safed, and edited with annotations by Moses Isserles (1520–1572), of Cracow. Annotations to the code of the law formed the most popular literary occupation for the rabbis of the 17th and 18th centuries. While the belief in the rabbinical authority became more and more almost absolute, indications of a development in the opposite direction begin to appear. Elijah Levita (1469–1549), a German who lived in Italy, and devoted his activity to grammar, made an important step in critical archæology by his discovery that the vowel points were not invented before the 7th century. He was followed by Azariah dei Rossi (1511–1578), who, in his work 'Meor Enayim' proved that the authority of the Talmud could not be maintained in questions of history and astronomy. His work brought forth a number of apologies of rabbinical literature, notably, the 'Beer Hagolah', of Loew ben Bezalel, Rabbi of Prague (1530–1609). Similar apologies were prompted either by the attacks of Christianity, or by skepticism within the Jewish fold. To the former class belong the 'Consolations' of Samuel Usque (1553), and to the latter, the 'Nomologia' of Immanuel Aboab (1625). An indication of a sounder development of Jewish literature, although prompted by apologetic methods, were the chronicles, becoming more and more numerous from the beginning of the 16th century. The most prominent of these are, 'The Sceptre of Judah', by Solomon ibn Verga, 'The Chain of Tradition', by Gedaliah ibn Yahia, and the 'Valley of Weeping', by Joseph Hakohen, all of the 16th century. The influence of this development is offset by the growth of cabalistic literature, which penetrates into every branch of religious practice, and degenerates into the compilation of senseless phrases. The comparatively soundest representative of this class is Isaiah Horwitz (1550–1630), whose book 'The Two Tablets of the Covenant', intended to give a system of Cabala, became very popular. The type of utter degeneracy is represented by Hayim Vital, whose exposition of the doctrine of the transmigration of the soul, and of similar Cabalistic doctrines, is partly childish, and partly unintelligible. At the same time, however, Cabala was attacked severely by Leon Modena, of Venice (1571–1648), who also wrote a defense of rabbinical Judaism, against the attacks of freethinkers, of whom, Uriel Acosta is the most prominent type. Apologetic works were further written by the Amsterdam Rabbi, Manasseh ben Israel (1600–1655), who is famous in history owing to his audience with Oliver Cromwell, which resulted in the re-admission of the Jews to England, after nearly 400 years of exile. Still, the most untiring activity of the Jews was devoted to dialectical explanations of the Talmud, and to the exposition of the ritual law. A great exception is the case of Moses Hayim Luzzatto (1707–1747) of Padua, whose allegorical dramas, written in Hebrew, and patterned after Italian masters, rank with the best Hebrew poetry of medævial times. Another exceptional position may be claimed for Jacob Emden (1696–1776) who, while a strict believer in rabbinical authority, wrote a work, proving that the Zohar, as we possess it, was the work of a Spanish Jew.

IV. From Moses Mendelssohn to the Present Day.— Religious toleration, partly the result of actual conditions as they developed after the Thirty Years' War, and partly the result of the philosophical teachings of Locke, and his disciples, the English Deists, and the French encyclopedists, influenced the condition of the Jews very favorably. Admitted to higher occupations, and to the universities, the number of those who devoted themselves to secular learning began to increase considerably in the 18th century. This movement to rescue the Jews from their mental isolation, received its strongest impetus from Moses Mendelssohn (1729–1786), whose translation of the Pentateuch into pure literary German changed the hitherto one-sided education of the Jewish youth. His example was followed by a number of his friends, who, like him, translated the biblical books and the prayer books into pure literary German, and wrote biblical commentaries, which, by their clear Hebrew, and by their embodiment of modern methods and ideas, broadened the intellectual horizon of the Jewish student. Together with this movement there was a revival of Hebrew poetry, notably due to Hartwig Wessely (1725–1805), which helped to develop a literary art, almost forgotten since the beginning of the 16th century. A prominent factor was ‹Hameassef› (1783–1810), a Hebrew periodical, edited by friends of Mendelssohn. Through the medium of these works, the Jews became acquainted with secular literature, and very soon a generation arose that received a secular education equal to that of their Christian neighbors, which could not but influence the development of Jewish literature. This branch, is inaptly called, «The Science of Judaism.» It is a systematic presentation of Jewish literature and history. The founder was Leopold Zunz (1794–1886), whose ‹Gottesdienstliche Vortraege› was the first, and is still unsurpassed in its scientific presentation of homiletical literature. Of his numerous other works, special mention must be made of his ‹Synagogale Poesie› another pioneer work, presenting a history of liturgical literature and especially of liturgical poetry. His work was taken up by some Polish scholars, who, possessing a vast acquaintance with Jewish literature, lacked systematic training, and living in a land where secular studies were considered heresy, had received the first ray of light from some men who had come, under Mendelssohn's influence, to Berlin. The leaders were Nahman Krochmal (1785–1840), and Solomon Loeb Rapoport (1790–1867). The latter presented for the first time, biographies of mediæval Jewish authors in scientific form. The attack of this movement by fanatics, prompted some fine satirical works in Hebrew, notably, ‹The Revealer of Secrets,› by Joseph Perl (1773–1838), patterned after the ‹Epistolæ obscurorum,› and a travesty on the Jewish mystics; also ‹The Observer,› by Isaac Erter (1792–1851).

These two currents of literature, namely, the investigation of the history and literature of the Jews on the one hand, and the poetical representation of modern ideas in good Hebrew, on the other, characterize the literary activity of the Jews in the 19th century. The work of Zunz was continued by various authors, notably Zechariah Frankel (1801–1875), who was head of the Breslau Seminary, and stimulated many authors into similar activity. Abraham Geiger (1808–1874) the leader of the liberal movement in religious matters, has also contributed to the elucidation of Jewish history. An attempt to present history in a more popular form was first made by Isaac Marcus Jost (1793–1860). The most popular work of this kind was written by Heinrich Graetz (1817–1891), whose work has gone through several editions, and been translated into various languages. More strictly scientific is the work of Moritz Steinschneider, born 1816. Of the numerous scholars who worked on individual topics of Jewish history and literature, mention may be made of Isaac H. Weiss (1815–1905), Meyer Kayserling (1829–1905), David Kaufmann (1852–1899). Jewish poetry and fiction was chiefly cultivated in Russia, where, through the efforts of Isaac Baer Lewinsohn (1789–1860), modern ideas were cultivated. A marvellous art in the use of Biblical Hebrew for novels was exhibited by Abraham Mapu (1808–1867), who first attempted to write novels from biblical times, and later on used the biblical language with unprecedented skill in writing a novel from the life of the Russian Jews of his day. Poetry, especially of the satirical sort, is best represented by Leon Gordon (1831–1892), while in novels from contemporary Jewish life, Perez Smolensky (1842–1884), ranks foremost.

Some words must be said about the development of literature in Yiddish, which is a German, freely mixed with Hebrew, and in Eastern Europe, also with Slavic. Originally devoted merely to practical religious purposes, such as translation of prayer books, for the edification and religious instruction of women, in the latter half of the 19th century it began to be used for higher literary purposes, in poems, novels, and dramas. As a poet, Simeon Frug may be considered as the foremost representative; among the novelists, S. J. Abramowitz, Solomon Rabbinowitz, and J. S. Peretz, some of whose works may justly claim a place in the world's literature. Among the dramatists, Jacob Gordin is noteworthy for his bold treatment of sociological and economical questions, although the plots of his plays are mostly adaptations from the classics of other languages.

In this connection a new branch of literature has to be mentioned, which, akin to the idyl, is peculiarly Jewish. It is the so-called ghetto novel, cultivated first in the German language by Aaron Bernstein (1812–1884), in his two novels, ‹Voegele der Magid,› and ‹Mendl Gibbor,› presented life in a provincial town of Eastern Germany in the period of transition from Ghetto to modern culture. Leopold Kompert (1822–1886), wrote stories from Bohemian Ghettos which are masterpieces of their kind. Life in the over-crowded Ghetto districts of Eastern Galicia, with its squalor and superstition on the one hand, and its ardent desire for knowledge, and its beautiful family life on the other, were masterfully presented by Leopold von Sacher-Masoch (1835–95), and Karl Emil Franzos (1848–1904). Israel Zangwill, born 1864, presented the life of the Russian Jews in London. Sketches from Jewish life in Moravia, were written by Martha Wolfenstein (1871–1906), in her ‹Idyls of the Gass.›

A development of the 19th century is Jewish periodical literature, although its beginnings reach back to 1674, when a periodical in Judeo-Spanish was first published in Amsterdam. These periodicals are mostly weekly, when devoted to religious interests. The oldest of them is the ‹Allgemeine Zeitung des Judenthums,› now of Berlin, founded in 1837 at Leipsic. It was followed by the ‹Archives Israélites› of Paris, in 1840, the ‹Jewish Chronicle› of London, in 1841, and the ‹American Israélite› of Cincinnati, in 1854. Such papers appear in at least fifteen languages, in all parts of the globe. Dailies in Hebrew and Yiddish are devoted to general news, but give particular attention to Jewish affairs. They appear in Warsaw, Wilna, Saint Petersburg and New York. The oldest is ‹Hazefirah,› founded in 1862 as a weekly, edited as a daily since 1886, and suspended by order of the government in 1905. Some monthlies and quarterlies are devoted to scientific and literary purposes; the most prominent are 'Monatsschrift fuer Geschichte und Wissenschaft des Judenthums' (1851), 'Revue des Etudes Juives' (1880), and the 'Jewish Quarterly Review' (1880). To this class belong numerous year-books, published in various languages, and appearing more or less regularly.

In spite of these modern tendencies, which occupied the attention of Jewish authors during the 19th century, Talmudic studies of the old type were not entirely neglected. They are, however, mostly confined to the East of Europe, and the Orient. The most prominent rabbinical author in the beginning of the 19th century was Moses Schreiber (Sofer), Rabbi of Presburg (1762–1839). In the Orient, the most prolific authors of rabbinical works of the 19th century are Hayim David Hazan (1790–1876), Rabbi of Jerusalem, Hayim Palagi, Rabbi of Smyrna (1782–1868), and finally, Hayim Hezekiah Medini, of Hebror (1832–1904). Of the Jews of Europe, the most prominent rank amongst the Talmudic authors in the latter part of the 19th century, was held by Isaac Elhanan Spektor (1810–1896), Rabbi of Kovno.

Such in brief, is the historical outline of a literature extending over more than three thousand years and over all parts of the globe.

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5. Judaism—Jewish Philosophical Writers.—The philosophic spirit in its proper sense appeared among the Jews at the time of their contact with Greek culture, which began with the conquest of the Semitic Orient by Alexander the Great. Its first definite traces are to be discerned in the skepticism which pervades Job and Ecclesiastes, books which in their present form belong, therefore, to a period subsequent to the last quarter of the 4th century B. C. In the former work, the skepticism is more or less veiled and proceeds no further than to express a doubt as to the wise workings of Providence. In the latter composition, the skeptical spirit is more pronounced and amounts to a practical denial of divine justice. Results of a more positive character, however, appear in the system of Philo Judæus (b. in Alexandria about 20 B. C.; d. after 40 A. D.). In his many works, of which the chief are in the form of commentaries to the Pentateuch, he strives to reconcile the traditional tenets of Judaism with the eclectic school of Greek philosophy. While recognizing the Old Testament as divine and authoritative, he makes full use of allegory, to adapt Jewish conceptions to current Greek wisdom. The corner-stone of his system is formed by his doctrine of the Logos or «Word» as the active agency associated with God in his creative powers. He identifies the Logos with the «divine wisdom,» so strongly personified, notably in the book of Proverbs, as to become not merely an attribute, but an element of the divine. Philo is influenced throughout by Plato's doctrine of ideas, and while leaving little permanent impress on Jewish, he profoundly influenced Christian theology. The conception of the «word» in the Gospel of John is the most striking trace of the Philonic doctrine, and so enthusiastic were the early Christians over Philo's teachings that some of them saw in him a Christian. Philo's philosophy plays also a prominent part in the writings of the church fathers, and it is chiefly due to them that his works were preserved.

Saadia.— One of the earliest and most distinguished Jewish philosophers dates from the 9th century when the intellectual centre was still in the East, although there were already indications of its transfer to Northern Africa and Spain. The rise of Islam, followed by conflicts among its adherents as to the interpretation of the Koran, had given a fresh stimulus to philosophic thought which had its influence likewise upon the Jews. The rise of the Karaite sect (see JUDAISM—THE KARAITES) at the end of the 8th century is to be directly ascribed to this influence. For a time it seemed as though the disintegration of Rabbinical Judaism was at hand when the tide was stemmed by a profound thinker and prolific writer — Saadia ben Joseph, born in Dilaz in upper Egypt in 892 and who died at Sura 942. Equally versed in the Talmudic and Islamic theology, Saadia attempted to reconcile the teachings of Jewish orthodoxy with the current philosophy as developed chiefly by the Islamic rationalists known as the Motazilites (or Separatists). His main work written in Arabic 'Book of Faith and Doctrines' was completed in 933 and may be said to mark the first systematic compend of Jewish philosophy. Differing from Philo in making Biblical doctrines his starting-point, his entire efforts were devoted to demonstrating that where the current philosophy or rationalism was in contradiction to the Old Testament, the philosophy must be wrong and the Old Testament right. The aim of the book is clearly set forth in the introduction as intended to put an end to the prevailing confusion, and to rescue those immersed in the sea of doubt and error. Recognizing as sources of knowledge the testimony of the senses, reason, and logic, he declares that a fourth source — revelation, as comprised in the Old Testament, is superior to them all, because through revealed knowledge, the means is found to control the correctness of the teachings deduced from the other sources. In his chief philosophic work Saadia includes discussions of the creation of the world, of the attributes of the Creator, the theory of revelation, the beliefs based upon divine justice, the doctrine of the soul, of the resurrection of the dead and of the Messianic belief, concluding with a summary of ethical precepts.

Beginning in each main subdivision with the teachings of the law and the prophets on the subject, he contrasts these teachings with the speculations of the philosophers and shows wherein the errors of the latter consist. He betrays Aristotelian influences and at times, especially in his discussion of the problems of creation, follows very closely the model of the more rationalistic Islamic theologians. Accepting the philosophic doctrine of a *creatio ex nihilo,* he proves its correctness from the use of the word «bara» in Gen. i, 1, which he declares means creating something out of nothing. The doctrine of a creator as set forth through revelation in the Old Testament is confirmed by reason which declares that creation implies a creator. Passing on to the more precise determination of the attributes of the Creator, he polemicizes against the dualistic tenets of Zoroastrianism, and against the trinitarian doctrine of Christianity in his endeavor to justify the conception of God as a unit. The divine laws as laid down in the Pentateuch supplemented by oral tradition, are, according to Saadia, given in order to enable men to attain to the highest degree of blessedness; and while recognizing in the divine laws given to Israel two classes, (a) those suggested by reason and (b) those due to revelation, he shows by examples how the latter may likewise be explained by pure reason. Perhaps the most original feature in Saadia's philosophy is the manner in which he endeavors to reconcile the doctrine of the freedom of the human will with the belief in the omniscience and omnipotence of God. He solves the problem by declaring that God could control the human will, but deliberately gave men freedom, so that he might bear the responsibility for his acts. Suffering and trials are sent by God to man in order to bring him by spiritual discipline nearer to perfection. He criticizes the various theories proposed by philosophers and others as to the nature of the soul and declares it to be a fine substance created by God, and placed in the human body during its stay on earth. After its life on earth another existence is in store for the soul, but only after the number of the souls to be created has reached an end, when all souls are again united to their bodies. In this combination of the doctrine of immortality with the resurrection of the body, Saadia betrays the influence of Islamic theologians who postulated this doctrine on the basis of the pictures of Paradise drawn in the Koran. Saadia's messianic beliefs accord with those indicated in the Talmud, pointing to the appearance of the Messiah as a preliminary to the resurrection of the dead. In the world to come, the good and pious will receive their recompense for their acts and sufferings in this world. The influence of Saadia on his age was profound. Through his philosophy in conjunction with his polemical writings against the Karaites, the new sect received a blow from which it never recovered. Jewish orthodoxy once more won the day, and it was not until the days of Maimonides that the soundness of Saadia's system was questioned.

Ibn Gabirol.— Passing by some minor writers like Bachya ben Joseph ibn Pakuda who flourished at Saragossa in the first half of the 11th century and who largely on the basis of Saadia's religious philosophy developed a system of Jewish ethics in a work known as 'The Guide to the Duties of the Heart' that represents a combination of Jewish doctrines with certain phases of Islamic mysticism, we reach in Solomon Ibn Gabirol (b. in Malaga about 1021; d. in Valencia about 1058) a thinker of the first magnitude, whose chief work written in Arabic is 'The Fountain of Life.' Though its aim is to reconcile the monotheistic doctrines of Judaism with the philosophy of Neo-Platonism which Gabirol espoused in opposition to the prevailing Aristotelianism, its basis is essentially philosophical rather than theological. Nor does the author lay any special stress upon his Jewish beliefs, as a consequence of which the influence that he exerted upon the scholasticism of mediæval Christianity was far greater than upon Jewish theology. The work consists of five treatises dealing respectively (1) with matter and form, (2) the substance underlying the corporeality of the world, (3) proofs of the existence of intermediaries between God and the physical world, (4) proofs that these intermediaries known as «simple» or «intelligible» substances are composed of matter and form, and (5) a treatise on universal matter and universal form. According to Gabirol's system, everything that exists is embraced under these three categories: (1) God, which is the first substance, (2) the world which is matter and form, and (3) will as intermediary between the two. Whether Gabirol connected with God divine attributes apart from an existence pure and simple is a question in regard to which opinions differ. The best authorities, however, incline to the view that Gabirol was an opponent of ascribing attributes to God as ingredient parts of his Being. Gabirol's chief model among the Greek Neo-Platonists is Plotinus, though he knew this author through secondary sources only. In an ethical treatise entitled 'The Improvement of the Moral Qualities' composed in 1045, he is even bolder than in his philosophic work, inasmuch as he attempts to formulate principles of ethics without reference to religious belief or doctrines. A comparison between Philo and Gabirol naturally suggests itself. Both revert to Plato as the natural source of their inspiration. Philo adapted Judaism to the Platonic doctrines whereas Gabirol a thousand years later revised Neo-Platonism and adapted Judaism, so far as it entered into his thoughts, to this system. Like Philo, Gabirol's influence was profound on Christian theology and under the Europeanized form of his name, Avicebron, his writings translated into Latin helped to mould the thought of such philosophers as Albertus Magnus, Thomas Aquinas, Duns Scotus, and Giordano Bruno. Ibn Gabirol was also a poet of the first rank, whose liturgical compositions in Hebrew give evidence that his philosophy, though so apparently independent of Jewish doctrines had not weaned him from Jewish orthodoxy. In this combination of poet and philosopher, he suggests comparison with Judah (or Jehudah) Halevi — the next important writer to engage our attention.

Judah Halevi was born in Toledo towards the end of the 11th century, dying some time after 1140 during a journey to the Orient. He is more famous for his exquisite Hebrew poems — both lyric and religious — than for his philosophy. The tone, form and imagination of the poet color his views of life far more so than in the case of Ibn Gabirol. Hence, in his philosophic treatise written in Arabic, but generally known by the title of the Hebrew translation as 'The Book of Cuzari'— he takes his stand upon revealed religion, which to him is superior and more trustworthy than any human speculation. He does not even attempt like Saadia to reconcile religion with philosophy, but devotes himself mainly to showing the superiority of Judaism among the religions claiming to be revealed. The discussion of the tenets of Judaism and the proof for their truth is given in the form of a dialogue between a Jew and the pagan king of Chazars — hence its title — who after discussing religion with a philosopher, a Christian and a Mohammedan, turns to the Jew for a statement of his beliefs. Naturally Judah Halevi cannot escape dealing with the current philosophical doctrines, and while claiming to draw his views exclusively from the teachings of the Old Testament, introduces distinctively Aristotelian notions, as well as certain views held by Islamic theologians. God is for him the first cause who creates the world out of "nothing." He divides the attributes of God, without any distinction between essential and non-essential, into three classes — active, relative, and negative. While not regarding God as a corporeal Being he is not prepared to reject all the anthropomorphisms in the Old Testament as purely symbolical. According to him, the immortality of the soul, the resurrection of the dead and the doctrine of rewards and punishment are all taught in the Old Testament and constitute essential features in Judaism. An entire division of the book is devoted to a refutation of the Karaites, an exposition of the basis and development of oral tradition as exemplified in the Talmud, while the fifth and last division is taken up with polemics against the current systems including the Aristotelian cosmology and the Epicurean doctrine of Fatalism which was also accepted by the orthodox Islamic theologians. His attempt to reconcile the freedom of the human will with the omniscience of God follows largely on the lines laid down by Saadia.

Maimonides.— The greatest of all Jewish philosophers in whom their philosophical activity reached its zenith was Moses ben Maimon, generally known as Maimonides (b. in Cordova 30 March 1135; d. at Cairo, 13 December 1204). His two main works are (1) the codification of the Talmudic regulations systematically arranged into 14 groups. This elaborate treatise, to which he gave the title 'Mishneh Torah' or 'The Second Law' and which was written in Hebrew, is a profound monument to the author's learning, ingenuity, and skill. It marked an epoch not only in Talmudic studies, but in the history of Judaism, and although intended to uphold and strengthen the authority of the Talmud, in reality led in the course of time to an anti-Talmudic movement, which after many vicissitudes contributed to the decline of Rabbinical authority in Judaism and eventually to its overthrow in all of western Europe and in America. The orthodoxy displayed by Maimonides in his code is in striking contrast to the freedom and boldness of his philosophical and theological views in his great philosophical work, completed in 1187, written in Arabic and known as the 'Guide of the Perplexed.' Upon this work his claim to immortal fame rests. Its principal aim may be summed up as an attempt to bring about the reconciliation between the prevailing modification of the Aristotelian philosophy and Judaism. Maimonides purposed to do for Judaism what Alfarabi, Avicenna (or Ibn Sina) did for Islam — to adapt it to the teachings of Aristotle, as these teachings were understood and interpreted in his days. Starting from the thesis that there can be no contradiction between truths revealed by God and truths discerned by the human mind, which is a power derived from God, Maimonides explains the apparent conflict between science and religion, as due to a misunderstanding of the anthropomorphisms in the Old Testament. Holding more strictly than any of his predecessors to the doctrine of the incorporeality of God, and going to the length of declaring every one who denied this dogma to be an idolater, he is obliged to fall back in accounting for anthropomorphic descriptions of God in the Bible on the old Philonic principle of the twofold meaning — an external or superficial one and an internal or allegorical one. By the same method he disposes of the attempt to predicate positive attributes into five classes, (1) those that include all the essential properties of an object, (2) those that include only a part of the essential properties, (3) those indicating a quality, (4) those indicating the relation of one object to another, (5) those referring to the actions of an object. He rejects all but the last because they either rest upon the erroneous assumption that God can be defined or because they contradict the fundamental view of the absoluteness of God. Attributes referring to God's actions may be admitted because they do not assume the co-existence with him of anything else. Maimonides, accordingly, interprets the names given to God in the Old Testament as indicative of His activity. While accepting the principle of *creatio ex nihilo,* because it can be supported by better arguments than the doctrine of the eternity of matter, he admits that no positive proof can be given for the former and criticizes sharply the seven arguments in support of the doctrine given by the Islamic theologians. In a series of 26 propositions he establishes the doctrines of the existence, unity, and incorporeality of God as the primal cause. He accepts the Aristotelian view of a number of heavenly spheres, each endowed with an intellect and possessing a soul, but instead of regarding these spheres and intelligences as co-existing with the primal cause, Maimonides maintains that they were created by the will of God. With the help of his allegorical method of interpreting Biblical passages, he proceeds to show that the account of creation in the Book of Genesis is in accord with the views of Aristotle. He takes the first word of Genesis as the term for "Intelligences" which constitutes the first work of God, as proclaiming the *creatio ex nihilo.* Adam's sin, and even the three sons of Adam are accorded a purely allegorical interpretation, so that in this way everything falls into line with the Aristotelian system. When he comes to prophecy, which in accord with the philosophers he regards as a natural quality that may be granted to any man whose physical, mental, and moral qualities are in perfect condition, he extends the allegorical method to the interpretation of the prophetic visions, notably those of Ezekiel. Evil, according to Maimonides, has no positive existence, and consistently all such evils as are in the Old Testament ascribed to God as the direct cause are interpreted allegorically. His solution of the apparent contradiction between God's omniscience and the freedom of the human will possesses at least one original feature in the emphasis that he lays upon God's knowledge as essentially one of possibilities, and that the knowledge of the realization of one of several possibilities does not affect the nature of the "possible." This being admitted, man has a free choice among several possibilities. The last part of the 'Guide' is devoted to an exposition of Maimonides' system of ethics which is based upon the Pentateuchal laws. These laws bear either directly or indirectly upon morality as the means to attain the highest happiness which in the case of men as superior to the animal world and as the end and purpose of creation must consist in a moral and intellectual perfection. In accordance with this basic principle he proceeds to the interpretation of the Pentateuchal precepts and from them deduces precepts for the regulation of man's life. His philosophy though intended as a justification of Judaism was not so regarded by those whose philosophical interests were subsidiary to their religious zeal. There was much in the 'Guide' that appeared rationalistic to more simple-minded believers — more particularly his views of prophecy and miracles, both of which he accounted for as due to perfectly natural processes. His lack of positiveness with regard to the doctrine of the *creatio ex nihilo* also aroused offense, and it was not long before a controversy arose that grew in bitterness between the adherents and opponents of Maimonides in France and Spain, and which threatened at one time to create a break in Jewry. The influence of Maimonides' 'Guide' extended, however, far beyond the limits of Judaism. Through a Latin translation it made its way to Christian scholastics and it was instrumental, like Gabirol's 'Fountain,' in shaping the thoughts of men like Albertus Magnus, Duns Scotus and numerous others, while within the pale of Judaism its traces may be discerned in Spinoza's system and down to the 18th century in men like Moses Mendelssohn and Solomon Maimon.

Gersonides.— Half a century after Maimonides we encounter in Levi ben Gerson known as Gersonides (b. 1288; d. 1344) and in Latin as Leo Hebræus, a philosopher who struck out into new paths, diverging somewhat from those of Maimonides. He was remarkable for the wide scope of his attainments, embracing logic, metaphysics, mathematics and medicine. As a philosopher his fame rests upon his work 'The Wars of God,' which is devoted chiefly to a discussion of those questions which Maimonides left in a vague state or in which he opposed Aristotelian principles. Gersonides clings more closely to Aristotle than any other Jewish philosopher, and thus represents the climax of Aristotelian influence in Jewish theology. If Maimonides is dependent upon Ibn Sina's interpretation of Aristotle, Gersonides may be said to represent the adaptation of Ibn Roshd's (or Averroes') exposition of the Aristotelian system to Judaism and which involved a more radical departure from orthodoxy. In a conflict between reason and religion, he does not hesitate to give the preference to reason. He ranges himself on the side of the scholastic realists and follows the arguments of the latter in maintaining that the intellect inasmuch as it consists of conceived ideas having a real existence may survive after the body decays. In opposition to Maimonides, he claims that certain attributes, such as knowledge, can be predicated of God but that divine knowledge is not to be placed on a par with human knowledge in any such particular. Through the wide divergence between the two, he opens the way for the maintenance of the doctrine of the freedom of the human will in the face of God's omniscience. Perhaps the most original part of his philosophy is his view of creation, assuming as he does that from eternity there existed inert and undetermined matter, devoid of form to which God at the proper time bestowed form, life, and motion. He thus occupies a middle position between those who accepted the eternity of matter and those who admitted the *creatio ex nihilo.*

Crescas.— The revolt against Aristotelianism came in the following century, the chief representatives of the movement being Chasdai ben Abraham (or ben Jehuda) Crescas (1340–1410) and his pupil Joseph Albo (1380–1435). In his work 'The Light of God,' Crescas boldly makes front against the subjection of Jewish theology to the tenets of the Aristotelians, whether of the Avicenna-Maimonides or of the Averroes-Gersonides type. He criticizes the 26 Aristotelian propositions adopted by Maimonides as the basis of his doctrine of the First Cause, and endeavors to show that through Revelation alone can the belief in the unity of God be established. Against Maimonides he assumes that attributes can be assigned to God without involving oneself in contradictions. As the six fundamental doctrines of Judaism he sets up the omniscience, omnipotence and providence of God, prophecy, freedom of the will and recognition of a purpose in creation. As the purpose of God's creation of the world he assumes the happiness of man's soul, though admitting that this happiness is not fully realized until after death when the soul enters into higher realms of existence. The soul is independent of knowledge and man's highest perfection is reached not through knowledge but through love of God's law and obedience to it.

Joseph Albo.— Crescas' pupil Joseph Albo develops the themes of his master still further. In his 'Principles' he plants himself even more securely on the basis of revelation, maintaining that the Mosaic law as the outcome of revelation establishes the claim of Judaism for all times as the only true religion. Instead of six, he sets up three principles as fundamental to this true religion, (1) the existence of God, (2) revelation and (3) rewards for the observance of God's laws and punishment for disobedience. Albo may be called the philosopher of Jewish orthodoxy par excellence, and the only feature of this orthodoxy that is perhaps not accentuated with its full force is the Messianic doctrine which is obscured by that of divine retribution. Such was the popularity of Albo's work that it eclipsed the glory of

Maimonides. The philosophical movement among the Jews thus issues, as among the Mohammedans, in the triumph of orthodoxy. With the breaking of the bond between the prevailing Aristotelian systems and Judaism, a distinctive religious philosophy among the Jews, for the time being at least, comes to an end. Instead, we have, as the next step in the realm of speculation, the tendency towards mysticism, which became more marked as the ages passed on, until in the 16th century it successfully stifled all efforts at independent speculation. The dark period of persecution which the Jews encountered, leading in Spain to their expulsion at the end of the 15th century, and to their more or less complete isolation from the life around them by the establishment of ghettos, either voluntary or enforced, in Italy, France, Germany, Poland, Russia, and even Holland, was also a factor in bringing the philosophical movement among them to a temporary close. Thus thrown upon their own resources, the study and interpretation of the Talmud, without reference to extraneous currents of thought, furnished by the side of absorption in cabalistic lore the outlet for their intellectual energies. (See Judaism — The Cabala.)

Spinoza.— In a measure Baruch Spinoza (1632–1677) is to be regarded as a representative of Jewish philosophy because of the influence exerted upon him in his youthful training by Maimonides, Gersonides, and Crescas, but his thought turning into the new direction given to philosophical speculation by the movement that dates from Descartes he developed a system in which Judaism as a revealed religion had no part. The breaking away from scholasticism opened up new aspects, and Spinoza takes his place in the general history of philosophy rather than in the religious philosophy of Judaism, and this despite the fact that there are features in his system which can be directly traced to some of the Jewish philosophers of the Middle Ages. Thus it is generally agreed that Spinoza's attitude towards the problem of determinism was derived from Crescas, as likewise the emphasis he lays upon the love of God, rather than knowledge as the highest human quality. From Maimonides he appears to obtain the view that Time arose in Creation and not the reverse. His attitude towards the question of divine attributes also points to the influence of Jewish philosophers. His break, however, with the prevailing form of Judaism was so complete, as illustrated not merely by his excommunication but by his departure from the accepted doctrine of the Pentateuchal Laws as a special dispensation for the Jews derived directly from the divine source through Moses, as to place him outside of the rank of Jewish philosophers. His system, however, furnishes a link between Jewish theology and the currents of the later philosophical systems like those of Leibnitz and Wolff (built up largely under the influence of Spinoza, though with an endeavor to escape from his conclusions), so that when towards the end of the 18th century, the Jews once more began to take their place within the world's activities, the influence of Spinoza on specifically Jewish thought also began to make itself felt. Moses Mendelssohn, the mediator between Judaism and the external world, though a follower of Wolff's system, yet derives some of his views from Spinoza, and Solomon Maimon one of the ablest of the early exponents of the Kantian philosophy passed through a period of domination of Spinozastic philosophy. Indeed from a certain point of view, Spinoza's pantheism may be regarded as the last word of Jewish religious philosophy, though it involves the discarding of the specific doctrine of the divine authority of the Old Testament. In a certain sense, Spinoza is the last Jewish philosopher. (See Spinoza.)

The attitude of Mendelssohn and Maimon toward the systems prevailing in their days is typical of modern Judaism, the exponents of which are swayed, as are the exponents of Christianity, by the currents of thought arising on the basis of scientific investigations outside of the domain of religious belief — either accepting the modern attitude towards the problems of existence, or endeavoring to confront it. Whether conditions will ever arise that will again lead to a distinctively Jewish philosophy is more than doubtful. The present tendency throughout the more intelligent religious world to seek the essence of religion in the heart and soul of man and to lay the main emphasis of the religious life upon conduct rather than upon speculation is unfavorable to the creation of such conditions, either in Judaism or in Christianity.

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6. Judaism—The Jew in Art, Science, and Literature. It is a task of much difficulty to describe the influence which the Jews in all ages have exercised on art, science, and literature; for a period of more than 3,000 years will have to be considered, while the Jews have not only shared all the great developments of humanity's intellectual life, but have blended therewith the views which are at the basis of their own individuality. The culture of the Jews is bound up with that of antiquity, with Christianity's origin and development, all important movements of the Middle Ages, all grades of development and tendencies of the modern era. While it takes part in the intellectual life of the past and present, whose struggles and sorrows it shares, it becomes a complement of universal culture, but with an organism which aids in its turn the recognition of the universal.

ART.— It is conceivable how a people of such positive monotheistic belief should have only slightly cultivated art. Such cultivation belonged rather to a race which had received the surname of Japhet, or beauty in the genealogical record of Noah, thus symbolizing its mission. It was, however, the mission of the Hebrews to know God and spread this knowledge throughout the world. The older Talmudists assigned to Hellas the cultivation of beauty, to Judæa that of religious truth. In fact certain lines of art were condemned by the Hebrews, because they led to idolatry, to imitating and deifying nature, which in the Jewish religion was secondary to God, as the world's creator. Poetry, however, chiefly the lyric, and music were zealously cultivated — in these fields they equalled the most important achievements of other races in antiquity or surpassed them in many respects. Unquestionably the Jew's capacity for music is an old inheritance of his race. Architecture, too, with its side-lines, was familiar to the Hebrews, judging from their temples, gardens, pleasure grounds. The plastic arts and painting were not cultivated from religious motives, not from any want of taste or capacity. The mimic art, for a similar reason, was adopted at a late period, but with great success. The dance had been early developed into an art, and with musical accompaniment. Upon the whole, however, the nurture and development of art was neither the task nor the strength of old Israel, which lacked all the conditions to its growth. The period of national prosperity under Solomon and his successors, the most favorable time for such artistic achievements, occurred at too early a stage in the intellectual development of the race, and when this gradually reached its maturity art found little sunshine.

In the Middle Ages.— A similar condition occurred in the Middle Ages, but to a greater degree. Persecution, leading to incessant wandering from city to city, and land to land, prevented any growth of art, even in countries where the Jews enjoyed comparative rest for some centuries. In Spain, of all lands, where they dwelt in free competition with the Arabs, shared joyously the pleasures of life, hardened themselves in knightly exercises, sang and danced, spoke the vernacular like a mother tongue, and participated in intellectual progress, the religious prohibition against idolatry was carried out by the rabbis to the extremest limit. Islam, with its fanatic hostility to plastic art, was a worthy model; not only the representations of the Deity, but that of living beings, man and animal, was not allowed. Yet we hear in Spain of a famous Jewish portrait painter, whose name is unknown; and in Titian's days, on the border lines of the 15th and 16th centuries, we learn of an Italian portrait painter and illustrator, Mose dal Castellazzo, who attained high fame in art-loving Venice and then elsewhere in Italy.

Art in the Synagogue.— One form of art was cultivated by the Jews in the Middle Ages — the ecclesiastical. If the synagogue interior was usually free from any decoration, there were exceptions, when this was permitted, if rabbinical authorities assented. One of the most eminent sages in the 15th century allowed painting of forms of animals and plants in the synagogue on the ground that there was no likelihood of the Jew becoming an idolator. Hence we find in the synagogue windows painted glass and on the walls birds and plants. In some MSS. of prayer books and ritual works the illustration is a real adornment — an art that attained great development in the later Middle Ages. The goldsmith's art and silver embroidery employed in the decoration of the scrolls of the law, the curtains, coverings, little bells, goblets, lamps, and other objects used in the synagogue, reached high perfection in the ghetto.

In the Modern Era.— As the Jews, first in Germany, in the second half of the 18th century, again participated in the nation's intellectual activity, they devoted their attention to every branch of art. Hardly half a century after their emancipation, they number in Germany prominent painters who rank among the ablest in their profession, like Eduard Bendemann, one of the leaders in the older historical school; Philipp Veit, one of the most brilliant representatives of ecclesiastical art; Eduard Magnus, Julius Muhr, Moritz Oppenheim, whose 'Pictures from the Old Jewish Family Life' have acquired fame; Solomon Hart, the first Jewish Academician in England. In our day Jewish painters are prominent in every land. To mention the most eminent, let us recall the Hollander Josef Israels, the English Academician S. J. Solomon, the Austrian portrait-painter Leopold Horowitz, the French historical painter Eugene Vichel, the genre artist Friedrich Friedländer, the Belgian painter Carl Jacoby, with names like Herman Junker, Max Kahn, Louis Neustätter, Felix Possart, Toby Rosenthal,— one of the few American genre painters with a reputation in Europe — the great Swedish painter Geskel Salomon, Nathaniel Sichel, Isidor Kaufmann, Philipp Aarons, Henry Baron, M. Verner, David Bles—the dozen of Dutch painters — Karl Heinrich Bloch, Felix Borchardt, Lajos Bruck, Friedrich Kraus, the Polish historical painter Alexander Lesser, the French idyl painter Emile Lĕvy, Leopold Pollack, Felix Heinrich, and Karl Schlesinger, Gustav Wertheimer, Jules Worms, F. Hirszenberg, Philipp Làszlo, Samuel Hirschfelder, Herman Struck, Isaac Snowman, the American Henry Mosler, Geo. D. M. Peixotto, Ernest Peixotto, M. A. Woolf. In the modern movement, Max Liebermann, Lesser Ury, and Louis

Corinth are among the leaders. Strange to say, Russia has expelled the most painters. In copper and steel engraving, as in etching, the Jews furnish three of the first masters of this art — Friedrich Fränkel, Louis Jacoby, and Henryk Redlich. In America Louis Loeb, Henry Wolf, and Jacques Reich have acquired high rank. In sculpture one can mention as pre-eminent the Russian Marcus Antokolski, then the American M. J. Ezekiel and Ephraim Keyser, the French Antoni Adam Solomon, E. Soldi, Em. Hanneaux, L. Astruc; the Hungarian Max Klein, the Belgian Charles Samuel, the German Louis Sussman Hellborn, the Russian Leopold Bernstamm, Henrik Glycenstein, Charles Günzburg. In architecture may be mentioned, in Europe, Max Fleischer, Georg J. Hitzig, W. Stiassny, Richard Wolffenstein, Ludwig Levi, Frederick Marcks, Adolf Wolff, Siegmund Taussig; the American Dankmar Adler, Arnold W. Brunner, Henry Fernbach, Edgar M. Lazarus, S. B. Eisendrath. As medalists and engravers few names surpass in excellence A. Abrahamson, Salomon Bucher, Jacques Karl, and Leopold Wiener.

Music.— Through all the stages of his history, music was always close to the Jew. In antiquity it accompanied the Temple service, in the Middle Ages it comforted the home, and in the modern era it was to reach high development. The long list of composers, musical artists, and directors, is opened by the Englishman, John Barnett, and there follow Sir Julius Benedict, Myerbeer, Felix Mendelssohn-Bartholdy, J. F. Halévy, George Bizet, Anton Rubenstein, Jacques Offenbach, Ignatz Brüll, Karl Goldmark, Frederic Cowen, Ferd. David, Friedrich Gernsheim, Ferd. Hiller, Eduard Lassen, Ignatz Moscheles, Moritz Moszkowski, Siegfried Ochs, Julius Schulhoff, Jules Cohen, Josef Dessauer, Baron A. Franchetti, Ferd. Gumbert, Adalbert von Goldschmidt, Leopold Auer, H. W. Ernst, J. Joachim, E. Reményi, H. Wieniawski, H. and A. Grünfeld, David Popper, H. Herz, M. Rosenthal, Karl Taussig, Karl Heymann, M. J. Gusikow, L. Damrosch, S. Sulzer, Herman Levi, Gustav Mahler, Julius Stern, L. Lewandowski, and the artistes Clotilde Kleeberg, Sophie Jaffe, Ilona Eibenschütz, Berthe Marx, Fannie Bloomfield-Zeisler, the American pianist.

The Stage.— In dramatic art the achievements of the Jew have been conspicuous. Among actors, singers, theatrical directors, managers, in every civilized land, there is a lengthy list of Jewish names. To mention the most prominent, as operatic and concert singers, there are Leopold Demuth, Georg Henschel, Paul Kalisch, Leopold Landau, Nikolaus Rothmühl, Julius Lieban, Heinrich Sontheim, John Braham, Jose Lederer, Pauline Lucca, the sisters Grisi, Lola Beeth, Juditha Pasta, Caroline Gompertz, Rosa Olitzka. Among famous actors and actresses are Rachel Felix and Sarah Bernhardt, Adolf von Sonnenthal, E. Worms, S. Berr, L. Barnay, Anton Ascher, Bogumil Dawison, Ludwig Dessoir, Siegwart Friedmann, Alfred Hertz, Maximilian Ludwig, Gustav Kadelburg, Ernest von Possart, Emrich Robert, Moritz Rott, Emil Thomas. In America, the names of Aaron J., Jonas B., and Moses J. Phillips, Mordecai Noah, Emanuel and S. B. H. Judah occur in the early history of the American stage as playwrights and actors, and in more recent days the Wallacks, Madeline Henriques, both of Jewish origin, David Warfield, H. Conried, Jacob Adler.

SCIENCE.— "Knowledge and understanding" were ever regarded in Israel as the highest palladium from the earliest ages of its national history to the present day. The priest was the community's teacher and physician as well. In later times, when the different sciences were separated from each other more and more, the rabbis of the Talmudic era not only recommended such avocations to the faithful, but zealously devoted themselves to such pursuits. Many Talmudic teachers were physicians, astronomers, mathematicians, jurists. In the Talmud principles of geometry are stated, which agree with the modern rules. Its computation of the calendar rested upon the finest astronomical observations. The number of bones in the human body is given exactly as in modern anatomy. In the Middle Ages the Encyclopedia of the Sciences included chiefly three disciplines — astronomy, which was connected with mathematics and geometry, medicine, and philosophy. In all these fields the Jews have accomplished much, in some degree they have been pioneers, particularly in Spain and North Africa, where they could develop unchecked. The foundation of mediæval mathematics — the 'Almagest,' of Ptolemy, and of mediæval botany — the 'Plant Lore' of Dioscorides, Jews brought to Europe. It was Abraham b. Chija who wrote the first tex-book of geometry that Europe could boast of; it was a Jew who brought to Europe the Arabic-Indian numbers; a Jew whose observations on the inclination of the earth's axis cleared the way for the immortal astronomer who, as he arranged his system of the world, had to have translated into Latin the Arabic writings of that Jew, Jacob ibn Machir. A French Jew furnished an approximation for incommensurable numbers; a Spanish Jew was the first to apply decimal fractions in the extraction of the square root. As Jewish astronomers, among the Arabs, are mentioned Maschallah, Sahl el Taberi, Sind ben Ali, Ibn Simaweih, etc., through whom the Arabs already in the 8th century became acquainted with Indian medicine and astronomy, before the Greek sciences had been introduced. Natural philosophy and medicine, mathematics and astronomy, formed often the transition from the *halakha* to the *hagada*, and knowledge of these sciences could not therefore have been unknown to the teachers of the law.

Medicine.— Jews have performed the most important service in the department of medicine. Masergeweih (683) translated from the Syrian into Arabic the 'Pandects' of the Presbyter Aaron, a valuable medical work of antiquity. Nearly all the works of the Greeks and Arabs, the Syrians and Indians, the Nestorians and Christians, were brought to Europe by Jews and thus rescued from oblivion. These very writings were then, mostly by Jews, again translated into Arabic. More than 200 such translations have been restored by modern bibliography out of the dust of libraries. Their activity was precious for the history of the sciences in the Middle Ages. Entire families like the Tibbon and the Kalonymos occupied themselves in such work. It is stated that Jews were the first teachers of medicine at the first European high schools of Salerno and Montpelier. Whether this is a fact or not, it is in every case proved, what the history of medicine illustrates, that the labors of the Jews in this field during the first half of the Middle Ages belong to the greatest achievements in that science, which without such activity could hardly be thought of as existing. In those days, too, Jews were body-physicians of popes and emperors, of sultans and notabilities in many countries.

Present Day Medical Scientists.— To-day this tendency has been naturally strengthened, with the result that in all lands Jews are among the most eminent physicians and medical investigators. We need mention only the names of Ludwig Traube, Herman Senator, August Hirsch, Jacob Henle, Eduard Henoch, Albert Neisser, Robert Remak, Julius Pagel, Karl Stórk, Emil Zuckerhandl, Johann Schnitzler, Adolf Politzer, Paul Ehrlich, Julius Cohnheim, Wilhelm Ebstein, H. Zeissl, Jac. Fischel, August Wasserman, Ludwig Mauthner, Karl Weigert, Victor Birch-Hirschfeld, John Lebert, Heinrich Jacobson, Julius Wolf, Jacob Gottstein, in Germany; Germain Sée, Georges Hayman, Siegmund Rosenstein and Jacob Stokvis, in Holland; Sir Felix Semon, in London; G. Valentin and Moritz Schiff, in Switzerland; Gottlieb Gluge, in Belgium; Max Mandelstamm, Josef Bertenson, in Russia; Elias Cohen-Pasha, in Turkey. In the United States it would be no exaggeration to say that 50 names and more could be cited of Jewish physicians and medical experts who are leaders in their profession in every city and included in college faculties. It was Dr. Simon Flexner, who was chosen director of the Rockefeller Institute of Preventive Medicine. Of German physiologists we might mention among the authorities Julius Bernstein, Herman and Ymanuel Munk, Nathan Zuntz, Isidor Rosenthal.

Natural Sciences.— In the natural sciences, Jews number distinguished names in the varied lines of research. The most famous botanists are Ferdinand Cohn, N. Pringsheim, Julius Sachs. Among the eminent chemists are Victor Meyer, whose discoveries were remarkable, Adolf Pinner, Rafael Meldola, Karl Liebermann, Oscar Liebreich, Georg Lunge, H. G. Magnus. As geologists, mineralogists, and palæologists, one may include Emil Cohen, Angelo Heilprin. In physics a name of international prominence is Heinrich Hertz, famous for his discoveries in electricity and magnetism, with F. J. Pisko, P. T. Ries, who was the first Jewish academician in Germany, and Arthur Schuster in England. As zoologists, we can refer to Mendelssohn's contemporary, M. E. Bloch, to Emil Selenka, H. Gabriel, E. Ladenburg, G. Lehfeld, Leo Graetz.

Mathematics.— For centuries Jews have studied mathematics. Their sagacity, gift of combination, power of thought, have won signal success. The rabbis of the Talmud had mathematical ability. In the Middle Ages the science of mathematics was preparation for philosophy. In this field Jews were intermediaries and translators, as well as independent authors. They were employed in editing the Alfonsine Tables — the chief being Isaac Ibn Sid, with Judah b. Salomo Cohen, and Samuel Levi. One of the leading mediæval Biblical commentators, Abraham Ibn Ezra, was regarded by the Catholic Middle Ages as patron of mathematics. In later centuries Jews displayed similar interest in that science, and to-day they number leaders in the line. For instance, we may mention Leopold Kronecker, Felix Klein, Immanuel Fuchs, S. Spitzer, W. Königsberger, Meyer Hirsch, Georg and Moritz Cantor, Oscar Minkowski, J. Rosanes, G. Schönfliess, S. Weingarten, Ch. Slonimski, Herman Schapiro, Maurice Levi, J. J. Sylvester. In astronomy can be included Wilhelm Beer, Wilhelm Goldschmidt, Adolf Hirsch, Robert Rubenson, E. Schwarzschild, Prof. Harold Jacoby, of Columbia University.

Travel and Exploration.— To turn from traversing the skies with the telescope to traversing the earth in the interests of scientific research, we find a large number of Jewish travelers who have penetrated distant lands. From the legendary Eldad-ha-Dani of the 9th century, Benjamin of Tudela, and Petachia of Regensburg down to the men who shared the sea-journeys of the Portuguese, the Spaniards, and the Italians, and accompanied Columbus, and Vasco de Gama, to our time, a lengthy list could be given. In recent times can be mentioned J. J. Benjamin, Jacob Saphir, J. Halevy, while among explorers are Emin Pasha, Emil Bessel, Oscar Neumann, Eduard Glaser, Herman Vambéry, Edouard Foá, Adolph Strauss, W. G. Palgrave (of Jewish descent), and in America Angelo Heilprin, and Franz Boas, who is associated with Arctic research. In this connection may be recalled the labors of Jews in engineering, science, and invention, etc., with Jos. Hirsch, Maurice Levy, J. Bachman for France, E. Herman, and G. Schlesinger for Germany, Mendes Cohen, Emil Berliner, Elias E. Ries, Albert Edward Woolf, E. Zalinski for the United States. Here, too, may be included prominent names in numismatics, statistics, and economics. In the latter branch Profs. E. R. A. Seligman and J. H. Hollander are authorities in the United States; A. Raffalovicz in Russia; L. Luzzatti, Leone Wollenberg in Italy; as statisticians, Maurice Block is preeminent in France, Josef Körösi in Hungary, while Leone Levi did useful work in England. Here belong the founders of modern Socialism — David Ricardo, Karl Marx, Ferdinand Lassalle, E. Bernstein, with J. Jastrow, Max Hirsch, Edgar Loening, E. Warschauer, Ludwig Hamburger. As numismatists we can refer to Julius Friedländer, Wilhelm Löwy, A. Merzbacher, Leopold Hamburger, M. A. Levy.

Law.— Biblical and Talmudic legislation shows clearly that the Jews from olden days showed special inclination toward law and its interpretation. Coworkers in the compilation of the Pandects, they furnish distinguished jurists, judges, and lawyers. In France they can point to Adolphe Cremieux, August Bédarrides, A. Lyon-Caen; in England to Sir George Jessel, Sir George Lewis, Jacob Waley; in Holland to the Asser family, Goudsmit, Gódefroi; in Germany and Austro-Hungary, to Eduard Gans, Levin Goldschmidt, Paul Laband, Karl Grünhut, Herman Staub, Heinrich Harburger, Heinrich Wiener, H. Friedeberg, H. Makower, Eduard von Simson, Wolfgang Wessely, David Rubi, Ferd. Frensdorf, Julius Unger, Max Neuda, H. Dernburg, J. Glaser; in America they include a number of State and city judges.

Philosophy.— Recent writers call the Jews «the people of philosophy,» and in fact to reflect on the highest questions of life has ever been their custom. Philosophy was regarded among them as one of the weightiest sciences —

both during the Middle Ages and to-day. We have to thank the Jews for the diffusion in Europe of Neo-Platonism, for being intermediaries between the Arab and Christian philosophy, for the basis of Scholasticism, the popularizing of Greek philosophy in Europe, and the birth of a new conception of the universe. In the construction of this new-world philosophy, above all else in spreading the systems of Kant, Hegel, and Schopenhauer, Jews have taken a conspicuous part. Among the Alexandrian philosophers Philo is pre-eminent, Solomon Ibn Gabirol opened a new path for Platonism, and was Scholasticism's pioneer, Moses Maimonides raised Aristotelianism to speculative heights. (See JEWISH PHILOSOPHICAL WRITERS.) Baruch Spinoza was influenced by him and later investigators, who were more inclined to mysticism. Jews were associated with the achievements of the Renaissance and Humanism, because they were teachers of the leaders of those movements. It was Moses Mendelssohn who popularized philosophy. Markus Herz and Salomon Maimon, Lazarus Bendavid, were enthusiastic supporters of Kant, whose most important representative in the new philosophy is Prof. Hermann Cohen of Marburg. The founders of the school of folk-psychology, Moritz Lazarus and H. Steinthal, champion Herbart's philosophy. Hegel's best followers were Eduard Gans and Julius Braniss; Schopenhauer's most ardent disciples, Julius Frauenstädt, D. Asher, Moritz Venetianer. In addition belong to philosophy Ludwig Stein, H. Bergson, Adolph Lasson, S. L. Steinheim, Adolphe Franck, S. Alexander.

Philology.— In the line of language, too, the Jews have labored with zeal. They count among the foremost workers in philology, as well as in literary history and bibliography. A brief summary of names will be sufficient proof — such as G. Ascoli, Jules Oppert, Jacob Bernays, Theodor Gompertz, Michele Amari, Theodor Benfey, M. Breal, James and Arséne Darmesteter, Jos. and Hartwig Derenbourg, H. Weil, W. Freund, Julius Fürst, Lazarus Geiger, Theodor Goldstücker, Ignatz Goldziher, J. Halévy, Wilhelm Bacher, H. Hirschfeld, S. Landauer, Gustav Weill, A. Harkavy, Salomon Munk, Adolf Mussafia, Daniel Sanders, S. Benedetti, L. Kellner, I. Gollanz, and in the United States, Marcus Jastrow, Alexander Kohut, M. Bloomfield, and a number of younger scholars who have done so much to arouse interest in Semitic studies at American universities, such as Morris Jastrow, and Richard Gottheil.

History.— In the Middle Ages history was neglected — they had no time to write their history, for before their old sufferings were narrated, new trials were to be endured. A few chronicles alone survive, with some Memor. Books. From the historian Josephus, of the 1st century, to our time, Judaism has produced no eminent historian of the outside world. With so much more zeal have Jews in more recent years devoted themselves to this department, men like Philipp Jaffé, Martin Philippson, Max Büdinger, Harry Bresslau, Samuel Sugenheim, Alfred Stern, Adolf Beer, Ernst Bernheim, Jacob Caro, Heinrich Friedjung, Salomon and Theodor Reinach, Julius Schwarz, Cesare d'Ancona, Alfred Przibram, E. Szanto. Samuel Romanelli is the historian of Venice, and Robert Davidson of Florence. Charles Gross, of Harvard, is an authority on early English history, as is Felix Liebermann on English law. In the history of the Jews in its varied departments Jewish scholars have naturally displayed particular ability — one need only mention names like Graetz, Zunz, Jost, Steinschneider, Geiger, Kayserling, Güdemann, A. Berliner. In the closely-allied branch of archeology, Charles Waldstein is a pre-eminent name, with B. Berenson in art criticism.

Literature.— In its earliest historical period Israel gave to humanity its best achievement in literature — the Bible, which with prophets and psalmists, despite the latest discoveries and researches, remains without a peer in the entire stretch of the world's literature. Since the close of the Canon until to-day the Bible has furnished a wealth of inspiration to the poets and writers of every race. The greatest poets in the world have been impelled by its words; it has exerted a distinct influence on the literary genius of every European literature, and how much plastic art is its debtor is far from being appreciated.

In the Early and Middle Ages.— The first translation of a book into another language was the Greek translation of the Bible — the Septuagint. This leads us to the participation of Jews in Greek literature. Of Philo, who has already been mentioned, it was said in Alexandria that he wrote as fine Greek as the divine Plato. Then lived, too, the first Jewish dramatist, Ezekiel; then a long line of philosophers, poets, historians, the author of the Sibylline books, and many other writers in Greek. In the Middle Ages the Jews familiarized themselves with Arabic literature, under whose influence the new Hebrew poetry in Spain developed. What Arab and Jew united in those centuries accomplished is not to be overlooked. They rescued the treasures of classical antiquity from oblivion and preserved them for posterity; they enriched the arts and sciences and truly promoted the intellectual growth of humanity. Jews appear, too, among the Arab poets, like Abraham Ibn Sahl, who is praised by them as one of the most graceful singers of love, Ibn el Mudawwer, Kasmune, etc. The Indian and Greek world of fable was communicated to Europe by Jews. During the entire Middle Ages, when the old literary treasures were practically lost, they preserved almost the only knowledge of those romances, stories, and fables which were to enter modern literature by a roundabout way through Arabia and Spain from the world of the ancients and the pictured pomp of India. They took a prominent part in those stories from the Orient, which still serve as material for our narrative literature. Later, too, when the Mohammedans were driven from Spain, the Jews displayed a lively interest in the development of the Arabic literature and language. A Moorish Israelite, Ibn Alfange, wrote the first ‹Chronicle of the Cid›; another the first Spanish romance; a third — the baptized Petrus Alphonsus — the first story in Oriental manner, ‹Disciplina Clericalis›; a fourth was the first Castilian troubadour, Santob de Carrion; and a fifth, Rodrigo de Cota, is credited with the authorship of the first Spanish drama (Celestina). In the Spanish songbooks of the 15th century can be found many poems of baptized Jews. At the same era Jews were familiar with French literature. From the glosses of Rashi, the famous Biblical commentator, the old French language has been partly reconstructed; and Rashi's contemporaries, who through Nicolas of Lyra directly influenced Luther, already knew German and utilized that language. At the very period when the Jews in Germany were persecuted in the cruelest fashion, there lived a Jewish minnesinger, Süsskind von Trimberg; a Jew shared in the authorship of Percival. Their epics and elaborations of romantic legends aid to-day in interpreting old German literature.

In Modern Times.— When through Lessing and Mendelssohn the Jews in literature, at least, were emancipated, they devoted themselves to authorship with special zeal. Jewesses, like Henriette Herz, Rahel Varnhagen von Ense, Dorothea Veit, founded the Berlin salon and gave distinct impetus to Romanticism. Moses Mendelssohn was not only a philosopher, but one of the first authors in the era of rationalism. Heine is unquestionably the greatest German lyric poet after Goethe, Ludwig Börne the first German critic after Lessing. Berthold Auerbach founded the school of village tales; Fanny Lewald that of the woman's social romance. Jews have taken marked interest in all later literary movements. One may mention in this field the German authors, Karl Beck, Michael Beer, Theodor Creizenach, L. A. Frankl, Leopold Kompert, Karl Emil Franzos, E. Kulke, Moritz Hartmann, L. Kalisch, S. Kapper, Hieronymus Lorm, S. H. Mosenthal, Max Ring, Ludwig Robert, J. Rodenberg, August Silberstein, M. G. Saphir, H. Stieglitz, Daniel Spitzer, J. V. Weilen, L. Wihl, O. L. B. Wolff, Wilhelm Wolfsohn; and of later writers Theodor Herzl, L. Hevesy, A. L'Arronge, F. Lubliner, Fritz Mauthner, Oscar Blumenthal, Max Bernstein, J. J. David, L. Fulda, Max Nordan, Georg Hirschfeld, Felix Holländer, L. Jacobowski, J. Löwenberg, A. Schnitzler, J. Wassermann, Ernst Rosmer, Henriette Ottenheimer, Lina Morgenstern, Betty Paoli, Jenny Hirsch. In the history of literature Ludwig Geiger, Richard M. Meyer, Gustav and Otto Hirschfeld, Otto Pniower, Max Hermann, Eduard Engel, Max von Waldberg, E. Wolff can be mentioned.

In France Jews contribute to all branches of poetry — in dramatic composition may be included Catulle Mendes, Abraham Dreyfus, Ernest Blum, Leon Halévy, A. d'Ennery, A. Valabrègue, and as lyric poet León Gozlan, Gustav Cahn, Eugène Manuel, Louis Ratisbonne. In England Sir Philip Magnus has written extensively on Education, Joseph Jacobs is an authority on folk-lore, Sidney Lee is a leading Shakespeare scholar, Emanuel Deutsch was the first to tell the English world what the Talmud really was, B. L. Farjeon was a voluminous novelist, while I. Zangwill is prominent in various lines. In Italy one may point to Alessandro d'Ancona, David Levi, Tullo Masserani, Erminia Fuá; in Denmark to Henrik Hertz, M. Goldschmidt, Georg and Eduard Brandes, Silvia Benet; in Sweden to O. Levertin, and Sophie Elkan; in Holland to Isaac d'Acosta of the past, and H. Heijermans of the present; in Russia to S. Frug, S. Nadson, N. Minsky; in Roumania to Ronetti Roman, the greatest poet of our day, and to H. Tiktin, the greatest philologist; in Hungary to Ludwig Doczi, Josef Kiss, Adolph Agai, A. Nemény; all writers of distinction. In the United States Isaac Harby, Mordecai M. Noah are names of the past; with Emma Lazarus admittedly the leading poet and essayist, and among present-day story-writers I. K. Friedman, Ezra S. Brudno, Emma Wolf, Miriam Michaelson, Martha Wolfenstein, Mary Moss, Lee C. Harby. Prof. L. Wiener has written on the history of Yiddish literature, Oscar S. Straus on ‘The Origin of the Republican Form of Government,’ and ‘Roger Williams.’ Prof. Winkler has edited a number of German classics. In journalism Jews have undoubtedly attained prominence, as names like L. Sonnemann, Dernburg, and Bernstein in Germany, Brody in Hungary, Lawson and Lucien Wolf in England; Pulitzer, Ochs, Rosewater, De Young in America, amply prove.

We have given merely a survey, necessarily incomplete, of Jewish activity in art, science, and literature, in all ages and among all nations. It has been shown, however, with sufficient clearness that they have always striven with ardent enthusiasm for ideal aims, and with marked energy, despite unfavorable conditions, have taken an active interest in all the developments of the world's intellectual life.

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GUSTAV KARPELES,
Author of ‘Jewish Literature and Other Essays.’

7. Judaism — The Talmud, a code or digest of Jewish laws and opinions. The Talmud is in reality a combination of two entirely separate works — the Mishna being the text, and the Gemara its commentary. The name signifies «study,» and has come to be applied to the combined text and commentary, although it refers properly to the Gemara alone. There are two recensions of the Gemara, one called the Palestinian Talmud, originating in Palestine, the other Babylonian, in Babylon. They differ both in language and contents. There are only slight variations in their respective Mishnas.

The Mishna.— The word Mishna has been differently interpreted, according to its etymology, either as «second» or as «doctrine,» oral teaching. It is a codification of the oral or unwritten law, based upon the written law of the Torah or Pentateuch, and was compiled during the era of the second Temple, and completed at the end of the second Christian century. As in course of time the oral law became unwieldy in bulk and hard to be remembered, owing to its lack of order and arrangement, Hillel, who presided over the Sanhedrin in Herod's days, made the first attempt to systematize the immense mass of material by arranging it in six divisions, which were accepted by later revisers. Rabbi Akiba, who participated in the Bar Cochba revolt, went a step further by employing a more correct method of division. His disciple, Rabbi Meir, continued the work of revision, or, rather, collation, of old-time usages and teachings. Toward the end of the 2d century, R. Judah, the Prince, called "Rabbi," a descendant of the wise Hillel, strove to complete the work of his predecessors, sifted anew the mass of traditional ordinances, and became, by his intellectual vigor and freedom, the real compiler of the Mishna. In his later years he subjected the work to further revision, although some additions after his death were made by others. Whether Rabbi wrote the Mishna or merely transmitted it orally to his disciples is not definitely known, and has long been a moot point among scholars, with the probability in favor of his having written the work.

Divisions of the Mishna.— The Mishna is divided into six chief sections, called Sedarim or Orders: (1) Zeraim, seeds or products of the field, containing the ritual laws respecting agriculture. (2) Moed, Festival, referring to laws of the Sabbath and festivals. (3) Nashim, Women, including rules about marriage and divorce. (4) Nezikin, Damages, a large section of the civil and criminal law. (5) Kodashim, Sacred Things, discussing the laws of sacrifice and the Temple service. (6) Teharoth, Purification, treating of regulations as to things clean and unclean. Each Order is divided into Masechtoth, or treatises, which are 63 in all in the Mishna. Each treatise is subdivided into chapters or Perakim, and each chapter or perek into paragraphs, each of which is called Mishna or halakhah, law principle. The arrangement of the Orders is fixed, although the sequence of treatises, chapters and paragraphs is more open to question.

Contents of the Treatises of the Mishna.— The best way to describe the subject matter of the Mishna is to give a list of the various treatises and their contents. These are as follows, according to the six Orders: I. (1) Berakhoth, benedictions, treating of liturgical rules. (2) Peah, corner, about the corners and gleanings of the field. (3) Demai, uncertain, about corn bought from those suspected of not having given tithes. (4) Khilayim, mixtures, about the prohibited mixtures in plants, animals, and garments. (5) Shebiith, the Sabbatic year. (6) Terumoth, heave offerings for the priests. (7) Maaseroth, tithes to be given to the Levites. (8) Maaser Sheni, the second tithe, according to Deut. xiv. 22–26. (9) Challa, the dough, to be given to the priests, as ordered in Num. xv. 20–21. (10) Orla, treating of the fruits of the tree during its first four years, as commanded in Lev. xix. 23–25. (11) Biccurim, or first fruits. The contents of Order II.: (1) Sabbath, giving an account of labors prohibited on that day. (2) Erubin, combinations, continuing the subject of the preceding treatise and referring to the Sabbath boundary. (3) Pesachim, relating to the laws of Passover and the paschal lamb. (4) Shekalim, the law of the half-shekel temple tax. (5) Yoma, of the day of Atonement. (6) Sukkah, of the laws concerning the Feast of Tabernacles. (7) Betsah, of the work permitted or prohibited on the festivals. (8) Rosh Hashonah, of the feast of the New Year. (9) Taanith, as to the public feasts. (10) Megilla, the scroll, about the reading of the book of Esther on the feast of Purim. (11) Moed Katan, minor feasts, referring to the intermediate days of the festivals of Passover and the Feast of Tabernacles. (12) Chagiga, feast offerings, referring to the private offerings on the three pilgrim festivals. Order III.: (1) Jebamoth, sisters-in-law, about levirate marriage. (2) Khetuboth, marriage contracts, of dower and marriage settlements. (3) Nedarim, as to vows and their annulment. 4) Nazir, of the laws concerning Nazarite. (5) Sotah, about the woman suspected of infidelity, according to Num. v. 12–31. (6) Gittin, the laws of divorce. (7) Kiddushin, of betrothals. Order IV.: (1) Baba Kama, of damages and injuries. (2) Baba Metsia, of laws concerning found property, buying and selling, lending, hiring and renting. (3) Baba Bathra, of real estate, trade and hereditary succession. (4) Sanhedrin, of courts, their procedure, and capital punishment. (5) Maccoth, stripes, referring chiefly to false witness, and its penalties. (6) Shebuoth, oaths, about the various kinds of oaths, private and public. (7) Eduyoth, testimonies, laws and decisions collected from the testimonies of famous teachers. (8) Abodah Sara, idolatry, of idols and their worshippers. (3 Aboth, a collection of ethical sentences from the fathers or Mishna teachers. (10) Horayoth, decisions, as to the effect of erroneous decision by a religious authority, according to Lev. iv. 5. Order V.: (1) Sebachim, sacrifices, of animal sacrifices and the mode of offering. (2) Menachoth, meat-offerings, about meat and drink offerings. (3) Chullin, of the methods of slaughtering animals for food and of the dietary laws. (4) Bekhoroth, of the laws concerning the first-born. (5) Arakhin, values, as to how things or persons dedicated by vow are legally appraised to be redeemed. (6) Temurah, exchange, of the laws about dedicated things which have been exchanged, according to Lev. xxvii. 10–27. (7) Kherithoth, excisions, of the sins subject to the penalty of excision and their expiation. (8) Meila, trespass, concerning the sins of profaning sacred things. (8) Tamid, the daily sacrifice, a description of the temple service connected with the daily morning and evening sacrifice. (10) Middoth, measurements, giving chiefly the measurements and description of the temple courts, gates, and halls. (11) Kinnim, birds' nests, an account of the sacrifices which consist of fowls, the offering of the poor. Order VI.: (1) Khelim, as to how domestic vessels become unclean ritually. (2) Ohaloth, tents, as to how tents and houses become ritually unclean. (3) Negaim, of laws as to leprosy of men, garments, and houses. (4) Parah, the heifer, treats of the red heifer and its ashes as a purifying agent. (5) Teharoth, purification. (6) Mikvaoth, wells, how wells and reservoirs are fit to be used for ritual purification. The remaining six treatises concern various kinds of ritual uncleanness.

The Mishna Rabbis.— The men who are mentioned as authorities in the Mishna are among the most notable names in Jewish history for about five and a half centuries from the era of the scribes to the death of Rabbi (210). They include the scribes or Soferim, who succeeded Ezra, and continued for about two centuries, the teachers who headed the Sanhedrin in pairs from the Maccabean struggle until the period of Hillel and Shamai, and finally the disciples of the two latter and their successors. These were called Tanaim teachers, whose opinions extend over fully two centuries, and whose disputations reveal marked intellectual keenness. Another class of rabbis received the name of Amoraim, speakers or expounders, whose labors were carried on in the schools of Tiberias, Sepphoris, and Cæsarea in Palestine, and in Nahardea, Sura, and Pumbaditha in Babylonia. Their province was to explain the terse Mishna phrases, examine into their sources, reconcile apparent contradictions, and apply the traditional principles to new cases. The Palestinian Amoraim were titled rabbis, the Babylonian rab or mar. They date from the death of Judah the Prince to the end of the 5th century, which marks the compilation of the Babylonian Talmud. They number several hundreds, while their predecessors, the Tanaim, amounted to about 120.

The Gemara.— The name Gemara, which means completion or doctrine, and which has come to be used interchangeably with Talmud, is practically a commentary on the Mishna, although some of its elements may be older. It embraces the discussions and interpretations of the Amoraim, but contains in addition a vast bulk of matter often unconnected with the Mishna text and touching upon law, history, ethics, and homiletics. The Palestinian Talmud, the work of the schools and schoolmen of Palestine, was more distinctly national, being composed on Jewish soil, and was completed about 370, although a later date is claimed by some. The Babylonian Talmud was finished about a century later. If rabbis like Jochanan, Rab, and Samuel were pioneers in the work, others gave the finishing touches, men like Rabba (270–330), Abayi (280–338) and Rava (299–352), while Ashi (352–427) and Rabina (died 499) are associated with its actual compilation. The Palestinian Gemara in its present form extends only over 39 out of the 63 treatises of the Mishna, thus indicating a probable loss of many treatises. The deficiency may partly be due to persecutions which abruptly closed the schools in Palestine, and partly to the fact that the Palestinian Gemara hardly received the favor and attention which commentators have given to the Babylonian. It is stated that Ashi devoted 30 years to the task of compilation and then revised the entire work. His Gemara covers only 37 of the treatises of the Mishna.

The Two Gemaras Compared.— The Gemaras differ in language, style, and method. The Mishna is in new Hebrew, which was developed during the era of the second Temple. While the popular language was Aramaic, the ancient Hebrew was retained for the liturgy and legal forms. Contemporary languages had their influence on it, and the Aramaic, Greek, and Latin were drawn upon and modified by the Hebrew idiom. In regard to the Palestinian Gemara, the language is the West Aramaic, which was current in Palestine in the age of the Amoraim. The language of the Babylonian is a blend of Hebrew, East Aramaic, and Persian, with other dialects whose decipherment is often attended with much difficulty. Of the main elements of the Gemara the halakhah or abstract law element, and the hagadah or legend, the former is more fully represented in the Palestinian, while the latter is more at home in the Babylonian edition. In size the Palestinian is about one third of the Babylonian, and only in modern times has aroused the attention of Jewish scholars. The study of the Babylonian Talmud, however, flourished in North Africa and thence passed to Spain, France, Germany, and Poland, and was ever a subject of interest and devotion. It gave rise to a vast library of rabbinical literature. Not the least curious incident connected with the spread of this study is that the four messengers sent by the schools of Babylonia in their days of decline to collect funds from their richer brethren in other lands, were taken captive by the Spanish pirates and sold in different slave-markets. All were redeemed by their coreligionists, and they became the heads of the community at Cairo, Kairwan in Africa, Cordova, and possibly in Narbonne. Among names eminent in the diffusion of Talmudic learning from the East to the West after the era of Sherira Gaon, his son Hai Gaon, and Samuel bar Hophni, were Gershom ben Judah of Metz, Isaac of Troyes, Jacob ben Yakar of Worms, Nathan ben Jechiel of Rome, Isaac ben Judah of Mayence, and the famous Rashi, his sons-in-law and disciples. After the expulsion of the Jews from England (1290) and France (1306), Poland became a favored home for them, and a seat of Talmudic learning whose glory has not yet been extinguished, although in other lands such lore is less cultivated. Of recent years, however, a fresh impulse has been given to Talmudic studies both in Europe and the United States.

The Talmud in History.— The history of the Talmud is essentially a history of the religious and intellectual development of the Jews, which has been elsewhere treated. A spiritual Temple rose among the Israelites when the Temple at Jerusalem had been destroyed by the Romans. The Talmud's history, however, is an important theme, and a brief glance at the varying fortunes of this volume will show the continuous persecution which it has received, like the Jew himself. It was proscribed by state and church, mutilated by the official censor, condemned by councils, burnt by popes and kings. Earlier centuries show a scattering fire of fulminations against it, from the era of Justinian, but the Middle Ages were persistent in such incidents of violence. In 1240 the Jews of France were compelled to surrender their copies of the Talmud and the work was put on trial, the result of which was that it was ordered to be burnt. Twenty-four carloads of the Talmud and similar writings were seized by Saint Louis and publicly burnt in Paris in June, 1242. The anniversary was held as a fast, and elegies were written on the event. Barcelona had a four days' trial of the Talmud on 20 July 1263. In 1264 Clement IX. issued a bull of confiscation, and subjected the Talmud to examination by the Franciscans and Dominicans, who expunged what they deemed abusive and blasphemous. Tortosa, Aragon, witnessed a public trial of the

Talmud, which lasted from February 1413 until 12 Nov. 1414, and had 68 sessions. Pope Benedict XIII. presided, condemned the work to the flames and prohibited its further study. His bull of 11 clauses issued 11 May 1415 never came into effect, for he was deposed by the Council of Constance. The hue and cry against the Talmud in the beginning of the 16th century was to have a marked influence on the Reformation and to pave the way for a Hebrew renaissance. On 19 Aug. 1509 the Emperor Maximilian gave Pfefferkorn full power over the Talmud and similar works; but when he demanded their surrender the Jews of Frankfort appealed to the Archbishop of Mayence, who temporarily checked the Dominicans. Reuchlin, the head of the Humanists, was asked to describe the character of the Talmud, and by him it was vindicated. Hutten and the author of ‘Epistolæ Obscurorum Virorum,’ lampooned Hoogstraten and the Dominicans. The Talmud gained new adherents, including Erasmus and Franz von Sickingen. The universities were appealed to for their opinion, and the University of Paris condemned the Talmud. Finally the subject was brought before the Lateran Council and the Dominicans were compelled to pay the costs of their suit against Reuchlin, while Leo X. permitted the Talmud to be printed by Daniel Bomberg at Venice. It was in the very year of the *editio princeps* of the Talmud (1520) that Luther at Wittenberg burnt the Pope's bull. On 12 Aug. 1553 Pope Julius III. signed the decree laid before him by the Inquisition-General, condemning to confiscation and the flames throughout Italy all copies of the Talmud and Hebrew books. Paul IV. continued hostile, but Pius IV. modified somewhat the harsh laws of his immediate predecessors. His bull (24 March 1564), in accordance with the decision of the Council of Trent, allowed the Talmud to be printed provided its name were omitted and it had been submitted before publication to the censor. The mutilations of the Talmud in accordance with the whim of an ignorant censor were often very curious; that the word heathen can refer to a non-Christian, and that the Rome of the early rabbis was not the Rome of the papacy, did not dawn upon the intelligence of the learned inquisitors. A brighter day was now to follow, with the Hebrew renaissance. In Holland, England, and Switzerland, Talmudic studies attracted a host of scholars, and the Buxtorfs, L'Empereur, Sheringam, Selden, Surenhuys, were among those who strove to popularize rabbinical lore, and who were to be succeeded by a host of learned men down to our own day — translators and interpreters in varied fashion. It is true, the Talmud was now and then subjected to condemnation; as recently as 1757, a large number of copies were burnt in Poland by fanatics. Germany, too, during the wave of anti-Semitism, revived old-time accusations. But the Talmud has survived the storm, and Christian scholars like Franz Delitzsch, August Wünsche, H. L. Strack, and W. H. Lowe, have joined with a host of Jewish scholars in its vindication and interpretation. After all its vicissitudes, it seems to have found rest as a distinct addition to the world's culture. Pope Clement's proposal in 1307 to found Talmudical chairs at the universities has been adopted to some extent in Europe and America.

Talmud Manuscripts, Editions, and Translations.— It is not to be expected that many manuscripts of the Talmud have been preserved after its experiences during the Middle Ages. The bonfire at Cremona in 1559, in which 12,000 volumes of the Talmud were burned, was only one of such incidents. The only known complete manuscript of the Babylonian Talmud, 1369, is in the Royal Library of Munich. Codices of single portions are preserved in the Vatican Library, and in the libraries at Oxford, Paris, Leyden, and other cities of Europe. Columbia University has secured from South Arabia a collection of manuscripts containing four treatises, which date from 1548. The University Library of Cambridge, England, has a fragment of the Talmud Pesachim, from the 8th or 9th century, edited in 1879, with an autotype facsimile, by W. H. Lowe. Manuscripts of the Mishna or portions of it are found in a few libraries abroad. The only manuscript of the Palestinian Talmud of any importance is to be found in Leyden. As to printed editions of the Mishna, the first appeared (1492) in Naples, and has since been followed by numerous others. In Venice (1520–3) appeared the first edition of the Babylonian Talmud by Daniel Bomberg in 12 folio volumes, and it has been followed by many editions in Venice, Basel, Amsterdam, Berlin, Warsaw, Vienna, etc. Only four complete editions of the Palestinian have appeared, Bomberg's Venice edition of 1523–4 being the first. Several parts, however, have been issued with commentaries. The Mishna has been translated into Latin and German, and partially into English. Translations of single treatises of the Babylonian Talmud have appeared in Latin, German, French, and English. At present complete translations of the work are being attempted in Berlin and New York. Special monographs have appeared on the medicine of the Talmud, its mathematics, its botany, zoology, astronomy, civil and criminal law, its legends, its archæology, meteorology, coins and weights, chronology and calendar, its customs, ethics and psychology, its exegesis, geography, and history, linguistics, education, its superstitions and philosophy, its poetry and proverbs,— an extensive list that proves how comprehensive is the work, and how many-sided the old-time sages who fought and wrought, until the fabric was finished. Out of its mines the workmen are still bringing fresh gems to light, and its deep lying strata furnish an inexhaustible field for research in almost every department of human knowledge.

The Talmud's Influence.— On the Jewish people the influence of the Talmud has been remarkable, not only by maintaining the religious idea among them, but by promoting their solidarity. Its development illustrates the buoyancy of Judaism, and the ease with which at a time of national overthrow and dispersion a fundamental reform could be instituted. It was a daring design, when so much of the Mosaic law had lost its application, to infuse new life into the religious code and provide for continuous intellectual development. The soldiers who defended Jerusalem became scholars whose labors were to be more successful in the field of progress and thought. The Talmud, too, was a popular institution — it was no exclusive possession of the few. All could become sages if they had the brain and soul-power. In its disputations, a purer atmosphere was breathed that made the dark ages impossible,— it was tonic and preservative as well. Hence Jews could be scientists, physicians, poets, philosophers in goodly number, because their intellects had been Talmud-fed, and they had no craving for the riotousness and immorality that prevailed among their contemporaries. The rabbi, too, was no idle ecclesiastic, but a resolute worker, now a saddler, now a weaver, now a carpenter, now a dyer, for the study of the law was held to be most meritorious when combined with some manual employment. Hence the helpful and ennobling domestic life, in ages when family vices, not virtues, were exemplified alike in court, palace, and hovel. On the other hand, it must frankly be stated, that the exclusive study of the Talmud was often narrowing and repressive, with an unhappy influence on Jewish growth. It produced in such instances an intellectual Ghetto, utterly foreign to the spirit of representative sages, dwarfing the Jewish soul and its ambitions. When scholars become scholiasts, and broad students fatuous schoolmen, like the mediæval champions who argued as to how many angels could stand on the point of a needle, mental decay is inevitable. Hence the study of the Talmud degenerated at times into useless dialectic, which met the severe rebuke of clear-thinking rabbis, but held sway over many minds, and particularly in lands where the Jew knew no vernacular but a mongrel jargon of his own, and had no rights or privileges as a citizen, being merely a serf or underling, to be told to «move on!» with every fresh outbreak of the mob, — a veritable Ahasuerus of the popular imagination, ever wandering. No wonder that under such conditions he found solace in his Talmud and built his mountains of syllogism on very unsubstantial basis. It was Moses Mendelssohn who broke away from the intellectual Ghetto of his coreligionists and paved the way for their emancipation from the exclusive Talmudic atmosphere. They were to be citizens of the world hereafter, and civil and religious liberty became their possession. The Talmud was to be cherished, but not made an idol of, to be venerated, but not worshipped. It was a work to be studied, but not regarded as an infallible authority. It was to be analyzed, dissected, subjected to criticism as the work of men. Bible, Mishna, Gemara, with ritual codes and commentaries, were but steps in the progressive development of Judaism whose sages are restricted to no age and clime, but are continuous as God's revelation. One can thus understand how the Talmud supplies ammunition to all schools in modern Jewry, whether right, left, or centre; progressive or conservative, advocates of orthodoxy or reform.

Faults of the Talmud.— While claiming high rank for the Talmud among the works that have influenced millions of people, it is not necessary to glorify it out of all proportion and assert its absolute perfection. There are faults in this encyclopedia, which records the opinions of a thousand disputants of different climes, conditions, and eras, their after-dinner talk, as it were, and their more serious utterances. These faults are given as four-fold by the Jewish historian Graetz (History, II. p. 633, Am. Ed.). The Talmud contains much that is immaterial and frivolous, it reflects the superstitions and views of its Persian birthplace, with their magic, incantations, miraculous cures, demoniacal medicine and mystic dreams — all opposed to the spirit of Judaism. Then, too, it contains occasional instances of harsh judgments and decrees against other nations and religions; and finally, it seems to favor an incorrect exposition of Scripture, accepting as it does, often tasteless interpretations. What Graetz asserts is not to be denied; yet these defects are not organic. The Talmud is not one book but a collection of books; is not by one author, but by a thousand authors; is the work not of one age, but seven centuries. What wonder, then, that there are faults in such a composite creation, which Graetz compares to a literary Herculaneum and Pompeii, comprising the sublime and the common, the great and the small, the grave and the ridiculous, the altar and the ashes, things Jewish and heathenish side by side. The expressions of uncharitableness, often nothing but the utterances of ill-humor and righteous indignation of some single teacher, preserved by over-faithful pupils, are more than counterbalanced by the breadth and humanity that often illuminate the Talmud; and by its recognition of genuine religion as something higher than race or creed. One must also consider that the rabbis never enjoyed security for any prolonged period. The Roman, the Greek, the Persian and the rest, were ever «baiting» them, and persecutions were constant. If their utterances were human and expressed their agony and passion in times of bitter distress, the spirit of broad humanity was never wholly absent from their complaints. It was a sage of the Mishna who said: «A heathen who occupies himself with the law of God stands in the same rank as the high priest.»

Commentaries on the Talmud.— The first to write a commentary on the Mishna was Maimonides (12th century), originally in Arabic. Manuscripts of this work are in the Bodleian, and have been translated into Hebrew by some scholars of the 13th century. R. Tanchum of Jerusalem followed Maimonides by writing a lexicon of the Mishna in Arabic. This has never been published, but manuscript copies exist in the Bodleian. A large number of commentaries have appeared upon the Mishna in whole or in part, usually clear and simple in aim, concise and exact in expression. As commentator on almost the whole of the Talmud, Rashi of Troyes (1040–1105) is most eminent, and his very clear and systematic exposition appears in every edition of the Babylonian Talmud. The supplements and additions to Rashi's commentary were written by his relatives and pupils. A collection of notes and discussions called Tosafoth, additions, appears in all Talmud editions, whose authors called «Tosafists,» lived in France and Germany during the 12th and 13th centuries. Three of the more important later commentators whose expositions are printed in many Talmud editions are Solomon Luria (16th century), Samuel Edels (d. 1631), and Meir Lublin (d. 1616).

Helps to Talmudic Study.— These consist of lexicons from the oldest, the Aruch of R. Nathan ben Jechiel of Rome, of the 11th century, recently revised and enlarged by Kohut as the

'Aruch Completum,' to Fisher's revised and enlarged edition of Buxtorf, Levy's 'Dictionary of the Talmuds and Midrashim' (in German), and Jastrow's ''Dictinary of the Talmud' etc. (London and New York, 1886–1903), an admirable and scholarly work. Then must be mentioned grammars, like Luzzatto's and Levias', which aid in the study of th idiom of the Babylonian Talmud, chrestomathies for beginners, and more elaborate introductory works and treatises from Samuel Hanagid's fragment (11th century) and Maimonides' introduction, translated into German by Pinner, to modern authors like Brüll, Frankel, and pre-eminently J. H. Weiss. There are other works of reference, but the best help is the living teacher, who is obiciously the most trustworthy pilot through the «sea of the Talmud.»

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8. Judaism — Masorah or Massorah, is the name given to the body of critical notes on the external form of the Hebrew-Aramaic text of the Old Testament. The name is taken from Ezek. xx, 37, and means originally 'fetter,' the fixation of the text having been correctly looked upon as a fetter on its exposition. In later times the word assumed the meaning of «tradition.» This body of notes represents the literary labors of a long line of scholars, very few of whom are known by name, who flourished during a period of about seventeen centuries — from about 300 B. C. to the invention of printing. They were mostly copyists or professional scribes, or teachers of the Bible, and their notes were the outcome of a close application to their professional work.

Object and Method — The chief object of the masoretic notes was to serve as a guide to the copyists and enable them to produce a faultless Bible-text. They were written on the margins of private Bible-codices or between the lines, and collected in a body before or after such codices, or finally compiled in special independent works. In Bible-scrolls designed for public use at the synagogue no notes were permitted in accordance with the injunction of Deut. iv, 2. The amount of masoretic notes differs greatly, depending on the amount of space at the copyist's disposal, on the size of the script used, the price of the writing material and of the scribe's labor and on the fanciful shape he gave to his glosses, which were sometimes written so as to form ornamental decorations to the book.

The independent works are arranged topically in numbered groups or rubrics, the interlinear and marginal notes, however, follow the order of the text, forming a kind of running annotation. Presumably in the course of time, a certain technique was worked out with regard to the distribution of masoretic material. Certain matter was designed preferably for the intercolumnal and outside perpendicular margins; other matter for the upper and lower margins, etc. The former is known as the Inner or Small Masorah, the latter, as the Outer or Large Masorah; the glosses surrounding the initial word of a book, usually written on a separate line, are called the Initial Masorah. The term Large Masorah is also applied to the lexically arranged notes at the end of the printed Bible, usually called Masoretic Concordance or Final Masorah.

The Small Masorah consists of brief notes with reference to marginal readings, to statistics, showing how many times a particular form occurs in Scripture, to full and defective spelling, and to abnormally written letters. The Large Masorah is more copious in its notes. The Final Masorah comprises all the longer rubrics for which space could not be found in the margin of the text.

The old Hebrew text was in all probability written in continuous script, without any break, and some of its words were abbreviated. The masorites divided the text into words, books, sections, paragraphs, verses and clauses (probably in the chronological order here enumerated), the various divisions being indicated by spaces. They fixed the orthography, pronunciation and cantillation, and introduced the square characters, or modern Hebrew script. To indicate various teachings, legal or popular, religious, or mystical, they formed some letters in some words in an abnormal way; some are larger, other smaller than the rest, some have their strokes or bars curved, others have them drawn out in a scroll, still others have scroll-like and semi-circular attachments, or a broken stroke. Most of these graphic peculiarities are of a late date and their vogue was short-lived; the printed Masorah either ignored them, or did not know them; and some of the terms referring to such peculiarities were already misunderstood by specialists in the 14th century. More of a purely calligraphical origin are the tittles or apices on certain letters of alphabet.

There are four words having one of their letters suspended above the line. One of them the *n* in the name of Manasse (Judges xviii, 30) is due to a correction of the original Moses, out of reverence for the latter. The origin of the other three (Ps. lxxx, 14; Job xxxviii, 13, 15) is doubtful. In the opinion of some, they are mistakes for large letters; according to others, they are later insertions of originally omitted weak consonants.

Nine passages in the Bible are preceded and followed by signs usually called «inverted Nuns,» because they look like the letter N in the Hebrew alphabet. These signs are probably of text-critical importance. Their real significance is, however, unknown.

In 15 passages some words are stigmatised, as a sign of deletion. At a later period, a marginal reading takes the place of a stigma. The marginal reading are of a threefold character: (1) words to be read for those written in the text; (2) words to be read for those not written or omitted in the text; (3) words written, but not to be read. The origin of these variants is manifold. Some represent various readings in ancient manuscripts; others arose from the necessity of replacing erroneous expressions by correct ones, difficult, irregular, provincial and archaic, by simpler, current and appropriate; or cacophonous by euphonious expressions. Some of them may have been designed to call attention to some mystic meaning or homiletical lesson supposed to be embodied in the text. Finally, and this at a later date, they represent variant readings found in Talmudic literature.

In traditional literature the observation is found that in some passages, the number of which varies in the different sources as 7, 11, 13, 15 or 18, the Bible contains expressions other than the context would lead one to expect. To the question why this is so, the earliest sources answer: "the Bible uses euphemism." The later sources, however, explain this by the assertion that the men of the Great Synagogue, *i. e.* the scholars of pre-Maccabean times, had made corrections in the text. Modern investigators are inclined to attribute these peculiarities to the authors or redactors of the Biblical books themselves, the latter shrinking from putting in writing a thought which some of the readers might expect them to express. The assertion about the corrections made by the scribes is probably due to the tradition which ascribes the redaction of several books of Scripture to the Great Synagogue.

Textual Correction.— There are, however, phenomena in the Biblical text which lead one to assume that at some time textual corrections had been made. These corrections may be classified under the following heads: (1) Removal of unseemly expressions used in reference to God; *e. g.* the substitution of the verb 'to bless' for 'to curse' in certain passages. (2) Safeguarding of the Tetragrammaton; *e. g.* the substitution of Elohim for Yhwh in certain passages. Under this head some have counted such phenomena as the variants of the divine names in proper names; *e. g.* Joahaz for Jehoahaz. (3) Removal of application of the names of false gods to Yhwh; *e. g.* the change of the name Ishbaal to Ishbosheth; or, according to another opinion, from Ishbosheth to Ishbaal. (4) Safeguarding the unity of divine worship at Jerusalem. Here belongs the change of the city of « Righteousness » (Isaiah xix. 18) to that of « Destruction ».

A large portion of the Masorah is given to statistical data: how many letters, words, verses, sections and chapters there are in each book and in all of them together; which is the middle letter, word or verse in each book; how many words begin with a certain letter, or combination of letters; how many times a particular form of word occurs in the Bible, etc. This feature probably has its origin in the early copyists counting the letters of the text to have a basis for calculating the charge to be made for their labor.

Beside the labors of fixing and guarding the purity of the text, the masorites put the world of scholars under the greatest obligation by inventing and introducing in the 6th century systems of vocalization and accentuation, embodying the pronunciation as handed down in the schools of their time, and their understanding of the textual connection. A great deal of our grammatical knowledge of the Hebrew language is based on their vocalization.

History and Development.—The history of the Masorah may be divided into three periods: (1) creative period, from its beginning to the introduction of vowel-signs; (2) reproductive period, from the introduction of vowel-signs to the printing of the Masorah in 1425; (3) critical period, from 1425 to the present day. The cultivation of masoretic studies both took its rise and had its culmination in Palestine. Still, it had already in the 2d Christian century its workers in Babylonia. In the course of time differences of spelling and pronunciation developed not only between the schools of Palestine and Babylonia, but in the various seats of learning in each country. In Babylonia the school of Sura differed from that of Nehardea; similar differences existed in the schools of Palestine, where the chief seat of learning in later times was Tiberias. These differences must have become accentuated with the introduction of graphic signs for pronunciation and cantillation; and every locality, following the tradition of its school, had a standard codex embodying its readings. The Biblical text accepted by us, its vocalization and accentuation, the Masorah in its contents and language, as well as the regulations with reference to writing of Biblical books, all are of Palestinian origin. Fragments of text and Masorah originating in Babylonia have but recently been discovered.

In this period living tradition ceased, and the masorites in preparing their codices usually followed the one school or the other, examining, however, standard codices of other schools and noting their differences. In the first half of the 10th century Aaron ben Moses Ben-Asher of Tiberias and Ben-Naphtali, heads of two rival masoretical schools, each wrote a standard copy of the Bible, embodying the traditions of their respective schools. Both of them were descendants of distinguished families of masorites. Ben-Asher's codex became recognized as the standard text of the Bible. Notwithstanding this, for reasons unknown, neither the printed text, nor any manuscript which has come down to us, is based entirely on Ben-Asher; they are all eclectic. The two rival authorities, Ben-Asher and Ben-Naphtali, practically brought the Masorah to a close. Very few additions were made by the later masorites, styled in the 13th and 14th centuries *Nakdanim*, who revised the works of the copyists, added the vowels and accents and frequently the Masorah. Considerable influence on the development and spread of masoretic literature was exercised during the three first centuries of the second millenium by the Franco-German school of *Tosaphists*, or Talmudic annotators.

Jacob ben Hayyim ibn Adonijah, having collated a vast number of manuscripts, systematized his material and arranged the Masorah in the second Bomberg edition of the Bible (Venice 1424–1425). Besides introducing the Masorah into the margin, he compiled at the close of his Bible a concordance of masoretic glosses for which he could find no room in a marginal form, and added an elaborate introduction — the first treatise on the Masorah ever written. In spite of its numerous errors, this excellent work has generally been acknowledged as the « textus receptus». Next to Ibn Adonijah the critical study has been most advanced by Elijah Levita, who published his famous 'Massoret ha-massoret' in 1538. The 'Tiberias' of the elder Buxterf (1620) made Levita's researches accessible to Christian students. Levita compiled likewise a vast masoretic concordance which still lies in the National Library of Paris unpublished. Other prominent workers in this field in the times of the Renaissance were Rabbi Meir ben Todros ha-Levi, Menahem di Lonzano, and Jedidiah Solomon of Norzi. In modern times, to mention only the most prominent names, were W. Heidenheim, S. Pinsker, S. Frensdorff, S. Baer and C. D. Ginsburg.

In imitation of the Masorah to the Hebrew text, a similar work exists to the text of the Aramaic version, known as Targum Onkelos. Its date is probably about 900.

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9. Judaism—The Cabala Cabala designates the mystic lore of the Jews and the practises based thereon. The name is etymologically related to a Hebrew verb meaning to receive and which is technically used to denote the reception and transmission of divine revelation. Its application to theosophic speculation and theurgic art indicates the belief that the doctrines and practises comprising the Cabala were imparted through divine revelation, saints such as, among others, the Patriarchs being regarded as the chosen recipients of the divine unfolding.

The twofold character of the Cabala as speculative and experimental is expressed in the distinction of the one as Cabala Iyunit — reflective Cabala, and of the other as Cabala Maasit—active or theurgic Cabala. Historically considered, the Cabala antedates by many centuries the works devoted to the exposition of its theories and the inculcation of its practises. Indications are plentiful in both the Apocrypha and the Pseudo-epigrapha, notably in the Enoch books and the Testaments of various Biblical heroes, pointing to the acceptance and currency of Cabalistic concepts at the time these extra-canonical books were composed. Babylonian mythological elements, as well as Zoroastrian theological conceits were among the extraneous influences that gave fertile impulse to cabalistic speculation. Greek philosophy, especially as developed in the Stoic and Neo-Platonic systems of Alexandria, must also be credited with having stimulated its development. Jewish, of the late pre-Christian, and Christian Gnosticism of the early Christian centuries, may be looked upon as its predecessor. The absolutely transcendental character of Jewish monotheism could not but lay near to reflective minds the fundamental problems, basic to all Jewish mysticism, how the sublime extra and supra-mundane Deity could be the Creator of the existing world and could be regarded as being in contact with it as its ruler and guide, and more especially how man could rise into communion with God. The Biblical account of the Creation known as the Ma'aseh Bereshit (literally the work of the beginning) and the description of the divine chariot in the first chapter of Ezekiel termed the Ma'aseh Merkabah (literally the work of the chariot) were held in early Talmudic records to hide esoteric knowledge within the reach of the chosen few who of mature age and proper degree of wisdom might venture to unravel their occult suggestions. The allegorical method of interpreting scriptural contexts, in vogue among the preachers of Haggadists of the synagogue, stood the elect searchers for the contents of divine revelation transmitted in these two chapters in good stead. By amplifying it, they arrived at the deeper meaning of Genesis i. and Ezekiel i., designated by them as the «secrets» and the «hidden things» of the Torah or the Law. But care was had not to divulge publicly the truth thus found. It was zealously reserved exclusively for the «wise» and «worthy.» Concepts that recur as basic to later theosophic speculations are attributed to some of these Talmudic wise men; for instance, the view that fire, water, and air existed before creation, these three producing light, darkness, and wisdom respectively, the world being a combination of these six elements, or that creation in reality is a process of condensation, God contracting Himself or His garment of light to make room for the world resulting from this operation. The Pantheistic designation of the Godhead as the «Place» the Mākôm (Greek Topos) of the universe credited to some Talmudic doctors is another indication of the prevalence of mystic speculation in the Talmudic schools, as is also the personification of God's «Justice» and «Mercy,» of frequent recurrence in Talmudical parlance. Another evidence to the same effect is the tendency characteristic of a number of Talmudical observations to represent God's activity by ten hypostases or Sephirot, viz: wisdom, insight, cognition, power, strength, immutability, justice, righteousness, love, and mercy. Sometimes, as in Philo, wisdom is named as the totality of these ten potentialities. But most significant in this connection is the occurrence in Talmudic theology of Metatron, an angelic mediator between the transcendental Deity and Creation. He is the Demiurgos, the instrument through which the supra-mundane God acts. Again the soul is often described as pre-existent. The pious are credited with the power while living to ascend to God. During such ascension they learn the secrets of the Beyond. Furthermore the «mystery of sex» and of «marriage,» which is one of the main pre-occupations of the later (literary) Cabala, as well as the doctrine of emanation, is met with in the Pseudo-epigrapha as in Talmudic passages.

Cabalistic speculation and practise presented in the Talmudic documents in detached glosses proceeded to become more systematic in what is known as the Geonic period (from about 500–900 or 1000 A.D.). Jewish mysticism developed a literature of its own, which, however, has been preserved only in fragmentary form. From what is known of the contents of this literature, it is certain that theosophy and cosmogony were central in its speculative interests, while theurgic practise, the art of producing by mystic words and names certain effects, was another department of its pre-occupation. In theosophy, the nature and personality of Metatron; the dimensions of God, or those of this mediator, presented the principal theme for discussion. A work entitled "Shiur Kômāh," the proportions of the (divine) stature," is devoted to the latter. Descriptions of the celestial halls or Hekalôt and of the visits and experiences of saints and ascetics that made the "ascension" furnish the matter of other treatises. To cosmogonic mysticism belong works treating of the "six days of Creation," the story of the conflict between God and Primal Water, or between the "Masculine" and "Feminine" Waters, descriptions of Paradise and the lower world. As for theurgic art, these fragmentary remnants of mystic literature present expositions of the power vested in such as know the names of angels, or of the prophylactic virtue of the knowledge and the use of mystic names.

The most important work by far is the famous Sephēr Yezirāh, the book of the Creation. Its date is in doubt. Certain it is that before the beginning of the second Christian millenium it had come to be regarded as one of the most important books calling for and receiving commentation at the hands of the most learned. According to this book, the fundamentals of all being are Sephîrôt or potentialities. These mediate between God and Creation. They comprehend first three emanations, one direct from God, and the other mediate, viz: (1) Spirit or air (Hebrew Ruach), from which came (2) water, which in turn was condensed into (3) fire. To these are added six dimensions, three to the right and three to the left. The tenth element is the Spirit of God. All ten are eternal, the first three being, however, preexistent. They are the substance of all that is, the form being supplied by the 22 letters of the Hebrew alphabet. Between substance and form is a contrast. Creation consists in resolving this contrast. God is the solvent. Through Him as the solvent, existence, *i. e.,* combination of form and substance, takes on reality.

The Neo-Platonic and Pythagorean character of the book's theorizing is evident. To some sectaries, the affirmations of the treatise seemed too strongly anthropomorphic. They therefore posited between God and universe a mediator, the "Prince of the World," to whom they imputed all acts of creation and to him they referred the corporeal descriptions of God found in the Bible.

Among the systems that to a certain degree were impregnated with Cabalistic Pantheism, and in turn exercised a determinating influence on the further evolution of Jewish mysticism, that of Ibñ Gabirol holds a prominent place, as his philosophy seemed to confirm the theory of God's immanence, underlying the central theory of the Cabala, that of successive emanation.

Subsequently the Cabala differentiated into that of the German Jews, and that of the Jews of Spain and Provence. Among these Eleazar of Worms and Abraham Abulafia deserve mention as exponents of the doctrine. They held that God was too exalted to be cognized by human intellect. But between the Unknowable God and man searching for God was God's Kābôd or Glory, created by God out of His own primal fire. This "Glory" has shape and dimension. It is seated on a Throne in the east but screened by a curtain open alone in the west. To this Kābôd the descriptive adjectives of the Bible refer. Four worlds are in existence: (1) That of this "glory;" (2) that of the angels; (3) that of the animal soul; (4) that of the intellectual soul. This German mysticism on its practical side was a reaction against the dominancy of Talmudic scholarship as the sole measure of piety. It substituted for study prayer, which it viewed as a mystic progress toward God. It reveled in states of ecstacy, as a protest against the barren rationalism and unstirred sobriety of the schools' dialects. Fasting, asceticism, and meditation were resorted to to bring on the coveted ecstatic states, or recourse was had to the mystic names of angels and the deity.

The Cabala of the Provence traced its origin to a revelation by the prophet Elijah to Jacob ha-Nazir, who in turn initiated Abraham, son of David of Posquiēres, whose son (Isaac the blind) again transmitted the doctrines to his followers. This invoking of the prophet Elijah shows that the mystics of Spain and the Provence regarded their doctrines as of divine authority. That it had came to them from afar—from Babylon by way of Greece and Greek philosophy — is now the theory of the competent scholars. The more important expositions are comprised in the following works: (1) 'Masseket Azilut' or treatise on emanation; (2) 'Bahir,' in which a new classification of the Sephirot is given and the doctrine of continuous emanation is advanced; (3) Azriel's book, written "to present Cabala to philosophers with a view of making it acceptable to them;" (4) a number of pseudo-epigraphic books of the second half of the 13th century, based on the foregoing; (5) the *one* publication commonly regarded as the Bible of the Cabala, the 'Zohar' (Splendor, based on Dan. xii:3), written in the form of a commentary on the Pentateuch and introduced as R. Simon ben Yochai's production. Analysis demonstrates that the Zohar is "an aggregate of heterogeneous parts." The compilation probably is not older than the beginning of the 14th century. It received its present form largely at the hands of Moses de Leon. Later Cabalists, either exponents or opponents of the Zohar, were Joseph ben Abraham, Ibn Wakar, Moses Botarel, Isaac Arama, Isaac Abravanel, Abraham Saba, Isaac Luria, Moses Zacuto, and others. The Cabala found readiest acceptance among the Jews in Turkey and in Poland. The pseudo-messianism of Shabbatai Zewi (1665) rested to a certain extent on Cabalistic expectations, asceticisms, keeping vigils at frequent intervals, performing baptismal ablutions, doing penance, having marked the practises of the adherents of the later Cabalistic teachers, who regarded these acts as preparatory to leading pure lives and expressive of love for man, virtues that were hoped to usher in the coming of the promised Redeemer.

The Cabala of the Jews was not without influence on the thoughts of Christian scholars, among them, Raymond Lulli (1225–1315), Pico di Mirandola (1463–1494), Reuchlin, Heinrich, Cornelius Agrippa (1487–1535), Zorzi 1460–1540), and others. It is not too much to say that Cabalistic speculation recurs in the theology of some of the noted precursors of the Reformation, and had a share in the development of the Evangelical Church's dogmatics.

In brief, the main contentions of the Cabala are these: (1) God is unknowable in His own essence. He is the Eñ-sôf, limitless, infinite. He is the Hidden of All Hidden. He is the «negative» as far as He is cognizable by man. He is the first primal of all primals, the ulterior principle. Only as far as He has deigned to change His absoluteness into relativity, by permitting creation to take on existence, is He cognizable in measure as creation reveals Him. Between Him and creation, through irradiation or condensation of His primal light, He placed a mediator, Metatron, or the Prince of the World, or the Merkaba or Chariot; to this, sometimes denoted as the first Sephirāh, refer all anthropomorphisms of scriptural description of the Godhead. The Infinite has no attributes. But the Mediator has. He is the «Superior Man,» the «Celestial Man,» «Wisdom.» This primal man or being is the creator and governor of the world. He is endowed with corporeality.

In God, will and thought and action are identical and synchronous — instantaneous. In Him transition from resolution to execution presupposes no change in essence. This divine will is the Rāzôn Kadmoñ, the uncreated eternal will. It is the first principle or sephirāh. God, however, concentrates himself. This «mystery of the divine concentration» (Sôd Zimzum) results in rendering visible that part of Himself which is the world. This act is similar to making a rent in a vessel, through which the contents are exposed to view. Through God's self-concentration, however, room is made for the visible world. For it limited vacancy is produced in which the divine ray of light is implanted as the germ of progressive creation. The Infinite has thus himself willed His partial finiteness. The Cause of all Causes has produced the ten Sephiroth. He is the Crown, the Light that is Infinite. In Him there is neither form nor substance. But He made a little vessel, the letter Yod. It is «wisdom;» then created He the sea, which is reason. This sea He divided into seven streams, for which He made seven vessels: (1) Greatness; (2) power; (3) beauty; (4) victory; (5) highness; (6) foundation; (7) Shekinah or government. Some of these Sephirot are constructive, others—the first three — are elemental. Some mystics regard these 10 as identical — representing only various aspects of the Divine Infinite — but others hold them to be tools of the Creator, superior beings totally different from Him. In the Sephirot two natures inhere: (1) That through which all change occurs, *i. e.* the «vessel;» (2) that which is unchangeable, *i. e.* the «Light» or the Power.

(2) Man. Man is the highest creature. His body is built according to the mysteries of wisdom. But he is more than body. He is threefold, soul,—animal soul (Nēphesh), moral soul (Ruach), intelligent soul (Neshāmāh). This third soul emanates from «Wisdom,» the second from «Beauty,» the third from «Dominion, or Kingdom.» The soul is pre-existent. After dissolution of the temporary union of body and triune soul, the intelligent soul ascends to God, the moral soul enters Eden, the animal abides peacefully on earth. This is the destiny of the righteous. If stained by sin, the soul has to undergo punitory trials. Hence the Cabala accepts the doctrine of the transmigration of the soul. Only those souls that have fully developed their power may return to God or enter Eden; others will have to serve their period of probation, sometimes two souls being «inter-impregnated,» merged into one, so as to help each other in the performance of the allotted task.

Man should love and fear God. Love is the secret of unity with God. In the degree man loves God he rises to higher intimacy with God. Life in the beyond is life which vouchsafes deeper contemplation of the divine reality. Evil is the contrary of the God-like, the «left side.» Evil is finite. Evil man mistakes semblance for substance. He separates himself from God. The Cabala to a certain extent teaches the sinlessness of original man whose fall brought sin and evil into creation.

Man, however, is not eternally lost. He may rise to the centre of divine light through penitence.

The Cabala has induced a more spiritual conception of religion and emphasized its ethical implications more strongly than legal ritualism could vitalize. On the other hand it encouraged the belief in magic, in demons, and opened the door to many grotesque and even noxious superstitions. Its adepts came to put faith in signs and constellations, and otherwise naturalized in Judaism many conceits and customs of non-Jewish origin and significance.

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10. Judaism—The Karaites. A Jewish sect which took its rise in Southern Mesopotamia in the second half of the 8th century and which has persisted to the present day. Several causes have contributed to its origin and continuance, some purely personal, others depending upon a difference of view in regard to some of the essential features of Rabbinical Judaism.

Origin.— The development of what is known as Rabbinical Judaism, which commenced after the destruction of the second Hebrew commonwealth, has not been as one-sided as is popularly imagined. In addition to the written law, the basis of all religious and all civil development, an unwritten law had naturally grown up which by its interpretation of the written law fitted that law to the changing times and to different needs. In this manner a large mass of traditions interpreting and enlarging the law has come into being. This mass is known as the oral law, and it gradually acquired a sanction and a sanctity second only to that of the canon. This oral law was not necessarily rigid; for as long as the schools maintained their vigor a natural and healthy development took place. Custom, however, came to the aid of the oral law and in a natural process was itself then regarded as law. The development, however, was not homogeneous. There were at all times within the Jewish polity freer spirits who rebelled against the trammels which a fixed interpretation of the Biblical laws naturally induced. They imagined that by basing themselves wholly upon the word of Scripture they would free themselves, forgetting that they were running the risk of worshipping the letter instead of the spirit which manifested itself in the development of the oral law. From time to time sects (see Jewish Sects) arose, having as their principal object the negation of the official tradition. Of such a kind were the Samaritans, though their opposition to the Jews was more political than religious, and in a large measure the Sadducees. To such sects the Karaites belong; but they represent the only sect that has had a long and important existence and against which Rabbinical Judaism had continually to be on the alert.

Anan and the Early Karaites.— The sect was thus to a certain extent the outcome of the opposition to the official oral law. A personal element entered into this opposition. The founder of the sect was a certain Anan ben David, said by some to have been a descendant of Bostanai, a celebrated head of the captivity. His followers and certain Mohammedan writers assert that he himself was an exilarch; this is undoubtedly a falsehood. His uncle, however, did occupy that position; and when he died in 760 Anan had a certain right to expect the appointment. A younger brother, Josiah by name, was preferred. Whatever may have been the reason for this preferment, Anan resented it and out of pique had himself proclaimed exilarch in 767. This appeared to the Abbasid caliph al-Mansur as treason, seeing that the regular exilarch had been confirmed by himself. Anan was imprisoned, and only released by heavy bribes given to the officials. He then started out to build up a following of his own. His immediate followers, who must be clearly distinguished from later Karaites, were called Ananites. This was no difficult matter at that period and in those regions. The Mohammedan world itself was in a ferment, due largely to the pretensions raised by the various followers of Ali. Numerous Mohammedan sects raised their heads, and their example cannot have been lost upon the Jews living in their neighborhood. The influence of Mohammedan thought upon the Jews was great at all times; and it cannot be doubted that this influence was strongly exerted in the formation of Karaism. The central doctrine of Anan's philosophical or theological rebellion was his denial that the oral law was divine. According to him all portions of the Bible are of equal value. One must delve deep into it in order to take out its secret and its hidden meaning. No fixed rules are to govern this study; each individual must find out for himself what is the law. To a greater or less degree similar controversies were raging in the Mohammedan world. The Shiites in a measure denounced tradition (Sunnah) as much as Anan did; and even among the orthodox the question as to the right of individual speculation occasioned bitter controversies. The founder of one of the four chief Mohammedan legal systems, Abu Hanifah, was the one who upheld this doctrine of the right of individual speculation; and it cannot be merely a chance circumstance that he lived in the same place and at the same time as did Anan. In fact it is said that he was imprisoned together with Anan. Undoubtedly the two systems have their basal thought in common.

Spurred on by the example in the Mohammedan world, the Karaites held that they were not a new sect, that they represented true Judaism, and that it is necessary to return to the purity in belief and practice of Moses and the Prophets, just as Mohammed insisted that he simply reintroduced the old religion of Abraham. The Rabbinites he held were following the cission introduced by Jeroboam. The Sadducees had, it was further held, found out a part of the truth; but Anan was the first to reveal it in its entirety. The connection with the Sadducees seems undoubted, in spite of the fact that the later Karaites rejected the connection, because the Sadducees did not believe in the resurrection. This is seen in their adoption of certain Biblical interpretations which are only to be found among the Sadducees or in the early *Halakah* which was superseded by that which became canonical: *e. g.* the meaning of the expression "on the morrow after the Sabbath" (Lev. xxii, 11), as the time for commencing to wave a sheaf of the first fruits; the real meaning of the lex talionis (Deut. xix, 21) and the use of the flesh of an animal that was diseased before it was slaughtered. The older Halakah not only forbade one to kindle a light on the Sabbath day but even to allow it to burn — an interpretation followed by the Sadducees, the Samaritans, and the Falashas. The early Karaites seem even to have had Sadduceean writings in their possession which are now lost, the authenticity of which not even their great opponent Saadiah contested. Anan was an eclectic, and evidently tried to gather into his fold all manner of doctrine that was in any way opposed to the Rabbinical interpretation. Thus he introduced the prohibition of eating meat or drinking wine during the exile of the Jews from the Holy Land; a theory upheld by two minor sects, the followers of Abu Isa of Ispahan (685 to 705), and of Yugdan, a pupil of Abu Isa. But despite his opposition to the Rabbinites, Anan followed their teachings in many things. He himself was a good Talmudist and he took over nearly all the rules of Biblical interpretation upon which the Talmudists based their system. He was by nature something of an ascetic, and consequently was apt to follow in all cases the more stringent rather than the more lenient view in questions of practice. In fact, he may be said to have developed a tradition and a Talmud of his own. His immediate followers, who called themselves "Mourners for Zion," went to live in Jerusalem, where they gradually died out and were of very little influence upon the development even of their own sect.

Development.— In the 10th and 11th centuries Karaism took on quite a large following. It spread notably in Babylonia, Persia, Syria, Palestine, and Egypt. It found a second home in Constantinople, and from here spread into Europe and certain parts of the Mediterranean litteral. We hear of Karaites in Salonica, and, what is of more importance, in Spain itself. One reason for this extension was undoubtedly the *point d'eppui* that Karaism gave to all those who, for one reason or another, were dissatisfied with Rabbinism. A more important reason was the supineness of the Jewish authorities in Babylon who were the nominal or spiritual heads of all the Jewish communities, but who were fast losing the direction of their affairs and prominence in scholarship. In a most surprising manner these Babylonian authorities misjudged the possible effects of the new schism. Even though proselytes were made out of their own ranks, they must have persuaded themselves that the new movement could be killed by silence. The Gaon Natronai bar Hilai (ca. 857–867) is the first one to busy himself with the new doctrine. In Spain it was otherwise. A Castilian Jew, Cid al-Taras, in 1054, journeyed to Jesrualem, where he became a convert to the new school. He returned and commenced to spread Karaism among the Spanish Jews. There grew up communities in Carrion, Burgos, Toledo, and Talavera, etc. The Rabbinites, however, were up in arms, and even secured the aid of the secular arm. Both the religious and the civil power weighed heavily upon the Karaites. At the end of the 11th century, then again under Alfonso VIII (1126–1156), and a third time under Alfonso IX (1158–1214), they suffered persecution and the schism was nipped in the bud.

But without making use of secular weapons, a young scholar in Fostat (Old Cairo), Egypt, set out in a scientific way to demolish the foundations upon which Karaism was built up. Had it not been for Saadiah ben Joseph (892–942), the heresy might have made great inroads into the Jewish body politic. Not only as a young man in Egypt, but later as Gaon at Sura, he devoted some of his best energies to refuting the works of Anan and to writing anti-Karaitic tracts. The refutation may be said to have been complete; for he set at rest any fear that the heresy might become dangerous to the real unity of Judaism.

The polemics of Saadia naturally called forth replies on the part of the Karaites and produced the flower of Karaite literature. Karaite scholars were forced to defend their theological position, their peculiar interpretation of the Bible, and their knowledge of the Hebrew language. The chief Karaite writers of this period were: the polemicist and Bible commentator, Solomon ben Jeruham (940); David ben Abraham al Fazi (950), the author of a Hebrew dictionary; Jacob al-Kirkisani (938), author of a commentary on the Pentateuch; David ben Boaz (ca. 910), author of a commentary on the Pentateuch and a work on the principles of religion; Japhet ben Ali (ca. 1000), their most prolific commentator, and Sahl ben Masliah (ca. 980), the author of a work on the Biblical laws.

Further History.— In the next period Constantinople becomes the center. Its most important Karaite scholar was undoubtedly Judah Hadassi (1149), the author of the Eshkol ha-Kofer, an encyclopedic work in rhymed prose, giving a whole system of Karaite theology and treating of the most varied subjects. After him lived Aaron ben Joseph, the elder (1300), a native of the Crimea, who is known not only as a distinguished Bible commentator, but as the compiler of the prayer book still used by the Karaites, and to which he contributed some notable poems of his own. Aaron ben Elijah, the younger (1300–1369), wrote the most philosophic treatise (Gan Eden) of any Karaite, as well as a commentary on the Pentateuch which is still very much in honor among his fellow believers. He had studied thoroughly the writings of Maimonides, and he did his best to raise up Karaism out of the morass into which it had fallen through the heavy onslaughts of Saadia. To these must be added Elijah ben Moses Bashyazi, the systematizer of Karaite canon law (1420–1490), his brother-in-law, Caleb Afendopulo (end of the 15th century), liturgical poet and writer of homiletic and theological works, and Moses ben Elijah Bashyazi (1544–1572), a writer on theology. At the present day there are from 50 to 60 families in Constantinople concentrated in the district Hasskeui. Upon several occasions the Karaites procured Firmans from the Porte recognizing themselves as a religious body apart from the other Jews and with their own chief rabbi. In 1900 these Firmans were confirmed by an Irade.

The Karaites had come into Egypt not long after the foundation of their sect. That they had made considerable progress there is seen from the fact that Saadia commenced his polemical writings in Fostat before 928, and that he had a number of direct opponents in the city. It was here also that lived the only important poet produced by the Karaites — Moses Dar'i who wrote in the style of the Judæo-Arabian poets of Spain. In Cairo, the Karaites, as elsewhere, kept themselves apart from the rest of the Jews. They had their own organization, at the head of which was a Nagid, who, however, was under the general jurisdiction of the Rabbinite Nagid. They had their own synagogues, first in Fostat and then in Cairo itself. They acquired a considerable amount of wealth there, being largely engaged in the goldsmith trade, while a number occupied positions of eminence chiefly as physicians. In the year 1313, when Abraham Maimonides was chief of the Egyptian Jews, a number of Karaites were converted to Rabbinism. At the present day about 400 families live in Cairo mostly in a separate street back of the old Jewish quarter.

In Russia.— Under the Tartar rulers of Southern Russia Karaite Jews had emigrated during the 12th century into the Crimea and into Lithuania. From here they even penetrated into Galicia, and a Karaite community exists to-day there in the city of Halitsch. A portion of the city of Troki was given over to them; and here Isaac ben Abraham Troki composed, in 1593, his polemic, Hizzuk Emunah, directed against the Christian interpretation of Old Testament Messianic passages. It was especially in the Crimea that they flourished and evidenced some attempt at a revival of their literature; Simhah Isaac Lutski (1750) wrote a bibliography of Karaite writers, while Isaac ben Solomon, at the beginning of the 19th century, composed a work upon the doctrines of his sect. Their chief settlements here were in Chufut-Kale, Goslov (Eupatoria), Kaffa (Theodosia), Yenikele, and Sulchat. In contradistinction to the other Jews in the Russian Empire they have always been treated well by the government. In 1796 Catherine II relieved them of one-half of the poll tax, and from 1827 to 1874 they were entirely freed from service in the army. As late as 1905 the Karaites in Moscow were permitted to keep their synagogue open, a privilege not granted to other Jews. In the Russian Empire there are at present 43 Karaite communities, all under the leadership of an energetic Haham Pampuloff. They are, however, yearly decreasing in number; as they have until recently refused to intermarry with other Jews. The attempt was recently made to have the government grant complete civil rights to all Rabbinite Jews who married Karaite girls upon condition that they formally renounce the Talmud. It was in the Crimea also that a Karaite archæologist, Abraham Firkovich, made his celebrated collection of Karaite antiquities and manuscripts, after having traveled over a great portion of the Hither East for that especial purpose. Unfortunately, despite the excellency of this collection which is now deposited in the Imperial Library at St. Petersburg, he forged the dates on gravestones and upon manuscripts in order to prove the great antiquity of Karaite settlements in the Crimea and the disassociation of the ancestors of the present Karaites from the events that preceded the death of Jesus. At times, the Karaites in Russia have not scrupled at aiding the Russian government against the other Jews of the empire. At the present day there are about 10,000 Karaites in Russia, about 2,000 in Cairo, 20 or 25 in Jerusalem, and another thousand scattered in various places.

Dogmas and Customs — The religious dogmas of later Karaism have been formulated by Judah Hadassi as follows: 1. *Creatio ex nihilo;* 2. The existence of a Creator; 3. God is an absolute unity and incorporeal; 4. Moses and the other prophets were sent by God; 5. God has given to us the Torah, which is true and complete in every respect and not wanting the addition of the oral law; 6. The Torah must be studied by every Jew in the original language; 7. The Holy Temple was a place elected by God for his manifestation; 8. Resurrection of the dead; 9. Reward and punishment after death; 10. The coming of the Messiah, the Son of David. In other observances the Karaites differ in several particulars from the Rabbinites. Their synagogues are more thoroughly Oriental and have the appearance of Mohammedan mosques. Their prayers are largely made up of selections from the Bible, and of hymns composed by Aaron ben Elijah. Before entering the synagogue they remove their shoes. They do not wear phylacteries nor celebrate the festival of Hanukkah. They observe the Sabbath rest with great strictness; though in some places fire and light are now permitted on that day. Pentecost is celebrated on the day after the Sabbath; and the 10th of Ab is observed as the anniversary of the destruction of the temple. The prohibitive degrees of marriage have been greatly extended.

It should also be said that during its early development Karaism reacted favorably upon Jewish learning in the East. The Rabbinite Jews were forced to meet their opponents upon their own ground. Karaite exegesis led the Rabbinite Jews to a deeper study of the Bible and of the Hebrew language. The philosophic presentment of their theology necessitated an equally philosophic presentment on the part of the Rabbinites, and the rivalry they engendered was useful in turning the other Jews to a closer and more scientific examination of their own position.

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11. **Judaism—Anti-Semitism.**—A term which has received a special signification of its own as the situation of the Jews in Germany, France, Russia, and elsewhere, in recent decades, has become more or less acute, means opposition to the Jews and their religion for various reasons. Such enmity, springing from many causes, has been a persistent factor in history from the era of the Pharoahs. Its manifestations assume dif-

ferent forms according to local or national conditions — from the crassest prejudice due to ignorance to more intense odium due to envy, and often arousing long-continued persecutions or popular outbreaks. While it is unjust to call every criticism of the Jews and Judaism as anti-Semitic—racial and religious peculiarities afford a fair field for the critic or investigator, who is not always to be termed an enemy because he discerns flaws or weaknesses — Anti-Semitism is wholly unfriendly, usually unjust, exaggerates minor defects into fundamental vices, employs faulty generalizations, and is careless how it arouses to strife and bloodshed, so keen and ruthless in pursuit of its quarry. History and literature abound in antipathies to nation and sect, from which, in Europe, Roman Catholic and Protestant, Methodist and Quaker alike have suffered, and which have crystallized themselves in words like barbarian and heathen, mummery and jesuitical. Anti-Semitism, however, in its intense and most characteristic form, is more than an antipathy — it is a relentless hunt to the death, which denying social and political equality to the Jew, would brand him as outcast and alien, strip Judaism of every distinguishing excellence, revive for the Jew an exclusive Ghetto or banish him from civilized climes. And this is done in the name of society, religion, and the state. What strength there must be in Judaism to awaken such antagonism! And how superficial the culture that countenances such enmity!

Origin and History.— The word Anti-Semitism owes its origin and present meaning to the ethnical differentiation of the Jews as Semites from the Aryan or Indo-European. Ethnology is made to prove that the racial traits of the Jews as Semites render them inferior and that they are legitimate objects of aversion. The theory as well as the present unfriendly signification of the term are of recent date, appearing in Germany about 1880, when the movement against the Jew and Judaism began to gain headway and spread elsewhere, as the era of persecution assumed a deadly phase in Russia. Decades earlier the word Semitism had been employed in a purely academic sense by philologists, but soon the theory of Semitic inferiority was to be asserted first by Lassen (1800–76), who ascribed to the Semite rather unflattering traits, such as intellectual sharpness, exclusiveness, and selfishness, in marked contrast to «the harmony of psychical forces which distinguishes the Aryan.» It was reserved for Ernest Renan (1823–92) to emphasize still more strongly Semitic inferiority: he went so far as to assert that «science and philosophy were foreign» to the Semites. But if this opinion was not sufficient, he added in his ‹Studies of Religious History› various other generalizations — a line in which he was quite proficient — to the effect that the Semites did not comprehend civilization in the modern sense; they were intolerant as the logical result of being monotheists, bequeathing their bigotry to the Aryans, who were naturally broader, while the Jews can attribute the hatred which has been extended to them for so many centuries to their glowing anticipation of future triumph. There can be little doubt that Renan's views had marked influence upon the growth of a hostile anti-Semitic spirit, although he urged his readers to be careful in their interpretation of his opinions. He stated expressly that Jews to-day were not Semites, but moderns, and he denied in his ‹Judaism as Race and Religion› that there was such a thing as a Jewish race. The extensive literature of anti-Semitism shows throughout Renan's unconscious coloring. It was but a short path from him to von Hellwald, who called the Jew a «cancer,» to Goldwin Smith, who termed him a «parasite,» and to Stewart Chamberlain, the latest and keenest in his attitude of aversion.

In Ancient Authors.— The curious persistence of anti-Semitism in modern cultured writers and the faulty generalizations which they do not hesitate to proclaim as scientific truth, this finds its parallel in many famous authors of antiquity. Thus Manetho, high priest of the Temple at Heliopolis and court historian under the early Ptolemies, considered the Jews descendants of the Hyksos usurpers and attributed their expulsion from Egypt to sacrilege and irreligion, stigmatizing them at the same time as afflicted with leprosy — and the story was repeated by Chaeremon and Lysimachus, to reappear in Schiller's ‹Mission of Moses.› Diodorus Siculus asserts that the prevalence of a plague in Egypt led to the banishment of foreigners, most of whom entered «the country now called Judaea;» at the same time he vindicates the character of Moses and the traditional religion. Apollonius Molo, a Greek rhetorician who lived at Rome in Cicero's time, pronounces Moses «a conjuror and deceiver;» and his disciple, Cicero, went further in his utterances to show his contempt. There are several passages in his ‹Pro Flacco› which display his animus against a people whose wealth and influence were beginning to be feared. «Their barbarous superstitions must be fought,» he exclaims; they are a nation addicted to «suspicion and slander;» they «display contempt for the Roman power.» Tacitus, the model for historians, repeats the fables of Manetho as to the origin of the Jews and adds that their laws are «hostile to men and calculated to inspire the Jew with hatred and opposition to the rest of mankind»—«the first instruction they receive is to despise the gods, to forswear their country, to forget father, mother, and children.» Horace and Martial could jest at the Jew and his ceremonies, like a modern comic journalist, while Juvenal exercised his wit more than once in the same direction, and Seneca, with all of his philosophic insight, deplores that «this abominable nation» has spread its customs everywhere and «the conquered have given their laws to the conqueror.» Under such teachings from moralists and orators, what wonder that the spirit of persecution was roused in Rome, Antioch, Lybia, and the Greek cities, with its accompanying bloodshed. In this era Christian and Jew were brethren in suffering and despised alike for harboring a «detestable superstition;» and many of the accusations which in after centuries the church hurled against the Jew were now forged against the Christian.

Apion and His Accusations.— It was Apion, an Egyptian teacher of rhetoric at Rome in the reign of Tiberius, who was probably the most violent anti-Semite in his field of his or any day; for his statements as preserved by Josephus in the historian's treatise 'Against Apion,' are modern in their variety and bitterness, while they are as baseless, as Josephus succinctly shows. Among his many charges, Apion claimed that the Jews derived the name Sabbath from the circumstance that they were obliged to rest after journeying for six days because they were afflicted with a painful disease which the Egyptians called Sabbatosis. He asserts that they put up a head of an ass in the Holy of Holies, that they caught a Greek annually, and fattened him for sacrifice. He accuses them of having produced «no wonderful men, not any inventors of arts or any eminent for wisdom.» He states that «they swear by God to bear no good will to any foreigner, especially to Egyptians, while they have no just laws of their own and do not worship God as they ought.» One of the replies made by Josephus can be given here. If the Jews, said the historian, had set up the head of an ass, it would not have been more contemptible than some of the animals, such as the goat, which the Egyptian deify. But the statement, he continued, is an untruth, which Apion would not have told had he not the heart of an ass or the impudence of a dog.

In the Dispersion.—The spirit of antagonism to the Jew which was displayed after the final destruction of Jerusalem and the gradual dispersion of the Jews, East and West, can hardly be called anti-Semitism, for it was really anti-Judaism and directed against the Jew and his religion. It was practically a religious, not a social or political crusade, in direct contrast to the modern movement which ostensibly claims to be without any religious motive and to work purely for the welfare of society and the state. Under the Romans there was often some approach to a legal residence, but the attitude of the church toward Jews and heretics was decisive. While here and there a kindly voice was heard and occasionally priest and prince championed them, the ages until the French Revolution were periods of enforced seclusion and repressive legislation. With the iron power of religion and the state checking them at every step, the Jews became a special class, awakening to new life and vigor for a few centuries under the Moslem, but liable at any moment to be at the mercy of the mob in Mohammedan Spain or Christian Europe. Being thus the weaker class both in numbers and prestige, upon whom insult could be heaped with impunity, the morale of the Jews was not to be improved by the policy which herded them in the Ghetto and restricted them from ordinary avocations. Most of the faults which their enemies discerned in them were acquired, not hereditary. The famous dramatist who to suit the London temper of his day consciously transposed the characters in the original story at the basis of 'The Merchant of Venice' and branded the Jew as a Shylock for all time, illustrates the attitude of those centuries. Springing from these conditions, came the conception of a Jew as a kind of Barabbas, in Marlowe's play, who poisons wells, murders children, commits all kinds of wickedness in his hatred of the Christian. In the heated atmosphere of the Dark and Middle Ages no accusation was too vile to fasten on the Jew. Hence their responsibility for the «Black Death,» a plague which ravaged Europe between 1348 and 1351. A myth arose especially in Germany, that the disease sprang from the wells which the Jews had poisoned. Alleged confessions were sent from town to town and the maddened populace wreaked vengeance, forgetting that the Jews were suffering as much as their neighbors from the pestilence. In nearly every town in Germany, exclusive of Austria, about 350 in all, the Jewish communities were attacked, only three large Jewish centres by the end of the 15th century being left in that land. A further source of odium was the Jewish usurer. Owing to the canon law forbidding loans on money, the money trade of Western Europe fell into the hands of the Jews in the early Middle Ages, who charged high interest, first because there was little if any competition, and secondly because of the insecure tenure of their property,— emperors, prelates, and powerful individuals could not be depended upon long to remain under a burden of debt to heretics. However, Christian evasions of the canon law became frequent and Jews were soon despoiled of their capital; and as reputable trades, professions, and agriculture were denied them, they were forced into humbler occupations, but the taint of the money-lender has clung to them even in later days when money-lending has become the vital international pursuit. Undoubtedly it was imprudent for them to lend on interest, but they had no other resource and one can understand the sense of power it gave to a despoiled race, for which they had to pay dearly in exactions and expulsions from land to land until England was closed to them for centuries.

The Blood Accusation.— Among the many popular accusations which have been fostered upon the Jew, none is more revolting than the charge of using Christian blood for ritual purposes, notably in connection with the Passover. The origin of such a myth is still unknown, but the frequency of its occurrence the past seven centuries is not to be denied. When in our day Christion missionaries in China can be accused by the populace of slaying Chinese children for church purposes, one may faintly understand how such accusations originate in ignorance and fanaticism in any age or clime. But the slander seems doubly incredible when one realizes that there is no Jewish ritual which prescribes the use of human blood. It is needless in this connection to trace the history of the blood-accusation which appears first to have been alleged against the Jews in 1144, in the case of St. William of Norwich, although the first literary mention dates from the middle of the 13th century, in a work of Thomas Cantimpré. The Norwich case was thus developed. A convert — and it must be confessed that converts were not averse to make mischief — said that the Jews annually sacrificed a Christian child at Passover, and when the boy was missing, the Jews were accused. It seems, however, that during an attack of catalepsy he had been buried alive by his relatives. No Jew was tried or punished in Norwich, but the rumor led to charges against the Jews in other English towns. A list of similar incidents from the 13th to the 16th centuries could be given. Chaucer has mentioned the story of Little Hugh of Lincoln — a lad of eight years, whose sudden disappearance was laid at the door of the Jews with tragic consequences. Most remarkable, however, is the survival of such a myth in the 19th century, cases having occurred in 1882 (Hungary), 1891 (Corfu and Prussia), 1899–1900 (Bohemia and Prussia), and of course without a shadow of proof as to the alleged crime. It is of interest to note that in recent years August Rohling of Prague, who was most conspicuous in his efforts to prove the truth of the blood-accusation, was completely refuted by a Christion theologian of distinction — Professor Strack in his scholarly book ‹Das Blut.› Christian divines have protested against the charge, which has received the condemnation of many Popes and the sanction of none. Yet, such is the persistence of the anti-Semitic spirit, the accusation may reappear at any time in Eastern Europe.

Recent Movements.— In long-continued attempts to prevent the complete emancipation of the Jews in German about the middle of the 19th century there was ample opportunity for anti-Semitism to show its hand. Prominent leaders in politics, literature and the church alike advocated the denial to the Jews of civil and political rights so long as they remained Jews. The ideals of the French Revolution had been forgotten. When the unwholesome era of reaction had passed and liberalism became the nation's rallying cry, the clerical party scenting danger to absolutism began anew a crusade against the Jews as the cause of every evil, the prominence of Jewish members of the Reichstag like Ludwig Bamberger and Edward Lasker arousing fresh hatred. Hence arose anti-Semitism both in German and Austria as a distinct political program. In 1878 a Christian Socialist party, under Court Chaplain Adolf Stoecker, was formed, whose avowed purpose was anti-Jewish. “The Jews are our misfortune,” said Prof. Heinrich von Treitschke (1834–96) in 1880 and for two decades the anti-Jewish agitation continued, it being made an issue in all elections and scattered riots took place, while books and pamphlets antagonistic to the Jews were published in the chief cities. It was even proposed to exclude Jews from public office, but that attempt was not successful. Bismarck acted as a check while in office and his influence led to Stoecker's retirement as court chaplain, while powerless or unwilling to prevent the growth of anti-Semitism. Renewed agitation appeared when Bismarck ceased to hold office (20 March 1890), and Ahlwardt began his attacks on the Löwe firm with their “Judenflinten” which were to be furnished the German army to ensure its defeat by the French; but his animosity was without ultimate effect, and he passed into obscurity like so many of his class, Henrici, Förster, Stoecker, and the rest. In 1891 the “Verein zur Abwehr des Antisemitismus,” a society to combat the attacks of the anti-Semites, was formed by prominent German authors and scientists, showing the growing sympathy of the better classes, and little by little the agitation appears to have lost much of its virus, with the disappearance, often through imprisonment for various crimes, of notorious leaders. In Austria George von Schönerer was the first to begin a distinct anti-Semitic movement (1882), whose adherents were elected in steadily greater numbers to the Reichsrath and the provincial Diets. To Luegar, mayor of Vienna, the party is indebted for its turbulent character, although of late years its excesses have been less marked. In France, Edouard Drumont's book, ‹La France Juive› (1886) was the beginning of an open anti-Semitic campaign which grew into the Dreyfus affair nine years later, as books and pamphlets were published, and Dumont's paper ‹La Libre Parole› became widely read. The story of Captian Dreyfus shows to what length the anti-Semites will go; if Clericalism inspired their efforts the present dissolution of religious orders in France tells its own moral. In Russia anti-Semitism has produced since 1881 a succession of disorders in many cities which culminated in the excesses of Kishenef and elsewhere (1903) that have aroused the world to indignation. It remains to be seen if mediæval restrictions against the Jews will be abolished partly or wholly now that Russia is apparently on the road to Constitutional government. In Roumania, despite the provision of the Berlin Congress (1878) guaranteeing civil and religious liberty to all citizens, the Jews continued to receive harsh treatment, became victims of popular outbreaks; were restricted in trade and profession, and debarred from public schools. As the natural result of such treatment the past two decades have witnessed an increasing emigration from Russia and Roumania to all portions of the globe, the great majority settling in the United States.

Future of Anti-Semitism — In the diffusion of education and the gradual recognition of the truth that nations and creeds are partners in the great work of human betterment, one may expect a general disappearance of antipathies and animosities as the borderland of the religions is broadening and the era of co-operation and confederation is less distant than at any epoch in the world's history. This reconciliation is not to be hurried — one must be satisfied to think that the agreements among people and creeds are more numerous than the diversities which drive them apart. And the Jew will do his share to promote good will among men, as his race and religion are universalized and memories of persecution and prejudice no longer promote disharmony or exclusiveness. There will be no Jewish problem when civil and religious liberty is everywhere acknowledged and class privileges have ceased to exist in the growing consciousness of human brotherhood.

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12. Judaism — Zionism — *Past and Present.* The first Basel Congress (1897) declared that the movement it organized «aims at establishing for the Jewish people a *publicly* and *legally assured* home in Palestine;» but modern Zionism is too complex to be defined by any formula. It is a broad stream wherein flow, but partially commingled, many currents. The first in point of time is the expectation founded on biblical prophecy and its traditional interpretation, that God’s purpose concerning His people can only be fulfilled by regathering the dispersed of Judah and Israel in the land of their fathers; and that this will be brought about through a divinely-commissioned prince of the House of David — hence an «anointed one» (Messiah). This hope is expressed in many prayers of the established synagogue liturgy and even in the individual or collective «grace after meat.» In those countries and times, however, wherein Jews have enjoyed a practical civic equality with their neighbors, the Messianic expectation has been for many centuries and with the vast majority rather an article of faith and a pious hope of the indefinite future, than a matter of immediate concern. Everywhere, Jews have exhibited the most ardent attachment to the land of their birth or adoption and have rendered it faithful and patriotic service. In Germany the 19th century witnessed a conference of Rabbis (Frankfort, 1845) who faithfully represented a large body of «Reform Jews» resolving to expunge from the prayer-book «the petitions for a return to the land of our forefathers and the restoration of the Jewish State;» while in the United States this example was not only followed by two rabbinical conferences (Philadelphia, 1869, Pittsburg, 1885), but bettered by the declarations of preachers and orators that «America was [their] Palestine and Washington [their] Jerusalem.» In those countries wherein the Jews have been continuously oppressed, as Russia, Roumania, Galicia, Morocco, the «dream» of re-establishment in the Holy Land as a priestly nation, under the direct protection of Providence, has naturally been more prolonged and more intense; and a strong intelligent minority — not all of whom may be characterized as «enthusiasts» — has nurtured the same hope, even in free countries. The belief that restoration was to be signalized, as of old, by some unmistakable sign of miraculous intervention, necessarily tended to discourage human initiative. Hence the many attempts, fantastic, tragic, or simply premature, of pretended Messiahs (*e.g.* Serene, 729; David Alroy, 1160; Sabbathai Zebi, 1648); of Jewish statesmen in the service of European states (*e.g.* Joseph Nasi, Duke of Naxos, Venice, 1550, Constantinople, 1565); or of benevolent Jews of local prominence (*e.g.* Mordecai M. Noah of New York, C. 1820) to establish self-governing Jewish communities in Palestine or elsewhere proved abortive or disastrous. A less ambitious and more frankly philanthropic movement has, however, in recent times, met with a somewhat greater measure of success. In 1870 Charles Netter, acting for the «Alliance Israélite Universelle,» established a farm-school near Jaffe, on land presented by the Sultan (Mikveh Israel) and in 1878 under the influence of Laurence Oliphant, active work in planting Jewish agricultural colonies in Palestine began. Baron Edmond de Rothschild now became interested and gave wise and practical aid. In 1882, and subsequently, many settlements arose. This was brought about largely through agitation in Germany and, especially, in Russia, by means of various societies which finally took the name of Chovevei Zion («Lovers of Zion»). Stimulated by the Roumanian and Russian persecutions of 1880 and 1881, the movement continued to spread in these and other countries, including England, France, and the United States; and in 1884 a conference was held in which more than 50 societies were represented. This phase of Zionism reached its height in 1890. In 1892–1894, perhaps because the immigrants were so largely of Russian nativity as to raise the question of a possible complication with a persistent enemy, the Sultan’s government restricted the entry of foreign Jews into Palestine, and the colonization movement received a temporary check, only recently removed. Meanwhile two other currents, always more or less active, began to flow strongly; one of them, turbulently. The latter third of the 19th century was marked in Europe by the recrudescence of separatist and nationalist sentiment. The French Revolution had made «universal brotherhood» a watchword, and this influence persisted until after the failure of the revolutions of ’48 in Germany. The Franco-Prussian War (1870) and the Russo-Turkish War (1878) marked the returning intensification of racial and national hatreds. To this a false philology and a falser anthropology brought its pseudo-scientific jargon of «Aryan,» «Semite,» and «Hamite.» Out of the whirlpool that arose issued the two streams that have most influenced modern Zionism — renascent Jewish Nationalism — a *Volk Geist* no longer religious in motive, and anti-Semitism. George Eliot in ‘Daniel Deronda’ (1876) described the first; the resurrection of obsolete oppressive laws and government-incited massacres in Russia (1880 to 1906) typify the last. (See Judaism — Anti-Semitism.) In Germany, France, and Austria Jews were not killed or subjected to legal disabilities, but they were harassed and restricted in social and professional life until finally the high-water mark of this form of persecution was reached in the «Dreyfus Affair» in France (1894-1906).

The Herzl Movement.— It may have been his observation and experience while sojourning in Paris in 1895 as correspondent of the *Neue Freie Presse* of Vienna, that led Dr. Theodor Herzl (b. 1860, d. 1904), an Austrian playwright and feuilletonist not before identified with Jewish life or affairs, to write his 'Judenstaat'; an attempt to prove that the «Jewish question» can only be solved by the establishment of a Jewish State. At first intended only for private circulation, this pamphlet was later published broadcast (1896) in German, English, French, Hebrew, and Yiddish. Assuming that anti-Semitism is uneradicable; that whatever may be true as to individual Jews here and there, the Jews as a whole are not welcomed into the social life around them; and that true assimilation is possible only by means of intermarriage — which means disappearance — Herzl proposes an organized effort to obtain a territory wherein Jews may build up a State of their own. The underlying motive being political and economic, not religious, one part of the globe will serve as well as another, and he at first suggested that Argentina might be available. Later, he was brought to realize the sentimental importance of the Holy Land, and now for the first time his proposition becomes in truth Zionistic. In some of its details it was, indeed, anticipated by Benedetto Mussolino (1870), an Italian Christian, who had vainly journeyed to London in the attempt to interest Lord Palmerston and Lord Rothschild in his project. In both plans Turkish suzerainty is to be acknowledged and the holy places of other faiths made extra-territorial. For the accomplishment of its object the 'Judenstaat' suggests first, a «Society of Jews» to do the preliminary scientific and political work (since measurably realized in the Zionist organization, especially its «Palestine Committee»); then a chartered «Jewish Company,» similar to the British East India or South African Company, with a capital of £50,000,000 and with headquarters in London (partially realized in the «Jewish Colonial Trust»). In July 1896, Herzl was induced to present his plan in person before representative London Jews. It was received with polite coldness or active hostility — in striking contrast to the enthusiasm evoked from an assemblage of poor Jews in the east end of that city. The difference was typical and prophetic. Indifference or opposition was manifested by the vast majority of prosperous Jews, not only in England but also in Western and Central Europe, and virulently in America.

Spread of the Movement.— The 'Judenstaat' nevertheless exerted an influence in the crystallization of opinion and action among Jews imbued with or susceptible to the nationalist sentiment. More important was the change gradually wrought in the attitude of Herzl himself, who, forced far beyond his primary intention of literary propaganda into the active rôle of leader and organizer of a reawakened people, and brought into contact, as not before, with religious Jews of both orthodox and reform wings, began better to understand both his people and their destiny. His new thought sprang into extemporaneous and epigrammatic utterance when he declared at Basel that «the return to Judaism must precede the return to Zion.» For by this time much support had come from among the «Chovevei Zion» and kindred societies, and an alternative territory to Palestine could not be considered. The Jewish bankers and rich Jews in general continued to be either indifferent or antagonistic to Zionism. Certain orthodox rabbis opposed it as an endeavor to anticipate Providence; Reform rabbis denounced it as an attempt to reverse history. Many sincere thinkers, regarding anti-Semitism as a temporary aberration, regretted the movement as an apparent abandonment of the position won by Jews in countries where their only distinction from fellow citizens is in creed, not in nationality — a position to be stoutly contended for wherever it has not yet been attained.

Herzl was not, however, altogether without the help of Jews of learning and distinction, and among those who early declared in his favor were representatives of the strictest orthodoxy, of the most extreme radicalism, and of the supremest indifferentism to all religion. Sympathy also came from the Gentile world from men eminent in art, literature, statesmanship, and Christian theology. A call was issued for an international convention at Munich, but so great was the opposition of the most influential rabbis and laymen among the Jews of Germany that Basel in Switzerland was chosen instead, and there, on July 29, 30, and 31, 1897, the first Zionist Congress assembled. It was composed of 204 members, most of whom came as private individuals, though a number represented various organizations, especially the «Chovevei Zion» societies, which later became virtually merged into the Zionist body here constituted. This Congress issued the document known as the 'Basel Program,' defining the Zionist aim in the words cited at the head of this article and proposing the following means for its attainment: (1) The promotion of the settlement of Jewish agriculturists, artisans, and tradesmen in Palestine; (2) the federation of all Jews into local or general groups according to the laws of the various countries; (3) the strengthening of the Jewish feeling and consciousness; (4) preparatory steps for the attainment of those government grants which are necessary to the achievement of the Zionist purpose. The scheme of representative organization was formulated, an executive body (Actions Comité) constituted, and steps taken toward the establishment of a «Jewish national fund» and the formation of a banking corporation which should be custodian of the national fund and perform the functions which the 'Judenstaat' had suggested for the «Jewish Company.» «The National fund,» now about $265,000, is derived from the sale of stamps placed upon all official Zionist communications, and upon other correspondence by ardent Zionists; from free-will offerings, and from payments made to inscribe persons and societies in the «Golden Book.» It is to be used exclusively for the purchase of land in Palestine, and although originally intended not to be touched until it had reached $1,000,000 has recently been drawn upon for such purposes. The Zionist bank, officially known as the Jewish Colonial Trust, Limited, of London, was chartered under the laws of Great Britain, "to promote, develop, work, and carry on colonization schemes in the East, by preference in Palestine and Syria, or in any other part of the world." Its authorized capital stock is £2,000,000 in £1 shares, of which somewhat less than £325,000 has been paid in, chiefly by the joint efforts of the very poor and upon an instalment plan. Control is lodged in 100 "founders' shares," which must be held by members of the "council of administration," who must in turn be chosen from the "Grosses Actions Comité" (Greater Executive Committee) of the Zionist organization. In 1902 a subsidiary corporation, "The Anglo-Palestine Company" was formed and a branch opened in Jaffe. Quite recently branches have been opened in Jerusalem and in Beïrut. Through the Colonial Trust the Zionist organization hopes to obtain concessions of territory, and to promote therein agriculture, industry, and commerce. Meanwhile it is the custodian and administrator of the Jewish National Fund and devotes its capital to the encouragement and development of private enterprise on the part of the settlers in Palestine. In 1906, its statutes were so altered as to restrict its operations to Palestine and adjacent regions.

Work of the Congresses.— The second and third congresses were held at Basel in 1898 and 1899 respectively. Organization had now so far progressed that only delegates were permitted to vote. A proposition to acquire Cyprus was rejected. With a view of making propaganda the fourth congress (1900) was held in London; the fifth returned to Basel and decided that subsequent assemblages should be biennial. Herzl necessarily became president of all congresses held during his lifetime and chairman of the smaller executive committee which had its seat in Vienna. He practically gave up his life to the work, except in so far as his refusal of salary made it necessary to continue his literary labors for a livelihood. He had interviews with ministers and crowned heads, including the Sultan and Kaiser Wilhelm II., from both of whom he received sympathetic expressions, but he was never able to report more than "progress" to the congress. Negotiations with representatives of the Egyptian and English governments for a concession of land at Al'Arish in the Sinaitic peninsula (1898) failed because of the necessity for irrigation, as diversion of any part of the Nile water could not be permitted. Herzl continued, however, to keep in touch with the British government and at the sixth Zionist congress held in Basel, 23 to 28 Aug. 1903, was enabled to make public the willingness of Lord Lansdowne "to entertain favorably proposals" from the Jewish Colonial Trust, Limited, "for the establishment of a Jewish colony or settlement" in British East Africa; with the "appointment of a Jewish official as the chief of the local administration, . . . and permission to the colony to have a free hand in municipal legislation . . . such local autonomy being conditioned upon the right of His [Britannic] Majesty's government to exercise general control." The proposition to send a commission to examine the country offered and to report to a subsequent special session of the congress was bitterly opposed by the Russian delegates, who on its adoption withdrew, and only Herzl's personal pleading and the agreement that no funds of the Zionist organization should be expended by the Commission of Inquiry prevailed upon them to return to subsequent sittings. Much delay was experienced in forming and despatching the Commission; opposition becoming meanwhile more and more pronounced in Russia, spreading to Germany, England, and America. Simultaneously with the sixth Basel Congress, the first Jewish Congress had met in Palestine in the colony Zikron Jacob, under the presidency of M. Ussischkin of Ekaterinoslav, apparently never proceeding further. Ussischkin, however, organized an aggressive movement within the Zionist organization to discredit and defeat the East African project. Others proceeded with greater considerateness but no less determination. A conference of Russian members of the "Greater Actions Comité," held at Kharkof in October 1903, demanded the abandonment of all schemes of "Territorialism"; by which term the movement for Jewish State-building outside of Palestine now became known. Meanwhile the East African Commission had reported to the Actions Comité 16 May 1904. The report was not unanimous, but two of the three members agreed that the territory offered by the British Government (the "Ghas Ngishu plateau") was insufficient for a large number of Jewish settlers, and was fitted for grazing rather than agriculture. At the sixth congress Herzl had exhibited signs of physical weakness. The worry consequent upon the dissensions that followed this congress completed what nine years of overwork and anxiety had begun, and on 3 July 1904 he died after a few days of acute illness. The seventh congress (Basel 1905) attended by more than 600 delegates, was controlled by the followers of Ussischkin. It voted overwhelmingly to "reject either as an end or as a means colonizing activity outside Palestine and adjacent lands," and that "the Zionist organization shall not engage itself further with the proposal of the British Government." As a result, the Territorialist delegates, under the leadership of Israel Zangwill (q.v.), met upon the adjournment of the congress and organized the "Jewish Territorial Organization" (Ito), which has since perfected an international organization, aiming to obtain wherever feasible, "a publicly, legally assured place of settlement upon an autonomous basis" for those Jews who are persecuted in the countries wherein they now live.

Many anti-Zionists and non-Zionists have joined the Ito, and many who remain Zionists, particularly in America, have united likewise with the new organization. It has recently appointed a "Geographical Commission" embracing such men as Lord Rothschild and Hon. Oscar S. Straus.

Present Status.— The number of Zionist societies throughout the world runs well into the thousands. They are composed of members subscribing to the Basel program and paying "one shekel" (25 cents) yearly into the general fund, with such local dues as may be exacted. For every 200 shekel-payers one delegate may be sent to the congress. The societies in various countries are aggregated more or less completely into federations. The present head of the executive committee and president of the Jewish Colonial Trust is David Wolffsohn of Cologne, to which city the headquarters has been transferred. Here also is now published 'Die Welt,' the Zionist organ founded by Herzl, and here will meet the «yearly conferences» of the Larger Executive Committee, which will probably take the place of frequent congresses. One of the most promising features in recent reorganization is the «Palestine Committee,» headed by Prof. Otto Warburg of Berlin, which systematically studies industrial and other conditions in Palestine. There are many parties in present-day Zionism — some being religious, others non-religious or even irreligious, and having various economic aims, such as the «Po'ale Zion,» a frankly proletarian or even socialistic organization. The «Ziyone Zionists,» probably representing the old «Chovevei Zion,» demand immediate work in Palestine. The «Political Zionists,» headed by Nordau and Wolffsohn and embracing Herzl's closest adherents, insist on diplomatic action, while the «Practical Political Zionists,» regarding autonomy as of less importance than legal authorization, favor systematic colonization in Palestine and neighboring lands under the best attainable assurances. «Moral Zionism» pleads for a national spiritual rather than a political centre in Palestine. Doubtless in time the fusion of these varied elements will lead to useful results. Meanwhile the Jewish population of Palestine is increasing with rapidly developing activites, agricultural, industrial, commercial, educational; while Zionism has brought closer together the Jews of different lands; stimulated anew the study of Hebrew literature and Jewish history and led to a reexamination and increasingly better understanding of the fundamentals, ethnic, religious and economic, of Judaism.

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13. **Judaism—Spirit of Rabbinic Legislation.** In Deut. iv. 2, Israel was told: «Ye shall not add aught to the word that I command you, nor shall ye diminish aught therefrom.» In the course of time, however, many new laws unavoidably crept in, along with new outward conditions, habits of life, tastes and beliefs; aside from relapses towards the old Babylonian statutes, forming a kind of common law for all Semitic Asia.

The Law-making Power.— For lack of an elective body wielding undisputed authority, with the early disuse of the sovereign assemblies of all Israel known from the book of Judges, the law-making power rested only with the learned men, who were wont to interpret and apply the existing laws, that is with the judges. These sat not only in civil and criminal cases but also passed on all questions of morals, ritual, and doctrine, for state and church were one. After the death of Herod, it seems, any man learned in the law began to be called «rabbi,» or «my master»; but the rabbi's office and spirit fell to Ezra and his companions. The leading scribes from their time down to Simeon the Just were comprised under the vague name of the «Great Synagogue.» Of their names and activity hardly anything is known with certainty; but there were ascribed to them these maxims (Mishnah Aboth, i. 1): 'Be slow in judgment, raise up many disciples; make a fence around the law.' The last maxim led to many additions to the divine commands; for the rabbis narrowly construed the verse forbidding additions or diminutions thus: Whenever the law names so and so many things to be used for one purpose; for instance, four paragraphs in the phylactery (Ex. xiii. 9, 16; Deut. vi. 8; xiii. 18), you must not use one more nor one less than this number. The grouping of the three maxims shows that the same men were judges, religious teachers, and law-makers.

Making of New Laws.— New laws were worked out mainly by a bold interpretation of the Torah (Pentateuch), which when accepted by the people became part of the traditions or of the oral law. This was carried down the ages by word of mouth from teacher to pupil or in the remembrance of judicial decisions until towards the beginning of the third century it was written down in the Mishnah, the commentaries on Exodus and Leviticus and in the Aramaic version (Targum) of Onkelos. The Mishnah in turn became the text of the later discussions of the Talmud (see THE TALMUD), and this whole mass of religious and juridical lore proved the starting point for the rabbis of later ages. Many of the new rules were avowed innovations, bearing the name of «Gezeroth» and of «Taqqanoth» (prohibitions and institutions).

Scope and Method.— The drift of rabbinical legislation ran always along four lines: the desire to set up a «fence» or outworks around the law; to render it more humane, fitted for a higher culture; to create a more rational and spiritual worship of God than that of the sacrificial altar; in times much later than the Talmud to adapt the Jews to the demands of their non-Jewish neighbors. It is to be understood, however, that the Talmud itself lays the groundwork for such concessions. The «fence» was sometimes thrown around a moral prohibition, such as that against receiving usury from fellow-Israelites; but it was mainly directed to ritual observances, such as Sabbath rest and abstention from forbidden foods. The rabbis frankly declared that certain acts, if done on the Sabbath, constitute "work" in the scriptural meaning, while other acts, although not capitally sinful as work, should be avoided, as they would lead to sinful work. Thus to bake or cook any food on the Sabbath is a scriptural sin; to eat anything on the Sabbath cooked or baked by a Jew, or even by a non-Jew at a Jew's request, is forbidden by the scribes. Again, the law forbids the eating of blood, but adds, "Thou shalt pour it on the earth like water"; which indicates that only blood which can be poured out, not blood which can be drawn from the flesh by artificial means, is scripturally forbidden. Yet the rabbis prescribed a course of salting and watering the flesh of mammals and fowl, although these had been bled to death in the act of slaughtering. They feared that the taste of the inhering blood once acquired might tempt the people to eat also the flowing blood. In like manner, the prohibition of leavened food on the Passover was surrounded by many minute rules which were avowedly not demanded by the true meaning of the text: for example, that against the use of "Median strong drink," that is a fermented infusion of barley. On the strength of the command (Num. xxxi. 23) for cleansing the captured utensils of the Midianites the use of dishes which have been employed for forbidden food, unless they have first been appropriately cleansed, is prohibited. Earthenware thus defiled cannot be cleansed, but must not be used at all. Thus the dietary laws of the Jews address themselves as much to the kitchen utensils as to the stomach. The thrice written words: "Thou shalt not seethe the kid in his mother's milk" were construed "thou shalt not cook, eat or use flesh in milk." While admitting that fowl's flesh is not within this wider scope of the prohibition, as its mother gives no milk, the rabbis nevertheless told the faithful that the flesh of fowl must also be kept out of touch with milk or cheese. The task to keep flesh and milk and the dishes for each apart is quite an obsession to observant Jewish housewives. The desire to bring humanity into the law and the ministrations of justice was shown by construing "eye for eye, tooth for tooth," etc., into a rule under which the assailant must pay in money both for the loss of earning capacity and for the pain inflicted; while damages for the affront were deduced from Deut. xxv. 12, which hard-sounding verse was held to signify this and nothing more. The Mishnah may have been right in its construction of "eye for eye," but to change the amputation of a woman's hand into a rule that awards a solace in cash for the disgrace of a whipping, is judicial legislation of the boldest type; but it was evidently borne out by ancient custom running back to the code of King Hammurabi. In the cause of mercy the rabbis taught that a man condemned to stoning should be thrown headforemost on a large stone; one condemned to be burnt should have hot lead poured into his throat at the moment of being strangled. The penalty of death or of forty stripes (at least for ritual offenses) was to be adjudged only when the culprit had been previously warned of the sinfulness of his act; and criminal proceedings were beset with such technicalities as to render conviction almost impossible. The position of women, both as wives and daughters, was much more favorable, the power of the husband and father much more restricted, than if the text of the Pentateuch alone had been regarded. Thus at the age of twelve years and a half a girl was termed "mature" and thenceforward freed from the father's control. The law for maintaining and endowing orphan daughters put them in a majority of cases in a more favorable position than the sons and heirs.

Spiritual Growth — The returned Babylonian exiles naturally craved a more spiritual mode of worship than that of bloody sacrifices. In the land of their captivity they had worshipped God without an altar. King Josiah's reform restricting all offerings to one chosen place had taken root. The farmers of Judea could bring or even see a sacrifice but rarely; they could fulfil Hosea's prediction: "We shall make good the bullocks with our lips." Still there was the temple with its altars of incense and sacrifice; there was the caste of the "Cohanim" claiming descent from Aaron, alone qualified to minister and partly supported by a tribute paid in kind ("Terumah"), which might be eaten only in "levitical cleanness" by them and their households. Then Ezra, although of the priestly caste, and his associates and successors of the Great Synagogue, began building up the liturgy which in its outlines is used still by the Jews of our day. Its main elements are: the reading of the Shema '("Hear O Israel"), which is Deut. iv. 4–9, xi. 13–21, and the last five verses of Num. xv.; the former two passages inculcating belief in God's unity and in national reward and punishment, demand "thou shalt speak of them when thou liest down and when thou risest"; the latter to commemorate briefly the liberation from Egypt. When "thou liest down and risest" was interpreted to mean at even and morning tide, thus enabling many to join in worship. Among the benedictions drawn up to precede these readings one was written to combat three forms of false belief. It blesses the Lord "who formeth light and createth darkness," in protest against Persian dualism; it asserts that He renews on each day the work of creation, in opposition to a godless philosophy; it names Him as the maker of sun, moon and stars to rebuke those who worshipped the luminaries as gods. The other chief element is the prayer proper, modified for Sabbath, festivals, new moons and fasts, spoken in standing posture twice daily, morning and afternoon; a third recital in the night service was made obligatory only by the efforts of the patriarch Gamaliel about 100 A.D. A grace after meals was elaborated, based on the command in Dent. ix. 1: "thou shalt bless the Lord thy God for the goodly land, etc."; and other home devotions for hallowing Sabbaths and festivals at the evening meal, to denote the return of work time, special services for Passover night, and for many other domestic occasions, were prepared. To the duty of reciting the liturgy was added that of hearing at stated times — Sabbaths, festivals, Mondays and Thursdays — the written Law read in public. Nehemiah's wooden turret (viii.) is the pattern for the platform from which the scroll of the law is read today, as Ezra read it to men, women and children assembled around him. Later on lessons from the prophets were added; in the days of Jesus it had become customary to preach on a text from this lesson. Thus while sacrifices went on in the temple, the synagogue (see SYNAGOGUE) was ready in and outside of the holy land whenever the Israelites met, to satisfy their needs with common exercises — confession, praise, prayer, the study of God's law, comfort from the prophets, monition to faith and good works. When the temple fell, the synagogue had almost supplanted it by greater usefulness. The Pharisees (see JEWISH SECTS), or «Haberim,» companions as they called themselves, had already taught the people that learning in the written law and in the traditions was weightier than priestly descent; as the Mishnah bluntly puts it: an adulterine bastard, if a disciple of the sages, is of more importance than an unlearned high priest. The rabbis of the Mishnah and Talmud and all their successors in the rabbinical office have been either Pharisees or the spiritual descendants of the Pharisaic party, which represented the main current of Jewish thought.

Influenced by Conditions.— The rules comprised under the name of the «ban of Rabbenu Gershom» (Rabbi Gershom ben Judah, b. at Metz 960; d. at Mayence 1040), form the best illustration of a principle proclaimed by the rabbis and accepted by the Jewish people as a concession to the nations among whom they dwell. The date and place of the synod which issued this «ban» is rather uncertain; the latest researches fix it at about the year 1000 and at Mayence. It was pronounced against Jews living in Christian countries, and accepted by those alone, who should be married to more than one wife at a time, or who should divorce a wife (except for notorious adultery) without her consent, or who should put obstacles in the way of one apostatizing under fear of death when he tried to return to the fold. But this decree of comparatively late date is only the outcome of the principle declared by Samuel at Nehardea (about 235 A. D.): «The statute of the kingdom is law»; that is, when the law of a country does not demand from the Jew anything contrary to the law of God, he should obey the law of the country in which he lives.

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14. Judaism — A Century of Emancipation. Up to the close of the 18th century the Jews had no political or civil rights anywhere. The only serious attempt at remedying this state of affairs before that time was made in England in 1753, when Parliament passed the Jews' Emancipation Bill, but so great was the outcry raised throughout the country that it was immediately repealed. In Germany a kindlier spirit had arisen in the latter half of the 18th century, the era of enlightenment, notably through the influence of Moses Mendelssohn (q.v.). Lessing's friendship had resulted in 'Nathan the Wise', and another friend of the «Jewish Socrates», Christian Wilhelm von Dohm, made the first extended plea for the political emancipation of the Jews in his work 'On the Civil Improvement of the Jews' (1781). In 1782 the Emperor Joseph of Austria issued the famous Toleration Edict; its object was not the political but rather the educational emancipation of the Jews; schools were established in which other branches than the Hebrew, the only subject of instruction then offered to Jewish children, were taught. After Mendelssohn's death the French orator and statesman Mirabeau (q.v.) published a book entitled 'Moses Mendelssohn and Political Reform' (London 1787), in which he urged the cause of the Jews.

France.— The country in which these seeds first bore fruit was France. A year before the French Revolution the Royal Society of Sciences and Arts of Metz offered a prize for the best essay on the subject 'What are the best means to make the Jews happier and more useful in France?' Nine were offered in competition for the prize which was awarded jointly to three contestants, one of whom was the Abbé Gregoire, to whose efforts as a member of the National Assembly the passing of the bill on 27 Sept. 1791, granting full rights of citizenship to the Jews of France, was largely due. Some time earlier (23 Jan. 1790) the assembly had voted rights of citizenship to the so-called Portuguese Jews. The status of the Jews also engaged the attention of Napoleon I. In 1807 he convened in Paris an assembly of Jewish notabies from the various sections of France and Italy, known as the French Sanhedrin, to which he propounded a number of questions, the sixth of which was «Do the Jews who are natives of France, and are treated as French citizens by the law, look upon France as their fatherland? Do they consider themselves in duty bound to defend it? Are they obliged to obey the laws and satisfy all the demands of the civil code?» These questions were answered with a decided affirmative; the emperor was assured that the Jews looked upon other Frenchmen as their brethren and upon France as their native country. The final step which placed the Jews for once and all on terms of absolute equality with all citizens of other faiths was taken on 13 Nov. 1830, when the minister of education offered a bill providing for the payment of the salaries of the rabbis from the public treasury as was the case with Catholic priests and the Protestant clergy. This became a law 8 Feb. 1831. The last vestige of mediæval discrimination against the Jews disappeared when the Supreme Court abolished the oath «More Judaico» in 1846.

Holland.— In the national convention of the Batavian Republic a bill was passed on 2 Sept. 1796, which declared that «No Jew shall be excluded from rights or advantages which are associated with citizenship in the Batavian Republic and which he may desire to enjoy.» Since then the Jews of Holland have had all political rights; how absolutely their equal standing with other citizens is assured appears from the adoption of a resolution by the Legislature in 1845 giving the widows of rabbis the same pensions as the widows of the Protestant clergy.

Germany.— In none of the many German States was political emancipation definitely granted to the Jews before 1848. True, the Prussian edict of 11 March 1812, issued by Frederick William III. at the instance of his liberal-minded prime minister, Hardenberg, did declare the Jews to be natives and granted them citizenship on the condition of their taking family names and using the German or any other living language in place of the German-Jewish jargon. They were given permission to settle anywhere and to acquire real estate; all special Jew taxes were abolished; in return they had to assume all the obligations of citizenship, notably the payment of taxes and military service. After the Congress of Vienna and the fall of Napoleon a spirit of reaction set in and this edict remained practically a dead letter. Not till 1848 was definite political emancipation granted the Jews of Prussia. Paragraph 4 of the law of 5 Dec. 1848, declared that "All Prussians are equal before the law. Class privileges are not recognized. Public offices are open to all who are capable of filling them," and paragraph 11 stated that "The enjoyment of political rights is independent of religious confession and of membership in any religious association." In that same year the delegates from the various German States in Parliament assembled at Frankfort-on-the-Main formulated a statement of the fundamental rights of the German people. Paragraph 13 was to the effect that "The enjoyment of civil and political rights is to be neither conditioned nor limited by religious belief; neither are political duties to be interfered with by it." The chief champion of the cause of Jewish emancipation in Germany was Gabriel Riesser (1806–1863). Notably during the fourth and fifth decades of the 19th century when this question was prominently before the Legislatures of the various German States was he active. In each one of these States the Jewish question had a varied course, but in time one after the other removed the civil disabilities of the Jews, Hanover and Nassau in 1848, Wurtemburg in 1861, Baden in 1862, Savony in 1868, and Bavaria last of all in 1869.

England.— In England the final struggle for Jewish emancipation began in 1830 and continued till into the 20th century, when in 1903 the religious test at London University was abolished with the appointment of a Jew (Israel Gollancz) to a professorship. In 1829 the bill removing the civil disabilities of the Catholics had passed the Houses of Parliament. The following year Robert Grant introduced a bill in the House of Commons granting the same boon to the Jews; this bill was passed in the Lower House in 1833 but was defeated in the House of Lords; the same fate met the bill in 1834; in fact the bill was passed ten times in the House of Commons and rejected as often in the Upper House before a Jew was finally permitted to take his seat in the House of Commons in 1858. In 1835 a bill was passed called the Sheriffs' Declaration Bill permitting Jews to hold the office of sheriff. In 1836 David Salomons was elected sheriff in London. In 1845 a bill became law whereby Jews were permitted to hold municipal offices. The Religious Opinions' Relief Bill passed in 1846 removed some minor disabilities from Jews and dissenters from the established church. The situation became particularly acute when Lionel de Rothschild was elected to Parliament in 1847 for the City of London. A bill was introduced in December of that year to permit him to take his seat. It took the course of its predecessors of like nature, passing the Commons, and being thrown out by the Lords. The year 1850 witnessed a similar experience. David Salomons who was elected a member for Greenwich in 1851 took the bull by the horns when he persisted in holding his seat although ordered to withdraw by the speaker; he aggravated the offense when he voted "no" on a motion for adjournment made after his refusal to withdraw. The prime minister now ordered that he leave the chamber. Salomons addressed the House and although the members sympathized with him they sustained the prime minister. The case was carried to the courts; the decision was against Salomons on the ground that he had no right to vote before taking the oath prescribed for members of Parliament. He was compelled to pay a fine of £500 for each time he had voted. Three times more, in 1853, 1856, and 1857, the Commons passed the bill, but the Lords persisted in rejecting it; finally in 1858 a bill passed both houses which declared the House of Commons competent on occasion to modify the form of oath by special resolution. Lionel de Rothschild by such special resolution of the House was now permitted to take his seat, omitting from the oath the words "on the true faith of a Christian." In 1860 this concession was made a standing rule and in 1866 the Parliamentary Oaths' Act was passed which omitted the objectionable words altogether and thus removed the discrimination which marked off the Jewish members. The University Test Act was abolished in 1870; in 1885 the first Jew (Baron Nathaniel de Rothschild) became a member of the House of Lords, and in 1890 all religious tests for all offices excepting the kingship itself were removed and all offices were thrown open to all subjects of the realm without distinction of creed.

Austria.— The Toleration Edict of Joseph II. was of no significance as far as the political emancipation of the Jews of that realm was concerned. There was no definite step toward removing civil or political disabilities until the year 1846 when the oath "More Judaico" was abolished; on 25 April 1848 the new Constitution granting free exercise of religion and civil rights irrespective of religious creed was promulgated; five Jewish deputies were elected to the first Parliament which convened after the new Constitution went into force. On 28 Oct. of that same year the special Jewish taxes were abolished. As in a number of German States a period of reaction set in in Austria after the revolutionary fire of 1848 had spent itself, and the Jews suffered from this reactionary spirit; the rights granted them were revoked; when the concordat was signed in 1855 whereby the reins of government fell altogether into the hands of the clerical party the anti-Jewish spirit was accentuated and some mediæval decrees touching the status of the Jews passed at this time. The reactionary regime was in power till July 1859 when the peace of Villafranca was signed. Soon thereafter, in Feb. 1860, some new legislation in reference to the Jews was framed of a more liberal spirit. On 21 Dec. 1867 the new Constitution was issued, which established the political equality of all citizens of the empire regardless of religious faith.

Hungary.— In the other portion of the dual kingdom political emancipation was greatly agitated in the fifth decade of the 19th century. As early however as 1790 the Jews of that land had laid before Leopold II. a petition requesting equality with other citizens; the following year the Diet passed legislation «De Judaeis» affording the Jews protection. At the same time a promise was made that a commission would be appointed to look into the situation and to report measures for the betterment of their condition. A half century passed before any real relief was afforded. The Diet of 1840 passed a law which allowed all Jews of good repute whether native or naturalized to reside anywhere except in mining towns; this law also permitted them to study for the professions and engage in manufacture; however, their right to own real estate was restricted to the cities. In 1846 the toleration tax was abolished. Nowhere did the Jews take so prominent a part in the revolutionary struggle of 1848 as in Hungary. This was appreciated by the party of freedom and in the national assembly of the Hungarian Republic held at Szegedin in 1849 a bill was introduced and passed on 28 July granting the Jews all rights of citizenship. This republic was of very short duration. The Jews enjoyed their newly won rights just two weeks. The overthrow of the Hungarian Republic was followed by the most stringent restrictive measures and the Jews were made to suffer severely for their sympathy with and participation in the revolutionary struggle; a very heavy tax was imposed and every right that had been granted was revoked. The question of Jewish emancipation was not agitated again till 1861 but no remedial legislation was passed till 1867. In December of that year both houses of the Hungarian Parliament passed a bill granting political emancipation. Full emancipation was secured when on 11 May 1896 the Upper House after two previous rejections concurred in the bill passed by the Lower House two years earlier recognizing the Jewish religion as one of the legally acknowledged faiths of the country.

Denmark.— When the deliberative assemblies were established in the various provinces of Denmark by the laws of 28 May 1831 and 15 May 1834, the Jews were granted the right to vote but they were not permitted to stand for election to Parliament; the Constitution adopted 5 June, 1849 granted them full political rights and removed all restrictions.

Belgium.— The Jews were emancipated politically in 1815.

Italy — When Italy passed into the dominion of Napoleon I. the Jews of that country secured the advantages of the liberal French legislation. With the fall of Napoleon and the reinstatement of Pius VII., the Jews were deprived of the liberties they enjoyed under French rule and the old mediæval legislation was re-enforced. This continued till 1848, the revolutionary year, when as everywhere else a brighter day dawned for the Jews of Italy; however, in the reaction which followed they were again forced into mediæval conditions. This continued till 1859 when with the achievement of Italian unity in 1859 the Jews received full political rights; in Rome alone were those withheld but there, too, they were granted upon the downfall of the papacy as a temporal power (Sept. 1870).

United States.— The first amendment to the Constitution announces unequivocally the separation of church and state; all men are equal before the law whatever their religious creed; however a number of the 13 original States which adopted State Constitutions before the Constitution of the United States was framed demanded religious tests of a character to exclude all but believing Christians from holding office. The Constitution of Delaware of 1776 had such a test which was abolished in the amended Constitution of 1792. The Constitution of Massachusetts which had a similar provision was not amended till 1822. According to a constitutional provision of New Jersey only Protestants could hold office; not till 1844 was this article amended; the article of the Constitution of Pennslvania which posted a belief in the Old and New Testaments as prerequisite for office-holders was amended in 1790 to the effect that belief in God and the future state should be the condition; Vermont repealed the religious test of the Constitution of 1777 in 1793; Rhode Island, Connecticut, Virginia, and Georgia required no religious tests in their original Constitutions. In Maryland a long struggle was necessary before the provision of the Constitution of 1778 requiring belief in the Christian religion as a condition for office-holders was abolished. The Jew bill introduced in the Legislature in 1818, whose object was to remove the civil disability of the Jewish citizens of the State was not passed till 1826. The new Constitution adopted in 1851 still contained the original clause accompanied, however, by a special provision for the Jews; the Constitution of 1867 definitely removed all religious tests excepting the belief in the existence of God. The Constitution of North Carolina of 1776 made a belief in the Protestant religion a condition for holding any office of trust or profit; in 1835 the words «Christian religion» were substituted for «Protestant religion»; this emancipated Catholics but not Jews; not till 1868 was this remedied, when only such were declared as being disqualified for office who «shall deny the existence of Almighty God.»

Roumania.— In 1878 the representatives of the powers of Europe assembled at the Congress of Berlin, made the political and civil emancipation of the Jews one of the conditions of the independence of Roumania. These rights have not been granted, and alone among European powers Russia and Roumania refuse to grant their Jewish citizens the rights of men.

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15. Judaism — The Synagogue, Its Origin and Development. See SYNAGOGUE.

16. Judaism — Reformed Judaism in America finds its roots in the beginning of the Reform movement that took place in Germany in the first quarter of the 19th century. The cause of the religious advance of the Jew in Europe was the breaking up of the Ghetto in the latter half of the 18th century. As long as the Jew was excluded from the world, its culture and its opportunities, he found his greatest comfort in his Hebrew studies and in his religion. The latter developed only along its own narrow lines and was protected from every admixture of foreign elements. The Jew, as it were, built a «fence around the law.» When the bars of the Ghetto fell and the Jew was initiated into a new world of thought, language, literature and activity, he found the old religion incongruous with modern life and the rabbinical law too rigid for the new conditions. Reconciliation between the two was difficult. A bitter struggle ensued between the old religion and the new life. A compromise was the only solution. Judaism was equal to the demand. Heartburnings, personalities, domestic schism, often followed in the wake of innovations. The wheels of progress, however, could not be stayed.

Moses Mendelssohn translated parts of the Bible into German and thus opened up a new field of study for the Jew. This was followed by a translation of the Prayer Book into German by David Friedlander. The Talmudic regulations were either openly isolated or interpreted in a liberal spirit. Religious schools for instructing the younger generation in the principles and practices of Judaism as well as in the literature and history of Israel, were instituted and conducted according to modern pedagogical methods. Religious services in many synagogues were modified, rituals were shortened, objectionable features were omitted, and prayers, sermons and hymns in the vernacular were introduced. Israel Jacobson was the first who successfully established reformed religious schools and services in Germany and later built a Reform Temple at Sessan, which was consecrated 17 July 1810. This Reform movement soon spread to Berlin and Hamburg and before long it reached America and found expression here in 1788 in the city of Charleston in the organization of the «Reform Society» of Israelites, which instituted divine services that consisted of a short ritual with sermons, etc., in English and the abolition of offerings during the divine service. A great ecclesiastical battle resulted and many questions of reform were delayed for several years. An organ was purchased and the system of family pews adopted in spite of much opposition. It may here be mentioned to the everlasting credit of Reformed Judaism, that it instituted family pews and gave to women the right to worship in the same pew with their husband and sons. The practice of the orthodox wing, which still prevails in many congregations, of isolating women in a screened gallery, is both improper and without warrant in this age of enlightenment. Reform differs further from Orthodoxy in the interpretations put upon the Scriptures and the Talmud and the authority with which they are severally credited. Orthodoxy gives to both Scripture and Talmud a binding authority over Jews without regard to circumstances of time and place. Reform seeks to set up a higher standard of authority than merely the literal texts and to find a way of reconciling ancient laws and traditions, if possible, with modern requirements. The usual custom of Reformers is to be reasonable and to discriminate between the essentials and the non-essentials of Judaism. Reformed Judaism has discarded belief in bodily resurrection, in the coming of a personal Messiah, in the national restoration of Palestine and the re-institution of the ancient temple with its Levitical cults. Reformed Judaism is also manifested in a refusal to abide by the rigorous enforcement of the Mosaic and Rabbinical dietary laws and in certain changes in the ritual and religious observances. The reform instituted at Charleston soon spread to the North where in the city of New York the Temple Emanu-El was organized in 1845 under the leadership of Rev. Dr. Leo Merzbader who formed his own ritual for the congregation. Temple Emanu-El has led the van of the Reformed Jewish congregations of America for over half a century and has given much impetus to the progress of Israel. Under Dr. Samuel Adler and Dr. Gustav Gottheil, this congregation made vast strides and is now the largest and wealthiest Jewish congregation of the world. Its place of worship is situated at the corner of Fifth Avenue and 43d Street, and its present rabbi is the Rev. Dr. Joseph Silverman. Har Sinai congregation was soon organized in Baltimore under the banner of Reform and adopted the prayer book of the Hamburg Temple. Some of its noted rabbis were Dr. David Einhorn, Dr. Samuel Sale, Dr. D. Philipson, and Dr. F. Shanfarher. The present incumbent is Rabbi Charles Rubenstein. A stronger note than all these, however, was sounded in the early days of reform at Albany where Rev. Dr. I. M. Wise officiated from 1846 to 1854. He had come from Germany, impregnated with the new spirit of progress, and at once carried his cherished ideals into practice in this country. He fought some of the early battles of Reform in America which went far beyond the expectations or desires of the Reformers of Europe. He contended for choir and organ and for a prayer book in the vernacular and his *Minhag America* (the American Ritual) was acceptable to most American Reform congregations for almost 50 years. It later became the basis of the Union Prayer Book now generally in use. Wise was not alone in his strenuous battles for progress. Leo Merzbacher, Max Libienthal, Samuel Adler, David Einhorn, and Samuel Hirsch ably entered the lists and contributed valuable aid to the new movement. These men were later reinforced by such valiant Reform leaders as B. Felsenthal, J. K. Gutheim, and Gustav Gottheil. Rev. Dr. Isaac M.

Wise, rightly called the father of American Reformed Judaism, gave to this movement a greater impetus than it had ever received, when in 1873 he organized the Union of American Hebrew Congregations and under its auspices, in 1875, the Hebrew Union College, a theological seminary for the training of American rabbis. A great drawback to the progress of the reform element was the lack of leaders and rabbis with modern scholastic education who could enter into the spirit of American conditions and the needs of Israel in this country. In the last 25 years over 100 graduates of this college have found pulpits in reform congregations where, with their modern culture and the ability to appeal to the younger generation, they have had eminent success and have given reformed (or Progressive Judaism, as it is sometimes called) a firm foothold on American soil. The Union of American Hebrew Congregations is now actively engaged in providing circuit preachers for small congregations and in organizing congregations and religious schools in communities where none exist. Another source of active strength to Reformed Judaism has been the Central Conference of American Rabbis, which the late Rev. Dr. I. M. Wise called into existence in Detroit in July 1889. This had been preceded by several Reformed Rabbinical Conferences which from time to time discussed burning ecclesiastical and ritual questions. The most noted of the conferences was the Pittsburg Conference held in November, 1885, at which the following platform of Reformed Judaism was adopted and which in the main, has been approved by nearly all Reformed Rabbis and teachers and been generally accepted by the laity.

Act 1.— Judaism conveys the highest conception of God and of his relation to Man. God is the Creator and Ruler of the world, Father and Educator of the human race.

Act 2.— The Holy Scriptures are the record of Divine Revelation and of the consecration of the Jewish people as the missionaries of the one God. In composition and literary arrangement the Scriptures are only the work of men with the unavoidable limitations of their age.

Act 3.— The results of natural science are the best helps to the understanding of the working of Divine Love in the world, the Bible serving as guides to illustrate the working of Divine Power within us.

Act 4.— The Mosaic laws are intended for the training of the Jews of Palestine in their former surroundings; only the moral laws are divine; all social, political, and priestly statutes, inconsistent with our modern habits and views, are to be rejected.

Act 5.— The Mosaic-rabbinical laws on diet, purity and dress fail to imbue modern Jews with the spirit of priestly holiness; their observance to-day would obstruct rather than enhance moral and spiritual elevation.

Act 6.— Israel's Messianic hope relates to the establishment of the authority of peace, truth, justice and love among men. No return to Palestine is expected, nor the re-institution there of a Jewish state, or of a worship conducted by descendants of Aaron.

Act 7.— Judaism is an ever growing, progressive and rational religion of modern civilization and asserts the necessity of preserving identity with the great past of the Jewish nation.

Act 8.— Judaism hails the efforts made by various religious denominations toward removing the barriers separating sect from sect.

Act 9.— It is the duty of Jews to spread the knowledge of their religious truths and mission amongst Jews and non-Jews.

Act 10.— The present agitated state of Judaism is a period of transition from a blind belief in authority and exclusion to a rational and humanitarian conception of religion; the masses, therefore, should be enlightened as to the history and mission of the Jewish people and their social and spiritual condition elevated through press, pulpit, and school.

The Central Conference of American Rabbis has, under the regime of its founder and first president, Dr. I. M. Wise (1889–1898), and its second president, Dr. Joseph Silverman (1899–1903), formulated many decisions which have been put into practice by the people at large, the most important of which are the abrogation of circumcision for adult proselytes, permission to the rabbis to officiate at cremations, the interdiction of rabbis from officiating at intermarriages (between Jews and non-Jews), etc. The most important work of the Conference has been the publication of the Union Prayer Book and Union Hymnal both of which have become very popular and have been the means of bringing unity into the religious services of almost 200 reformed congregations and of abolishing the many different rituals which had been a source of confusion in modern Judaism. Of late years some reformed congregations have been holding Sunday services in addition to the regular Sabbath services and many people have had grave fears lest this movement might lead to the substitution of Sunday for the Jewish Sabbath. The Central Conference of American Rabbis at its convention at Detroit July 1903, allayed those fears by adopting a resolution to the effect that this Conference favors adherence to the historical Sabbath as the fundamental institution of Judaism, and that Sunday services, whenever held, must only be regarded as supplementary to the regular Sabbath services. The future of Reformed Judaism in this country is pregnant with great possibilities. It is to be shaped, in the main, by the Union of American Hebrew Congregations, the Central Conference of American Rabbis and the Hebrew Union College (Cincinnati, O.) presided over by Dr. K. Kohler, the successor of Dr. I. M. Wise, and by the graduates of this college of whom the older and more prominent are: A. Aaron, H. Berkowitz, Jos. Krauskopf, Louis Grossman, R. Grossman, M. Heller, David Phillipson, Jos. Stolz, Jos. Silverman. Among the scholarly and leading Reform rabbis of America may be counted E. G. Hirsch, K. Kohler, S. Sale, Leon Harrison, I. S. Moses, M. Samfield, J. Voorsanger, S. Shulman, M. H. Harris. It is hoped that the new Jewish Theological Seminary of America (New York), Dr. S. Schechter, President, will also in time add power and influence to progressive Judaism in America, notwithstanding its present conservative tendency. The main problem for the reformers of the future will be how to promote assimilation with modern conditions without sacrificing the integrity of Judaism. Consult: 'Reports of the Union of American Hebrew Congregations'; 'Reports of the Central Conference of American Rabbis'; 'Yearbooks of the American Jewish Historical Society'; 'Reminiscences of I. M. Wise'; Philipson Grossman, 'Life and Writings of I. M. Wise'; Kohler, 'Settlement of Jews in North America'; and 'The Jewish Encyclopedia.'

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17. Judaism — Education and the Jews. The rise of education among the Jews during the period before the Babylonian Exile is, like all the beginnings of national and intellectual life in antiquity, enveloped in obscurity. But enough can be learned from many casual allusions in biblical literature, to prove that even during that early era education had attained a high standard, and had become a solid foundation upon which generations could continue to build. So much is certain, that education began at a very tender age, from the moment when the intelligence of the child first awakened. Then the impressions had to begin to produce what was regarded the end and aim of all education, namely to make a perfect man.

Among the Jews the virtuous man was one who realized his likeness to God in whose image he was created. This ideal was taught by the Hebrew prophets, and formed the basis of their education, which religion commanded should be given to all alike. Every duty to the individual and the community was a religious duty; therefore there was a perfect union of religion and life, and education had as its end systematically to form and elevate humanity. Of the highest truth and duties it was commanded «Thou shalt teach them unto thy children, and shalt talk of them when thou sittest in thy house, and when thou walkest by the way, and when thou liest down, and when thou risest up.» (Deut. vi. 7.) «This instruction educated the whole people to the consciousness, that conduct is the largest concern of life, so that righteousness became Israel's ideal» (Matthew Arnold).

The survival of the Jews after the twice repeated destruction of their national life, their salvation from disappearance under eighteen centuries of systematic persecution and their constant high standard of intellectual and moral attainments is due to the high value they placed upon education and the manner in which it has been adapted by them to every age and time, so that no progress, caused by the advance of science, found opposition among them for any length of time. Therefore a modern educator has said truly, «If ever a people had demonstrated the value of education, it is the Jews.»

In Biblical Times.— During the earliest period the instruction was domestic — the home was the only school, the parents were the only teachers. (Deut. iv. 9; vi. 7; xi, 19.) Ceremonies were introduced in the house for the purpose of impressing upon the plastic minds of the children the glorious achievements of the fathers and government of the world by God. (Ex. xiii, 8.) Abraham's merit was found in the assurance, that he would give his children such training. (Gen. xviii, 19.) There are many evidences that the arts of reading and writing became more and more widely diffused. The well-educated child is the joy of his parents. (Prov. x, 1; xvii, 25.) But religion and virtue remained the foundation of all education. «The fear of the Lord is the beginning of wisdom.» (Prov. i, 7.) The main object of the Sabbath assemblages was instruction; everyone was made thoroughly acquainted with the national literature. (Deut. xxxi, 12–13.) So the Jews were trained to become 'the people of the book.'

In the Rabbinical Era.— During the period of the second Temple systematic instruction and schooling was introduced. First the High School (Beth ha-Midrash) in connection with every Synagogue, (first mentioned Ecclus. li, 23). The New Testament refers to these schools many times. Luke, v, 17 speaks of teachers from every town in Galilee and Judea which proves how numerous they were. It seemed indeed so unthinkable that such schools had not existed from primeval times, that the later Haggadah anticipates the Beth ha-Midrash for the time of Moses, Joshua and Samuel, that it reported Solomon built schoolhouses and Hezekiah supported them. Primary education was made compulsory by Simon ben Shetah about 75 B. C., and the High Priest Joshua ben Gamla 63–65 A. D., enacted that teachers be appointed in every province and town for children from the ages of six to seven years up. It was then that the elementary school (Beth ha-Sefer) was established, and together with the high school connected with every Synagogue. (Talm. Babl. Ber. 17, a, Ta'anit 23, b, Kidd. 30, a, Yalkut Is. 257.) At the time of Josephus the duty of universal education for every child was regarded as so important that he says, (Ap. I, 12) «Moses commanded us to instruct the children in the elements of knowledge, reading, writing and the deeds of the forefathers.» He could state with pride (Ap. II, 25) «Amongst us every child must learn to read.» In addition to reading, writing and the history of the past it was the duty of every father to have his son taught the art of swimming and to give him manual training by letting him learn a trade.

In the midst of the convulsions caused by the destruction of Jerusalem and the Temple R. Jochanan ben Sakkai obtained from Vespasian the permission to establish an academy at Jamnia which at once became the centre of Jewish learning, the mother of the succeeding High schools where the discussions were held whose records are preserved in the Talmud, (See TALMUD) which is filled with evidences of wise pedagogic insight in the arrangement of schools and courses of studies, and anticipates many of the new movements in education which mark the present time. Especially is the high importance of the teacher and the respect due to him expressed in the most emphatic manner. «A President of the Academy,» relates the Talmud, «sent some scholars to examine the schools, and established them where none existed. They came to a city and demanded to see the keepers of the city. The magistrates and police officials were introduced to them. 'These are not the city's keepers!' said the wise men, 'Who then are?' asked the citizens. 'The city's keepers are the teachers of the children,' was the reply." "A city without elementary schools deserves to be destroyed," is another saying. Nothing was permitted to interfere with the school lessons, not even the rebuilding of the Temple. Rabbi Jehudah said "The world is saved only by the breath of the school children." The subjects of instruction were in the first place the religious literature, the Bible and the Talmud. But the studies were so arranged that by the nature of the talmudic discussions they embraced all known sciences: natural history, anatomy, medicine, geometry, astronomy and foreign languages.

In Later Times.— The succeeding ages were dominated by the wise rules laid down in the Talmud referring to discipline, qualifications of the teachers, the respect due to the teachers, rules about limiting the size of the classes taught by one teacher, and the attention paid to the individuality of the pupils. The great regard paid to the school by the Jews in the middle ages, when among Christians education was limited to the small number of the favored classes, is apparent from a detailed scheme preserved from the 12th century for the course of instruction followed in the schools. The order of studies is carefully elaborated from the elementary schools for all children through the secondary schools up to the academies. In the 13th century the "seven sciences" comprised the prescribed curriculum among the Jews as it did among the Christians. Especially in Italy systematic education received great care and encouragement at that time, and the same is true of Spain and Provence. Great Rabbis stimulated interest in science outside of religious lore, Hebrew books of ethics of the period contain side by side with the moral teachings of the Rabbi's maxims from Aristotle, Porphyry, Theophrastus and others. The Jewish educational curriculum in Italy included the whole field of knowledge, theology, poetry, philosophy and natural science long before the Renaissance.

In Spain the ordinary course of Jewish study was Bible, Hebrew poetry, Talmud, the relation of philosophy and revelation, the logic of Aristotle, the elements of Euclid, arithmetic, the mathematical works of Nicomachus, Theodosius, Menelaus, Archimedes, and others, optics, music, mechanics, medicine, natural science and metaphysics. So it happened that during the darkest medieval times Jews were conspicuous as scholars, philosophers and physicians; to them, in fact, is owing the scientific elaboration and advancement of medicine; they took the most active part in the progress of astronomy, founded the famous schools of Montpelier and Salerno, and contributed essentially to the flourishing condition of Padua. Without Jewish inventions neither Columbus, nor Vasco de Gama could have made their daring sea voyages, Moritz Steinschneider in his great work 'The Hebrew translations of the middle ages, and the Jews as interpreters' has shown the inestimable services rendered by them in being the mediators of Greek and Mohammedan civilization for the nations of the occident. All of this high education and respect for scholarship was based upon the broad foundation of the elementary school which existed in every and even the smallest Jewish congregation.

Child Training.—Although little attention was paid to the education of the girls, nevertheless many of them became distinguished by scholarship, and all were imbued with the highest appreciation of learning. The mothers took their little sons to school, and both the mother and father participated in the important function of introducing the boy to school for the first time. This was made a solemn religious ceremony, so arranged as to leave an indelible impression upon the tender mind of the child. The initiation took place in the synagogue on the Feast of Pentecost, the traditional anniversary of the revelation on Mount Sinai. Early in the morning the boy was dressed in new clothes and three cakes of fine flour and honey were baked for him by a young maiden. Three eggs were boiled and apples and other fruit were gathered in profusion. Then the child was taken in the arms of the Rabbi or another learned friend first to the school and then to the synagogue or vice versa. The child was placed on the reading dais before the scroll, from which the Ten Commandments were read as the lesson of the day. In the school he then received the first lesson in reading Hebrew. On a slate were traced in honey some of the letters of the alphabet, or simple texts, such as "Moses commanded us a law, an inheritance for the congregation of Jacob" (Deut. xxxiii, 4); the first verse of Leviticus and "Let instruction be my vocation." The child was then handed over to the arms of his mother who had stood by during this delightful scene. (Abraham's 'Jewish Life in the Middle Ages' p. 348 from Machzor Vitry p. 628.)

Rabbis as Educators.—The influence of Jewish education became very conspicuous when at the time of the Renaissance the revival of learning took place. Then the Jews were the only ones through whom the Hebrew Bible could be rediscovered for the Christian world. As once Origen and Jerome so now the religious Reformers learned to read and interpret the Hebrew scriptures from the Jews, and Luther in his commentaries is altogether dependent on Nicholas de Lyra, who in his turn had appropriated the commentary of Rashi (Rabbi Solomon ben Isaac of Troyes 1040–1105), which was familiar to every Jewish child. So the Italian Jews especially became the teachers of nearly all Hebraists among the Humanists. Wherever the Jews found a refuge during the persecutions in Germany, and when expelled from England and France, Spain, Portugal and Sicily, they carried their educational ideals with them and it was their first concern to establish elementary schools, and schools for higher education. Especially praised by contemporaries on account of its excellent systematic arrangement was the school at Amsterdam, where Spinoza received his primary education.

In Modern Times.— Less systematic were the educational establishments in Germany and Austria in consequence of the centuries of oppression to which the Jews were subjected and their total deprivation of all civil rights in those countries. But even there they did the best possible under their arduous condition, and at no time were men distinguished by scholarship lacking among them. The system was finally improved in Germany by the influence of Moses Mendelssohn and his followers, and in Austria through the initiative of Hartwig Wessely who stirred up the Jews to improve their schools in accordance with the suggestions of the Emperor Joseph II. So at the end of the 18th and the beginning of the 19th centuries a number of Jewish schools were founded on the old Jewish principles combined with the most modern pedagogic developments. The Jewish Free School was founded in Berlin in 1778, the Wilhelm School of Brelau in 1791, the Franz School of Dessau in 1799, the Jacobson School at Seesec in the Harz in 1801. the Philanthropin at Frankfurt-on-the-Main in 1804, the Samson School at Wolfenbüttel in 1807. At the latter school Leopold Zunz received his education and imbibed that love of learning which made him the founder of the scientific treatment of Jewish religion, literature and history. These schools were so excellent that most of them were patronized by Christians also. They set an example for schools with similar ambitions in every Jewish congregation in Western Europe. Immediately the necessity was felt for competent teachers at such schools and for Rabbis systematically trained and endowed with general education. The first teachers' seminary was founded at Cassel in 1809. Others followed in rapid succession. For the education of Rabbis many institutions sprang up which have won deserved distinction in France, Germany, Italy, Austria, England and America.

The New Education.— Guided by the conviction that education would be the best means of improving the wretched condition of the Jews in Roumania and Turkey, the Alliance Israelite Universelle (See Judaism —Alliance Israelite Universelle) has opened in those countries many schools for the teaching of elementary branches, languages and manual training, their high standard being so well recognized that in Turkey they are largely patronized by Mohammedans and Christians also. Trade schools and schools for technical training have been founded by Jews. Those established in America for the benefit of Jewish immigrants and their children, in New York city the Educational Alliance by the Baron Hirsch Fund, and in Chicago the Jewish Manual Training School deserve special mention on account of the magnificent work they are doing.

Bibliography.— Abrahams, ‘Jewish Life of the Middle Ages’; A. Berliner, ‘Aus dem Leben der deutschen Juden im Mittelalter’; M. Guedeman, ‘Das juedische Unterrichtswesen’; H. M. Leipziger, ‘The Education of the Jews’; Hamburger, ‘Real Encyclopedie’; Joseph Simon, ‘L'education et l'instruction des Enfants Chez les Anciens Juifs.’

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18. Judaism — Commerce and the Jews. Commerce or the exchange of goods is and has at all times been one of the prime motors of civilization. In antiquity the Phenicians were the great trading nation, and together with the various products they carried from one land to another they spread the elements of culture into remote parts of the earth. Thus they furnished the Greeks with the very elements out of which their industry, art and literature afterwards developed until they themselves became heirs to the Phenician trade. Less known and recognized is the fact that during the early middle ages the Jews, owing to their dispersion over the globe and their connection with one another, were the merchant people *par excellence*, filling the position of the Canaanite of old as intermediaries of the world's trade.

Early Traders.— On the soil of Palestine the Hebrews were gradually transformed from a people of shepherds into farmers. Trading was greatly discouraged by legislation which prohibited loaning money on interest, and the merchant's honesty was distrusted alike by prophet and by sage (Hosea xii. 7; Ecclesiasticus xxvi. 29 — xxvii, 2; Kiddushin iv. 14.) The great caravan routes from Arabia and Egypt to Tyre and Damascus did not touch the highlands of Judaea and Samaria; it was the Canaanite or Phenician who « walked around » from town to town and from house to house with his merchandise (Isaiah xxiii, 8; Hosea xii, 8; Ezek. xvii, 4; Zech. xiv, 21; Prov. xxxi, 24.) Once or twice the attempt was made to join the Phenicians in maritime expeditions but without success (I Kings x, 15–22; xxii, 48). In the Babylonian exile the Jew imbibed an unquenchable love for the wide world; his eyes were opened to the facilities of commerce as he watched the markets of Babylonia and of Tyre (Ezek. xxvii; Genesis x; Tobit i, 13). Travel on land or on sea for the pursuit of commerce became a matter of frequent occurrence also among Palestinian Jews under the Persian dominion (Prov. vii, 19–20; Ps. cvii, 23; Tobit i, 13; 21; iii, 7; Jonah i, 3), although the markets of Jerusalem were chiefly occupied by Phenician traders at the time of Ezra (Nehem. iii, 31; xiii, 16). Josephus also writes rather in a spirit of contempt for trade: « We neither inhabit a maritime country no do we delight in commercial occupation, but take pains in cultivating the fertile land we inhabit.» (Contra Apionem i, 12).

Hellenic Jews.— It was chiefly since the time of Alexander the Great and under the Ptolomies and Seleucides that the Jews settled in large numbers in the great centres of commerce all along the Mediterranean and engaged in mercantile pursuits acquiring wealth and influence to such a degree as to rouse the jealousy of their Greek competitors. This was especially the case in Alexandria where they inhabited a large portion of land along the sea and became owners of ships and great merchant princes controlling the navigation of the Nile. (Philo In Flaccum 8; III Macca. iii, 10; Josephus Contra Apionen ii, 5; Comp. Frankel Monatschrift, 1874, p. 147 and Theodore Reinachart, «Judaei» in «Dictionaire des Antiquite's Golques et Romaines.») There was scarcely a commercial town throughout the whole Roman empire from Asia Minor to Spain in which they had not a colony of their own enjoying the protection of the Roman rulers because of their success (Josephus Ant. xiv, 7, 2–3; Jewish War ii, 16, 4). They were Jews in race and faith, but Hellenes in culture; commerce broadened their views and rendered them cosmopolitan. Jewish merchants carried Jewish ideas wherever they went; they paved the way for a world-conquering faith. They ploughed the soil for Saint Paul and Christianity to reap the great harvest.

Judæa also came under the influence of the commercial spirit of the Hellenic Jew. The large list of goods mentioned in the Mishnah gives evidence of the extensive international trade carried on by the Jews which flooded the mother-country with merchandise imported from all parts of the globe and which enriched the Jewish vocabulary with a great variety of Greek terms (Herzfeld, ‘Handelsgeschihte der Juden des Alterthums,’ 1879; Schuerer, ‘Gesch. d. juedischen Volkes’ II^3, 50–63). The ships sculptured upon the Maccabean mausoleum point to the possession of a mercantile fleet by the Jews stationed at Joppa, the port at which Simon the Maccabean prince endeavored to develop the foreign trade (I Macc. xiii, 29; xiv, 5), whereas King Herod desired to make Cæsarea a more convenient harbor (Josephus Ant. xv, 9, 6). As a typical man of wealth of this time a high priest by the name of Eleazar ben Harsom is mentioned in the Talmud who is said to have inherited from his father a thousand towns on land and a thousand ships on sea (Yomna 35^b). But the best proof of the gradual transformation of the Jews from an agricultural to a commercial people at the time of Herod is given by the fact that Hillel, the great master of the rabinical schools, felt induced to institute a legal mode of procedure in regard to loans of money which virtually did away with the Mosaic prohibition (Gittin v, 5). It shows that investment of capital in commercial speculation had become a necessity with the people.

The Jews in the Dispersion.— The fall of Judæa in the year 70 and the final defeat at the Bar Kokba war in 135 changed the destiny of the Jews altogether, and they bent their efforts to a far larger extent than before upon mercantile pursuits. Scattered over the wide globe, they were enabled through extensive travel and good connections to establish flourishing trade everywhere. Especially in Babylonia under the dominion of the Parthians they amassed great fortunes by their commerce, enjoying the favor of wise rulers (see Herzfeld l. c. 118–119; 336). Along the Phenician seacoast they became heirs to the Phenician trade and industry to such an extent that far into the middle ages they are found to be the chief manufacturers of Tyrian glass and of purple, as shown by Benjamin of Tudela's Travels. Ere Christianity spread its arms westward, they marched as peddlars under the shadow of the Roman eagle up the Ebro as far as Toledo and Saragossa, up the Rhine as far as Cologne and along the Danube as far as the Black Sea, carrying on an importing trade in spices and perfumes, in pearls and jewels and in costly clothes of the East. Particularly was the silk-trade greatly developed, if not altogether monopolized by them, and this accounts for ancient Jewish settlements in China, the home of silk, and for the protection accorded to Jewish silk manufacturers by the rulers of Sicily, France and Spain (See Heyd, ‘Gesch. des Levanthandels’ i, 6–9, 12; 24; 26; Mommsen, ‘Roemische Gesch.’ v, 465–470; Herzfeld, 119; 308; Graetz, ‘Gesch. d. Juden’ v^3. 55, 228, 329, and elsewhere). The same seems to have been the case with the trade in spices (Heyd, l. c. 12, 141; Depping, ‘Die Juden in Mittelalter,’ p. 132; Bedarride, ‘Les Juifs de France’ 46; 454). It is significant that the Jews were assessed to pay their taxes in the shape of pepper (Depping, l. c. 132). The existence of black Jews in Malabar indicates the establishment of Jewish colonies in India for commercial purposes. Throughout the early Christian centuries Jews are mentioned as importing silk, spices and embroidered goods from the East to the markets of Spain and France. The flourishing period of Jewish trade came when the victorious flag of Mohammed united the East and the West into one great empire offering new incentives to industry and commerce. Jews were employed by the Moslem rulers as commissioners of the army and as financiers. Jewish merchants, partly on their own ships, made regular trips from far off China, India and Egypt to Marseilles and Narbonne bringing the produce of the East to the Western depots of commerce. They carried the fur and amber of Russia brought to the Crimea or to Bohemia, the shawls and embroideries of Constantinople, the spices of India and drugs of Arabia to the markets of Narbonne, Lyons, Cologne and Mayence (Bedarride, l. c. 57 and elsewhere). Descriptions of the mercantile routes taken by such Jewish traders have been preserved by Arabic geographers, showing the important position taken by them as international mediators between the Orient and the Occident. Jews were indeed in those centuries the merchants (mercatores or negotiatores) par excellence. This accounts for the fact that Jews were selected as ambassadors by German emperors like Charlemagne and Otto I and made secretaries of finance and prime ministers by the Moslem rulers. Conversant with the languages of many countries, they had the opportunity of controlling the market and accumulating great wealth as no other class of people (Heyd, l. c. 138–142; 87; 194; 258; Jacob, ‘Handelsartikel der Araber,’ 1891, p. 9; Stobbe, ‘Die Juden in Deutschland’ 6–7; 103; 199–200; 231; Kremer, ‘Die Kulturgeschichte des Orients,’ I. 188; II. 176; and Leo's ‘Spanish Inquisition.’

As Addison says in the Spectator, they were so disseminated through all the trading parts of the world that they became the instrument through which the most distant nations conversed with one another and by which mankind were knit together in a general correspondence.

The trade in slaves was almost exclusively in their hands for a long time (see Heyd and Stobbe l. c.). Some they brought from Gaul, but to a larger extent they bought slaves from the Slavonic rulers (Benjamin of Tudela p. 111^b and Graetz Gesch. V. 303). With the Chazar Kings in the Crimea they also stood in close relationship, as is proven by the fact that the latter embraced the faith of the Jews (Graetz, l. c. 176 *et seq.*; Beer, ‘Gesch. des Welthandels,’ 198 229–230). The entire trade with the products of the Baltic provinces seems to have been in their hands since the time of the Roman Empire (Schuerer, l. c., III, 18). Besides woolen and silken goods, spices, tapestry, embroideries and furs, we find jewelry, gold and precious stones also monopolized by them. Nor was the commercial activity of the Jews merely confined to the exchange of goods. They reared those centres of commerce in Western Europe which were afterwards occupied by the rich burghers or merchant guilds who drove them out of their possessions in order to rid themseves of their competitors or masters in the art of trading. The beginnings of the history of cities such as Narbonne and Lyons, Cologne and Mayence, Nuremberg, Regensburg, Ulm and

Augsburg, London and York and dozens, if not hundreds of others, coincide as a rule with Jewish settlements in these places, one far-sighted Jew being the pioneer of commerce whose success attracted other Jewish traders, to render the market there a centre of commerce until, finally, the growing wealth of the Jews rouses the jealousy of the Christian people and becomes the cause of their oppression and expulsion. As Kieselbach 'Der Gang des Welthandels' and Roscher 'Die Juden im Mittelalther' in his 'Ansichten der Volkswirthschaft' II, have shown, the Jews opened new sources of wealth everywhere by creating the means and methods of communication for the trade, for which neither the peasant or farmer nor the nobleman had the capability or the understanding. Only wise rulers, realizing the benefits conferred by the Jewish traders upon the country, encouraged these by special privileges to settle therein and develop its resources. This was done by Charlemagne and his successors in France and in Germany, by Alfred the Great and William the Conqueror and Cromwell in England, by King Roger of Sicily, Kasimir the Great in Poland, and Sultan Bajazid in Turkey. Everywhere the commercial genius of the Jewish people developed the prosperity of the cities. (See also Lecky, 'History of the Rise of the Spirit of Rationalism in Europe' II, 272–273.) "They were the teachers and tutors of the commercial activity of Europe," says Roscher, l. c., and no sooner did the cities feel that they could do without them than they dispossessed them of all they had acquired, though half of the houses of Paris, London or Nuremberg had been theirs, and either killed or expelled them. But even when driven by a bloodthirsty mob or by hostile guilds and by state legislation out of his original domain, the world-commerce, the Jew carried his small stock of merchandise into the villages to bring, as Kieselbach says, the elements of culture also into parts more remote from civilization, or he took up the despised work of the money lender, finally to rise to the influential position of banker and prince of finance. The whole system of modern exchange of money is, if not his invention, certainly to a large extent his work. To his financiering skill and international trade the banks of Amsterdam, Hamburg and finally of England owe their existence and their success.

Results of Their Activity.— What Jewish commerce achieved in all these lands became manifest in France after their expulsion in 1306, and in England after their expulsion in 1290, and still more so in Spain after 1492. Jewish fugitives of Spain carried the trade into Turkey and Holland and into Italian cities like Leghorn and Ancona, just as Poland's commercial industry was entirely due to fugitive Jews of Germany (See Graetz, 'Gesch. d. Juden' index and 'Jewish Encyclopedia' s. v.) So did the new world profit by the persecutions of the Jew in the old. Jewish Marranos built up the trade in tobacco, coffee and sugar in South America, and with the help of the Jews of Amsterdam for some time brought the world's commerce into the hands of Holland until Cromwell succeeded in opening England for the Jews and thus paved the way for the British trade with the West Indies. (See Beer, 'Gesch. d. Welthandels' II, 211, 366; Max Kohler: 'Jewish Activity in American Colonial Commerce' in Publications of the American Jewish Historical Society X, 47–63). The trade between America, Europe and the Levant was almost entirely in the hands of Spanish Jews or Marranos; families like the Gradis, Caceres, Mendez, Lopez, and Henriques had their branches and their ships in almost every part of the world (See Lucien Wolf, 'Menasseh ben Israel'; Gruenwald, 'Portugiesengraeber auf deutscher Erde.') Jews were instrumental in starting the East India Companies (Picciotto 'Sketches of Anglo-Jewish History,' 134). They were the pioneers of commerce in North America. Jewish merchants (Marranos) enabled Columbus and other navigators to discover the new hemisphere and provided the new lands with grain, horses and other needs (Kayserling, 'Christopher Columbus' and the article 'THE JEW IN AMERICA.') They possessed large tobacco, sugar and coffee plantations in Cuba, Brazil, Surinam, Curaçoa, and kept up commercial connections through navigation, partly by means of their own ships, with North America, Amsterdam, Leghorn in Italy, and the far East (Gruenwald, l. c.).

When with the era of the Reformation the systematic oppression of the Jews somewhat relaxed and they were again allowed to pursue more honorable and profitable occupations, we find them for a century or two, up to the time of the better regulated traffic by steam railroads, the chief visitors of the annual or semi-annual fairs held at Leipzig, Frankfort on the Oder, Prague, Wilna, Novgorod and other great market places, whither they bring their clothes, silk and velvet, fur, leather and other goods, for sale. On these occasions Jewish merchants from the remote parts of the continent met, exchanging the products of the various lands and providing their specific districts with goods for home consumption. In some provinces of Europe, Jews became the principal dealers in cattle and the chief attendants of the cattle markets; elsewhere as in Russia they deal chiefly in grain and lumber.

The new modes of industry finally transformed the former peddlars in old clothes and the like into manufacturers of woolen, silk, and leather goods. The first silk and velvet factories in Prussia and the woolen factories in Austria were introduced there by Jews. Henceforth Jews monopolize this trade again in a large part of the world. (Compare for the whole also the article "Commerce" in the 'Jewish Encyclopedia,' and art. "Juifs" in 'La Grande Encyclopaedie.')

Owing to his constant expulsion from the land inhabited and cultivated by him, whether in Palestine or in Babylonia, in Africa or in Southern Europe, the commercial instinct was developed in the Jew, thus making him excel his competitors. As a skilful and far-sighted merchant he not only acquired the wealth and power needed to maintain himself amidst the perils surrounding him wherever he was treated and regarded as an alien, but he proved the most valuable promoter of civilization in the lands in which he lived, the foremost liberalizing element in the shaping and broadening of human culture.

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19. Judaism-Food and Health Laws.— Food Laws.— The food laws of the Jewish people form a very complex system, with numerous and diversified enactments. These refer to the determination of the species of animals, birds, fish and insects that may be eaten; the method of slaughter; the inspection of the animal for disease and lesion; the prohibition of the blood, fat and certain parts of the animal; the treatment of meat prior to cooking; the prohibition of certain food mixtures; certain vegetable food laws, such as the prohibition of leaven during Passover, first fruit crops—Orlah, and the new corn—Hadash; and various anti-heathen food laws, affecting the use of wine, etc. It is certainly very suggestive of the importance of food legislation that the first direct command of God to Adam should be a food law (Gen. ii. 17), and that the punishment for its trangression should be the advent of death. The exposition of the dietary laws has given rise to a vast literature to which every century and almost every school of thought has made its contribution, but the general result is chaos. This is due mainly to three causes: (1) The essentially monistic nature of the Jewish thought has been quite overlooked. Conceptions that appear almost antithetic for the modern mind were apprehended as an undifferentiated whole by the ancient Hebrew. His language had no word that would be equivalent to «nature»; the physical and the psychical, the legal and the ethical, the spiritual and the vital, were all unified manifestations of the Theocratic Will. So that when the Bible declares with all emphasis that the end of the Law is «life»—«that ye shall live by them»—«your life and the prolongation of your days,» it is just as uncritical to exclude physical life from this end as it would be to exclude from it the life of the spirit and the life everlasting. (2) The second cause of the overwhelming confusion prevalent in this literature is the unscientific exaltation of every observed effect of the laws into a motive for their promulgation and observance. (3) The avowedly different character of many of these laws in origin and purpose has been largely disregarded. The exposition of the dietary system would have been much simplified and innumerable controversies avoided if it had been clearly understood that the statement of effects does not involve their predication as motives; that motives apparently diverse could yet remain unified and undifferentiated for the Jewish mind, and that there is no one explanation that will cover all the Laws:

1. *Clean and Unclean Species.*— Among the quadrupeds only the ruminants that are provided with fully cloven hoofs are declared to be fit for food; and of these only the kine, sheep and goats are fit for sacrifice (Lev. xi., Deut. xiv). The Rabbis refer to another distinguishing mark possessed by all clean animals, namely the absence of incisors from the upper jaw (Talmud Bab., Hullin 59A). Among the fish, only those that have fins and scales are clean; thus all the siluridæ, eels and shell-fish are prohibited. As all that have scales have also fins, the presence of scales is the decisive mark (Talmud Bab., Niddah 51A). No marks are given in the Bible to determine the clean fowl, but a long list is recorded of species that are unclean. These are birds of prey, scavenger birds and marsh fowl. The bat is also included in the list. All the species not named are declared fit for food. The Rabbis have formulated certain marks distinguishing the clean fowl — but finally only those birds that are traditionally known to be clean are permitted to be used for food (Talmud Bab., Hullin 63B). All insects are declared unclean, with exception of four species of locusts. All creeping things are unclean (Shulhan Aruch, Yore Deäh §§ 79–85).

The earliest explanation of this distinction between clean and unclean is afforded in the allegorical interpretations of the Apocrypha (IV Maccab. 5, Letter of Aristeas, etc.), the works of Philo and the Fathers of the Church (Agustine, Irenæus, Cyril, Tertullian, Novatian «On the Jewish Meats»). The unclean animals are all regarded as typifying vices,— the hare libidinousness, the swine impurity, the fox craft, etc. The cloven hoof, the first sign of purity, typifies the distinction between good and evil; the chewing of the cud symbolizes the constant repetition of the law. This method of interpretation, while certainly leading to curious results, has some justification in the Bible presentation of the Serpent as the agent of temptation (Gen. iii. 1.) and also in the figures employed by Ezekiel (chap. xxiii. 20). Another explanation bases itself upon the natural and instinctive antipathy and loathing that destructive and death-dealing animals arouse. It is only natural that beasts of prey, serpentine and snake-like fish, slimy crustaceans, birds of prey, marsh fowl and scavenger birds, insects feeding on corruption and ordure, should be held unclean and polluting by a people striving to keep itself pure and holy (Lev. xi. 43). The consequences of this striving after holiness affect the whole of Jewish thought and life, and are of primal importance for the comprehension of the dietary system (Schechter, *Jewish Quart. Rev.* Vol. X Art. «Holiness»). That death-dealing creatures were regarded as abhorrent and imperfect is proved definitely by the prophecy of Isaiah, who sees as one of the conditions of the Messianic period «that the wolf shall dwell with the lamb — and the lion shall eat straw like the ox — they shall not hurt or destroy in all my holy mountains,» etc. (Is. xi. 6–9, lxv. 25). There must further be noted the special shrinking evidenced in many ways from the hybrid and border species as departures from the true order of nature, which was that «all creatures should be after their kind» (Gen. i. 11, 21, 24). This would specially apply to the bat, the hybridous ostrich of the desert and the «winged quadrupedal creeping things» (Lev. xi. 23): The grass-eating locust would alone be excepted of all the insect tribe.

Others have seen in the distinction made between the clean and the unclean the means to separate Israel from the rest of the surrounding nations. «It was necessary for Israel to sever all intercourse with the desert tribes and in order to accomplish this the camel, for instance, was declared unclean. It was even more necessary to separate Israel from the corrupt and degenerate Caananites, and so the swine was pronounced impure.» (Ewald.) The argument is entirely without warrant, as the kine, sheep and goats were all eaten by the neighboring nations, and yet are regarded as clean for Israel.

Many have striven to connect the food laws of Israel with those of Manu. It is true that the food laws of Manu, with regard to the clean and unclean, have a great many elements in common with the Jewish Code, but the differences are too great to permit of any direct connection. Both give expression to the natural repugnance for certain classes of animals, but the details do not agree. In Manu's laws the hare, rhinoceros, porcupine, hedgehog, are all permitted, but they are unclean in the Jewish Code. The prohibitions relating to the birds, too, are not the same. Manu prohibits birds dwelling in cities and those that strike with the beak. There are also differences with regard to the fish. Manu prohibits all but a few species, and declares the crocodile, turtle and tortoise clean, but these are unclean in the Jewish Code. The Jewish law stands even further removed from the Zend-Avesta, as it knows nothing of the dualism of the latter (Gen. i. 31; Is. xlv. 7; Ps. cxlviii. 10). The most recent interpretation is the one advanced by W. Robertson Smith and accepted by Stade and Cheyne. He regards the prohibitions as identical with the taboo that Totemism places upon the use for food of the sacred ancestral animals. But it is the essence of Totemism that while sacred animals are not to be eaten generally, they are to be eaten eucharistically, as a religious rite; and further, these animals being regarded as ancestral, their names are reproduced in the names of tribes and individuals. With regard to the first point, there is absolutely no proof that the unclean creatures were ever eaten eucharistically in Israel. The two verses usually cited (Is. lxv. 4 and lxvi. 17) which condemn the consumption of swine are altogether too doubtful in meaning and too decidedly the subject of dispute (Duhm, Marti) to be in any way important. Still less fortunate is the attempt to prove the existence of Totemism from the occurrence of such names as Achbor and Chesir; for there is a larger number of clean animals whose names occur as names of individuals-Zimri (?) Hagab, Eglah, Epher, Rachel, Jonah, etc. (Jacobs, 'Stud. in Bib. Arch.'). If any further proof were needed that the bestowal of names has no connection with Totemism and is the result of accident or the suggestion of environment, it would be afforded by the large number of plants, excluded from consideration of clean and unclean, that furnish the names of individuals. Thus Susanna (Lily), Hadassah (Myrtle), Tamar (Palm), Carmi (Vineyard), Elah (Terebinth), Elon (Oak), Keziah (Cassia), Zetham (Olive). Totemism, moreover, would utterly fail to account for the extensiveness of the list of the unclean, and for the evident principles of selection guiding the compilation of the list. But the presence of Totemism altogether, characteristic as it is of the lowest stages of savage life, would be a startling anachronism in the highly complex and ethical civilization of the Hebrews (Nöldeke, Zeitsch. d. Deutsch. Morg. Gesell. 1886). The consideration of the dietary laws as hygienic enactments will come under the section in this article Health Laws.

Blood.— The prohibition of blood is avowedly different from the prohibition of the unclean creatures. Blood was too precious to be used by man. It was identified with the vital sentient principle. It was therefore to be consecrated to God. It is declared to be the medium of atonement representing the very life of the animal sacrificed (Lev. xvii. 11). The injunction concerning the blood is coeval with the very permission to use flesh as food (Gen. ix. 4). It is enunciated as a duty for all humanity, and the stranger was bound to respect the prohibition equally with the Israelite.

In the case of non-sacrificial animals or birds, the blood had to be poured on the ground and covered with earth (Lev. xvii. 10–15). The prohibition only applied to blood of mammals and birds, not to the blood of fish or locusts. It referred only to the free blood in the blood-vessels, and not to that absorbed in the tissues. The blood prohibition was one of the chief factors for the law of Shehitah or ritual slaughter. So great is the abhorrence of the Jews towards blood that bread is rendered unfit for use if in the process of eating, it become tinged by a speck of blood from the teeth (T. B. Kethuboth 60A). The monstrous absurdity of the «Blood Accusation» has been adequately treated by Strack ('Das Blut in Glauben,' etc., Munich 1900) and Chwolson ('Blutanklage,' 1901). Early Christianity accepted the blood prohibition (Tertullian, Apolog.), and it remained in force for various Christian sects till comparatively recent times (Grotius on Acts xv. 20). For Moselems, the prohibition is still in force (Koran, Sura II, V, VI). For the hygienic consideration of the blood prohibition, see under section Health Laws.

Fat.— The fat, like the blood, was reserved for the altar. Its prohibition was therefore limited to the fat of sacrificial animals,— kine, sheep and goats — and did not refer to that of other clean animals or birds. It was further limited to the fat similar in character to the intestinal fat, lying in layers separate from the flesh, and did not refer to that which was grown with the flesh (Lev. iii. 16, 17; Shul. Aruch, Yore Deäh § 64). The traditions of Karaitic Jews differ from those of Rabbinical Jews with regard to the extent of the fat prohibition (Adereth Eliahu, chap. 19). The curious suggestion of Michaelis that the prohibition was due to the desire to further the oil culture of the country has no foundation. For hygienic aspect, see section Health Laws.

«*Sinew which Shrank.*» — «Therefore shall the children of Israel not eat of the sinew which shrank which is upon the hollow of the thigh» (Gen. xxxii. 32; cf. Septuagint). The prohibition of the nervus ischiadicus (?) commemorates the great triumph of Jacob, when, through his victory over the Angel of the night, he received the name Israel, and despite his own injury, compelled his conquered opponent to bless him. It is the special moment of great achievement to Jacob (Hosea xii. 4.5) and of supreme destiny to his children (Gen. xxxv. 10, 11). Owing to the disputed nature and locality of the prohibited sinew, the prohibition has been extended to both the nervi ischiadici, the adjacent veins, tubular sinews and fatty fibres. The removal of all these, however, demands a special knowledge and expertness infrequent in many Jewish communities; so that the sirloin, etc., is not generally available for food except in the Orient and Eastern Europe (Shul. Aruch, Yore Deäh § 65).

Slaughtering.— All animals that die otherwise than by Shehitah, ritual slaughter, are termed Nebhelah (that which dieth by itself), and all that are torn by beasts or are afflicted by any fatal disease or lesion are called Trefah (the Torn). In both cases their use for food is prohibited. The ritual slaughter, Shehitah, is one of the most important functions in the Jewish ceremonial and is always in the hands of trained experts (Deut. xii. 21). The knife used is specially sharpened and repeatedly tested by experts to ensure a perfectly sharp and smooth edge. Its blade being usually 14 inches in length and two inches in width, is specially adapted for rapid manipulation. It must then be drawn with a steady stroke across the throat, severing the trachæa and esophagus and dividing the pneumogastric nerve controlling cardiac action, and the carotid artery and jugular vein. Reserving hygienic considerations for «Health Laws,» the following effects of the process must be noted. They formulate the result of a vast number of experiments comparing all the known methods of slaughtering animals, conducted by Dr. Dembo in Saint Petersburg under the auspices of a scientific commission. (1) Comparative Painlessness of Death.—(a) The severing of the great blood-vessels, producing instantaneous anaemia of the brain, results in absolute unconsciousness — the gray matter of the brain ceasing its function at once and complete loss of consciousness following in three to five seconds. (b) The cut is exceedingly rapid, seldom consuming more than one second in time, as the knife is sharpened and smoothed with extraordinary precaution; consequently the pain of death is minimised. (2) Economical Considerations.—(a) Through the much earlier appearance of rigor mortis, the meat is sooner available for food. (b) Through the much later appearance of decomposition, the meat remains longer available even in summer (Shul. Aruch. Yore Deäh §§ 1–27).

Inspection.— While the proper performance of Shehitah excludes the animal from the category of Nebhelah, it must be further examined to ascertain beyond all question that it is not Trefah (suffering from any mortal disease or lesion). This examination, Bedikah, is purely hygienic and is treated under section HEALTH LAWS. But just as the Shehitah (ritual slaughter), with all its far-reaching ethical, economical and hygienic consequences, originated in all probability with the necessities of the altar service — to pour out the blood for sacrifice — so the Bedikah (examination for disease) with all that it involves had its prototype in the temple service in the priestly examination of the sacrifice for disqualifying blemishes (Lev. xxii. 20–25; Malachi i. 8).

Extraction of Blood-Vessels, etc.— The prohibition of the blood, the fat and the nervi ischiadichi necessitates the careful extraction (nikkur) of certain blood vessels, membranes, fat layers and tissues, sinews and fat-fibres from various parts of the body (Shul. Aruch. Yore Deäh § 65.) English-speaking Jews call this process of extraction «porging,» a word derived from the Judaeo-German «porschen». The process is very elaborate (‘Jewish Encyc.,’ art. Porging) in the case of animals. It is, however, very simple in the case of fowl, where neither the prohibition of fat nor of the nervi ischiadichi obtains.

Salting, etc.—There still remains one further process Melihah (salting), before the meat is fit for food, and that is the soaking and salting thereof to remove the surface blood. Salt also came on the altar with sacrifices (Lev. ii. 13; Ezek. xliii. 24). The hygienic importance of Melihah is referred to under section HEALTH LAWS.

Products of the Prohibited.—Not only are the unclean and the diseased animals prohibited but all their products. Thus the milk and cheese of both unclean and diseased (Trefah) animals are prohibited. Milk and cheese should not therefore be purchased in the general market without superintendence. Human milk is prohibited for the adult and even for the child who has once been properly weaned. So the eggs of unclean birds and all eggs on whose yoke a drop of blood is found are prohibited. In like manner the roe of an unclean fish cannot be eaten. Honey, however, is permitted, as it is not regarded as a product of the bee, but simply as the nectar gathered by the insect (Shul. Aruch, Yore Deäh § 81). In the case of any mixture of the forbidden and the permitted,— if the taste of the forbidden object be discernible, then all is forbidden. So cheese which has been curdled with a prohibited rennet is entirely prohibited, and some superintendence ought to be exercised over the manufacture of cheese.

Meat and Milk.— The threefold repetition of the command «Thou shalt not seethe the young in its mother's milk» (Deut. xiv. 21) is traditionally interpreted as referring to the threefold prohibition of cooking meat and milk together, of eating this mixture or of deriving any benefit from it. The interpretations of the command have been many and varied, but two predominate, and have certain justification. Philo construes it as an ethical law similar to (Deut. xxii. 6 and Lev. xxii. 28), denouncing cruelty to animals and intended for the moral discipline of the people. The milk that was set apart by nature for the nourishment of the young should not be used as the medium in which the young is seethed. Maimonides explains the prohibition as directed against an old heathen custom or magical rite of propitiating the nature gods by sprinkling the fields with this meat and milk broth. This explanation of the prohibition has also been advanced by Spencer and Cudworth and has received some support from modern authorities. Meat and milk are never partaken of together at the same meal, sufficient interval being allowed, if the meat has been eaten first, for it to be digested before partaking of milk. The prohibition refers with equal force to any preparations in which meat or milk enters (Shul. Aruch, Yore Deäh §§ 87–97).

Vegetable Dietary Laws.— Not all the food laws concern themselves with meat. There is the injunction concerning Orlah which forbids the use for food of the fruit of a tree in the first three years of its growth (Lev. xix. 23–25). The yield of the fourth year, or its money equivalent, was brought to Jerusalem and used for special rejoicing and feasting. The prohibition of the fruit crop of the first three years continues binding to the present day. Another law of somewhat similar character is that of Hadash which prohibits the eating of the new corn until the time of the offering of the Omer (Lev. xxiii. 9–14). The sowing of mixed seeds in a vineyard is prohibited (Deut. xxii. 9). Should, however, the prohibition be transgressed, then the produce cannot be used for food. But the most important vegetable dietary laws are those of Hametz and Mazzah commemorating the Exodus from Egypt. During the eight days of the Passover festival no leaven (Hametz) can be eaten and none may be permitted to remain in the house (Ex. xiii. 7). There is furthermore the positive law that unleavened bread (Mazzah) shall be eaten.

Heathen Food Laws.— Another group of dietary laws are either prohibitive of the objects of idolatrous worship or of intercourse between Jews and idol-worshippers. The most important of these refer to the use of wine. Wine that has been consecrated to an idol is absolutely prohibited. But even the ordinary wine of the heathen is prohibited, partly because of the suspicion that he may have consecrated it to his idol, but also to create a social barrier that would make the possibility of intermarriage more remote (Ab. Zarah 36B). Furthermore wine that has been touched by an idolator though belonging to a Jew, will be under suspicion of having been idolatrously consecrated and its use prohibited. The general stringency of the regulations is, however, influenced by the specific conditions of social environment.

Health Laws.—There has been considerable dispute as to the existence of a class of professional medical men distinct from the priestly class in Biblical times. The occurrence of the expression "thy healer" (Exod. xv. 26) has been advanced as an argument for the affirmative, but the whole verse may be interpreted as referring to a union of the sacerdotal and the medical offices. Certainly the context in Exod. xxi. 18–20 seems to imply that the doctor was paid; and there is mentioned in Isaiah the Hobhesh or wound-binder. Asa, King of Judah, is reproached for having sought help from the physicians and not from God. The Prophets were frequently appealed to for aid in sickness and one interesting cure is recorded as having been made by Isaiah. King Hezekiah had fallen sick of a disease which Lauder Brunton identifies with the inflammation of the tonsils. The prophet cures him with a plaster of figs,— a remedy not unknown to modern treatment. Later, we find physicians highly honored (Ecclesiasticus xxxviii. 1–8), and numerous evidences of considerable skill on their part. A long array of famous physicians is recorded in the Talmud and many difficult operations are credited to them (Kotelmann, Virchow's Archiv. Vol. 84). A prolonged controversy has raged round the interpretation of a passage in the Talmud (T. B., Niddah 40 A) which according to one reading refers to the successful performance of "Cæsarian Section," Hysterotomy, mother and child both being saved. Of special importance is the physiology and pathology of the Talmud tractate Hullin. Certainly the health laws of the Bible give eloquent testimony to the advanced condition of Social hygiene. Certain biotic advantages have been claimed for the Jew. Greater longevity, greater fecundity, greater exemption from tuberculosis and syphilis, special capacity for acclimitisation, are among these. But the advantages do not appear to be racial and seem to be entirely dependent upon the degree of the observance of the special laws, and to be forfeited with the non-observance of these (Adler, Nossig).

Work and Rest.— The first health laws are given in the Decalogue with the institution of the six days of labor and the seventh day of rest. The hygiene of labor is clearly recognized in Jewish law. Even the scholar is enjoined to acquire a handicraft (Pirke Aboth ii. 2). The necessity of physical training is insisted upon with emphasis, and it is accounted a paramount duty for the father to teach his child a craft and to train him to swim. Even the women of the wealthiest class are enjoined to work because of the destructive effect of idleness upon moral strength and mental sanity (T. B. Kethuboth 59 B; cf. Proverbs xxxi.). but over pressure has been guarded against by the complementary regulation of a full day of periodical rest. Since the nature of the toxins produced by fatigue and the extremely gradual rate of their elimination from the system have been more clearly recognized, the Sabbath rest has become a scientificially demonstrable hygienic necessity, which no shortening of the day's labor can possibly supply.

Food.— Nearly all the food laws have their hygienic aspect. The prohibition of the carnivoræ with their exclusively nitrogenous diet; of the swine with its tendency to trichinic infection, and the readiness of its meat, as most freely productive of gelatine, to provide a favorable nidus for morbific bacilli (Dr. E. Ballard), has been welcomed as a health law of importance. Dr. Borell of Göppingen (Virchow's Archiv. 65) describes the presence of worms similar to trichina in the blood of the raven, and Virchow adds, that this is a variety of Filaria similar to the Filaria sanguinis hominis which is known to be the cause of chyluria and chylous hematuria and supposed to be the cause of Elephantiasis. Similar discoveries have been made by Herbst in the blood of the crow, the daw, the hawk and the jay. The rejection of eels, muræna, oysters, mussels and crabs from the list of foods has been regarded as hygienic since these feed largely on sewage, and have been the causes of numerous epidemics, especially of typhoidal character. The ordinary mussel, mythis edulis, has had its poison examined and analyzed by several specialists (Virchow's Archiv. Vol. 103, 104, 110, 115). The preference for the scaled fish of the sun-bathed, purer and more highly oxygenated surface waters has also its hygienic aspect. Recent investigation as to the propagation of disease through insects and animals,— malaria and yellow fever by the mosquito, typhoid by the fly, pneumonia by mice, hydatid cysts by the dog, etc., seems to afford continually growing evidence to the hygienic value of the food laws and of the elaborate regulations concerning the defilement of person, clothes, foodstuffs and utensils by contact with the various species (Lev. xi. 32, et seq).

The rejection of blood has also its hygienic effect. It is in the blood that toxins produced by disease germs and occasionally the germs themselves, circulate, and this makes it a vehicle for communication of disease; and further by its own rapid decomposition, it becomes also an original source of disease. The intestinal fat has also been considered by many hygienically objectionable, as harboring parasites in the lymphatic ganglia (Ebstein). In the method of slaughter (Shehitah) a valuable group of health laws is encountered. (1) The two main characteristics of the Shehitah are the quick bleeding and the accompanying epileptoidal convulsions. These produce, after certain chemical reactions, the acid phosphate of Potash KH_2PO_4 which is antiputrefactive. It hinders the development of micro-organisms, delays the formation of the products of decomposition, of ptomaines and toxins, and imparts an additional savor to the meat. (2) Through the epileptoidal convulsions the blood left in the meat is less alkaline and therefore less favorable to the development of bacteria (Dembo). The Bedikah (Examination) is avowedly a pure health law. Its function is to determine whether or not the animal was suffering from any fatal disease or lesion, as this would make it Trefah, «Torn,» and unfit for food. For this purpose the chief organs have to be examined, especially the lungs. It must be clearly determined whether or not there are any adhesions either of one lobe of the lungs to the other, or the whole or part of the lungs to the diaphragm or chest wall. The lungs are tested for perforations by inflation during immersion in water. The surface of the lungs is examined for tubercules of any kind (Dr. Behrend in *Nineteenth Century*, 1889). Inspection of other organs only occurs when symptoms are observed indicating the presence — or when there is general prevalence — of some affection. Nor are the lungs of a fowl examined unless there is special ground for suspicion. Koch (Inter. Med. Cong. 1890) has, however, shown that tuberculosis of fowl is a species distinct from human or bovine tuberculosis and is inocuous to man.

Melihah, or «salting the meat» prior to use, has for its purpose the removal of the stagnant, impure, diseased, germ-laden, surface blood. When the conditions, under which meat has often to be kept before use, be remembered, the health value of the Melihah law will be clearly apparent (Hyamson, *Jew. Quart. Rev.* Vol. IX.). The avoidance of the mixed meat and milk diet has also been hygienically commended. It is claimed that the simultaneous ingestion of soluble and fibrinous albumen is not well borne by the gastric apparatus (Aronstam). Of importance are the special laws aiming at the purity of water and milk. In countries where poisonous reptiles abound, water and milk must not be left uncovered. Articles of food should not be kept in any unclean place, as under the bed, nor be served from any impure vessel. Timely and simple diet is recommended. There are 83 diseases that are prevented by an early breakfast of bread and salt and a pitcher of water. For health reasons, it was enjoined that meat and fish should not be eaten simultaneously.

Body.— In its insistence on the purity of the body Jewish law presents a unique phenomenon. As Leroy Beaulieu declares, «for 25 centuries the Jew has striven to be clean, and alone has observed the laws of moral and physical purity.» Yet here as elsewhere there should be no confusion between effects and motives. Though the motives were to a considerable degree avowedly hygienic, yet predominantly, they were religious. Ablutions were demanded from the Jew, for prayer could not be pronounced amid physical uncleanliness; his body had to be scrupulously clean for the Phylacteries could not otherwise be worn. At the very moment of rising, ablution of the hands and face was enjoined,— without this he could not offer his morning prayer (Psalm xxvi. 6). Before and after every meal the hands had to be washed and a special benediction for the injunction of cleanliness pronounced. After every unclean bodily function, after touching any unclean object, after visiting a cemetery, ablutions had to be performed. Although water is truly precious in the East, yet there never was stint of it for the purposes of cleanliness. Rabbi Akiba in prison, preferred to leave his thirst unassuaged, and used his dole of water for ablutions. It was prohibited to live in a town that had not a bath, and the use of water was regarded as the infallible panacea. «Better a little cold water in the morning and a warm hand and foot bath in the evening than all the salves in the world» (Shab. 109A): «Man endangers the eye, nose, mouth and ear if he touch them with unwashed hands.» The value of the warm baths of Emmaus near Tiberias, of Gadara in Peræa and Callirrhoe near the Dead Sea, was thoroughly appreciated. Nor were aesthetic considerations overlooked in the case of the body. Physical beauty was highly valued (T. B. Berachoth 20A). The long list of blemishes and disfigurements, over 150 in number, that were disqualifying for the priesthood points to the existence of a high standard for physical conformation (Sifra, Emor III).

Clothes.— The view entertained as to the cleanliness of clothes is tersely stated in the apothegm, «the sage upon whose garments a grease spot is found is worthy of death.» The uncleanliness of his garment was an insult to the holy law whose dignity it was his duty to protect. Whenever the man has been in contact with any impurity, whether it be one of the leproidal diseases or the impurity of the corpse, or any sexual impurity, it is not only his body, but also his clothes that have to be washed. It is perhaps unduly imaginative to see in the law which prohibits the wool being mixed with flax in the manufacture of garments, an anticipation of Jaeger (M. N. Adler). But Ebstein insists nevertheless that such a garment would be hygienically harmful as the wool would tend to warm and the cotton or flax to cool the body and there would be unequal protection for the body surface (Deut. xxii. 11). There is a reference in Leviticus to a peculiar species of reddish or greenish discolorations occurring in garments and destroying the material. It is termed leproid and may be some form of fungoid growth. Where garments are worn for long periods such growths may occur. Directions are given for inspection and seclusion, lustration or destruction (Lev. xiii. 47).

Sanitary Arrangements.— The Bible already makes provision for the protection of the camp from the usual plagues of typhoid, diarrhœa and dysentery attendant on camp life. The consignment of all putrid matter to the earth — in a place without the camp — ensured disinfection and the protection of the water and the air (Deut. xxiii. 9–14). These admirable hygienic provisions are the direct consequences of the Holiness motive with its psychophysical implications; "that thy camp shall be holy." In the subsequent city life similar precautions were taken. It was prohibited to rear poultry or keep wild animals or permit dung-heaps to gather in Jerusalem (T. B. Baba Kama, 82 B.). No tannery could be erected within 50 cubits of the city limits, and then only to the east of the city so that the prevalent west wind would carry away the effluvia. Kimhi maintains in his comment to Psalm xxvii. that a fire burnt continually without the city for the destruction of all cadavers and offal and refuse. Many scholars, though not all, accept this statement. Certain writers have referred to the extremely valuable sanitary results of the minutely scrupulous removal of all leaven from the homes before the advent of Passover (M. N. Adler). As this involves the thorough overhauling of the whole house from garret to cellar, the purification and cleansing of all utensils and kitchen accessories, and the destruction of the accummulation of scraps, etc.— the hygienic effects, however undesigned, must be acknowledged (Ex. xii. 19; Deut. xvi. 4).

Temperance.— Both in food and drink temperance was enjoined. Gluttony and drunkenness is the special crime of the rebellious son whose punishment is death. Wine was so important an article of food, that special influence was necessary to prevent its abuse. The stories of Noah and Lot conveyed their own moral. The priests were held unfit for office if they indulged in strong drink. The order of the Nazarites, and the clan of the Rechabites, upheld an ideal of abstinence. But yet the value of wine as a medicine was recognized (Prov. xxxi. 6). Nor was the ascetic attitude entirely approved of. The Nazarite brought his sacrifice when the term of his vow was over for having denied himself that which God permitted. "In the future world, man will have to account for every enjoyment that was offered to him and he has unnecessarily refused" (Jerus. Tal. Kid. IV). Yet there is no limit to the denunciation of drunkenness throughout the Bible.

Dwelling.— The Bible records the special protection to be afforded to the flat roofs of the houses. They were to be surrounded by a battlement so there should be no blood upon them (Deut. xxii. 8). The height of the battlement is fixed at a minimum of 3.06 ft. It must be strongly built and able to stand any ordinary strain. There are further injunctions prohibiting the presence of any open well or pit, or the presence of unsafe ladders about the house. There is a remarkable series of hygienic laws referring to a diseased condition of the house (Lev. xiv.). The reference is probably to houses attacked by dry rot — merulius lacrymans, a fungoid growth inimical to the health of the inhabitants. There are clearly formulated in the regulations — (1) duty of declaration; (2) duty of examination and diagnosis; (3) complete removal of the affected parts without the camp; (4) scraping of the interior of the house and removal of the dust and dèbris without the camp to the unclean place; (5) on return of the affection, the house is to be completely destroyed; (6) all the persons who have been in the house, eaten or slept therein, must be purified through the washing of clothes and person (Baginsky).

Disease.— Proceeding upon the principle that the whole law was given for life and not for death (Lev. xviii. 5, T. B. Ab. Zarah 27B), the interest of the patient is declared superior to any of the ordinary religious obligations; — even the sanctity of the Sabbath and the Day of Atonement giving way to the necessities of medical treatment. The duty of visiting the sick is a part of the great *Imitatio Dei* (T. B. Sota 14A) and the neglect of this duty is declared by Rabbi Akiba to be a criminal indifference to human life (T. B. Nedarim 39B). But the visiting must be helpful in act and reverent in spirit since the Divine Shechinah stands ever watching at the head of the bed of suffering. This visiting should, however, be entirely omitted if the nature of the disease or the attendant circumstances make it a source of embarrassment to the patient. In certain cases of disease or contact with disease measures for putrification and disinfection have been enacted. Wherever there has been contact with the dead, or pseudo-leprous symptoms of disease, or sexual secretions and discharges — an elaborate process of washing and bathing for person and garments prevails.

Burial.— Interment must take place as speedily as possible (Deut. xxi. 22). It is the last and most unselfish act of kindness one can perform to one's fellow. God himself showed the example by burying Moses. All can claim interment, even the criminal executed on the gallows (Deut. xxi. 23). Cemeteries were extramural and were prohibited within a circuit of 60 cubits from the city limits. The dead were placed in caves and vaults and were visited by their relatives for three days after, to avoid all possibility of their being buried alive. After some time the remains were then interred in the grave proper. The rapid decomposition of the body to its constituent elements is regarded as desirable. While cremation is opposed to Jewish practice (Gen. iii. 19; Eccles. xii. 7), yet quicklime is frequently placed in the grave in some countries. The prevalent custom among observant Jews in Eastern Europe and the Orient is to have the coffin of the simplest construction,— a few boards nailed together,— with the bottom perforated,— so as to interpose no obstacle to rapid decomposition.

The selection of the soil for cemetery purposes is of hygienic value,— as the ground must not be in contact with any water sources, and thus the danger of contamination of the water supply is minimised. An interesting account is given in the Bible of the composition of the "Water of Lustration" used for all who had been in contact with the dead. Undoubtedly the ingredients possess high disinfecting qualities. Into its composition entered cedar wood (coniferæ), rich in phenol and cresol and cedrene camphor; hyssop with its camphoraceous oil of penetrating aroma and other oils, rich in oxygen; the cremated carcase of the heifer, rich in potash and soda (Numb. xix.).

Sexual Relations.— There is a vast legislation controlling all the circumstances of sexual relation. The penalty of death is imposed for all acts of sodomy or unnatural intercourse, for connection within specially prohibited degrees and for adultery with a married woman (Lev. xx. 10–16). Excision is the penalty imposed for all other illicit connections. Prostitution is absolutely prohibited (Deut. xxiii. 18) and chastity is demanded from both sexes. Two of the commandments of the Decalogue are devoted to the maintenance of the purity of married life (Exod. xx. 14, 17), and the elaborate table of prohibited degrees protects it hygienically (Lev. xviii. 7–18). Thus the marriage institution is enabled to perform its proper function, the fulfilment of the law: 'Be ye fruitful and multiply' (Gen. i. 28). Anticonceptional acts invited the Divine doom (Gen. xxxviii. 9), and the duty of begetting children is declared the supreme privilege and blessing (Psalm cxxvii. 3–5; Psalm cxxviii. 3–4). In opposition to the powerful current of opinion, favoring childlessness, that found support among Epicureans and Stoics in the interests of greater independence and posibilities of self-indulgence or self-development, and in Essenaic and Christian monachism in the interests of chastity and personal holiness, the Rabbis compare a man voluntarily childless to a «shedder of blood» and «an opponent of God» and adjudge him unworthy of life (T. B. Yebamoth 63B et seq.). Yet marriage is acknowledged to be also an end in itself (Gen. ii. 18), and an eloquent panegyric is pronounced over it. «He who is without wife, dwells without joy; without blessing; without good; without religion; without citadel; without peace. The wife is to be loved as one's self; to be honored, more than one's self» (T. B. Yeb. 62B). The age recommended for marrying is about 18 years for the male and extreme disparity of age is discountenanced. The influence of modesty in love is declared of paramount importance for the character of the children (T. B. Niddah 71A), and temperance is absolutely enforced by the rigid prohibition of sexual relations for a certain period succeeding the menses and parturition (Lev. xii. 2–5; xx. 18). Behrend maintains that the enforced temperance ensures procreation at a specially favorable period. The fecundation that occurs after the lapse of seven days following the cessation of the menses is much less likely to result in abortions. Circumcision was regarded by Philo and Maimonides as assisting in the promotion of temperance by weakening the erotic element (cf. Bereshith Rabbah § 80) while increasing functional power. Motherhood was honored even in animals (Lev. xxii. 28; Deut. xxii. 6). The time preceding and following parturition is the occasion for the exercise of extreme care both dietetically and mentally (Jud. xiiii. 7; T. B. Yoma 8; T. B. Kethuboth 60B). The nourishment of the child is the duty of the mother (I. Sam. i. 23); the mother's milk being regarded as the best food. With regard to sexual impurities the laws are very minute and detailed and refer to the impurity through coition, the menses, parturition, secretions and discharges of various kinds. Segregation, bathing and washing of the clothes, etc., are the means by which purity is restored. The laws in Leviticus (Chap. xii-xv.) are elaborated in the Shulhan Aruch, Yore Deäh §§ 183–200. The fullest protection is given to woman and the utmost hygienic precautions are taken (Baginsky).

Leproid Impurity.— Much controversy prevails concerning the leproid affections referred to in Leviticus (Ch. 13 et seq.). One group of interpretors identify the disease here referred to with true leprosy, Lepra Arabum or Elephantiasis Graecorum (Häser, Michaelis, Neumann, Fox). A second group regard the Zaraath of Leviticus as a generic term covering a large variety of skin diseases ranging from true leprosy to the comparatively mild Psoriasis (Lepra Graecorum), Scabies, Eczema and possibly Syphilistic affections. (Aug. Hirsch, Liveing, Munro). Others again find no connection at all with true leprosy (Hebra, Münch, Hillary, Finály, S. R. Hirsch). Thus Münch maintains that the Lepra Arabum was quite unknown to the early Hebrews. Finály gives a peculiar and unwarranted connotation to the diseased «skin of the flesh» (Lev. xiii. 2) and would confine the whole legislation to syphilistic affections. Hirsch, Hoffmann and other theologians regard the disease as a purely symbolical affection, similar possibly to the 'mark of Cain' (Gen. iv. 15).

The following are the main negative considerations that influence those that deny all reference to true leprosy. (1) The absence of the characteristic symptoms of Lepra Arabum; anæsthesia, muscular atrophy and loss of extremities, etc. (cf. Sforno on Lev. xiii. 2). (2) The extreme brevity of the interval of seven days, between the different inspections that determine the presence or absence of a serious affection, points away from leprosy which is characteristically slow in development. (3) The excessively mild enforcement of the regulations in the later development of the law, makes the identification of Zaraath with true leprosy highly improbable (T. B. Moëd Katan 7B). (4) The Biblical Zaraath seems to be regarded as an hereditary and contagious disease. Many authorities, however, consider true leprosy to be neither contagious nor hereditary. (5) Certain anomalies in the regulations suggest a symbolic disease or infliction of stigmata expressive of Divine displeasure rather than a true disease (T. B. Arachin 16A; cf. Exod. iv. 6; Numb. xii. 10.). Thus when the white leprous efflorescence covers the whole body, the affection is pronounced clean and neither isolation nor further inspection follows. Yet this complete efflorescence is apparently a characteristic of the incurable Egyptian leprosy (Deut. xviii. 35).

None of these considerations is however conclusive, and most probably, Zaraath in the Bible is a generic term including many diverse skin diseases and among them, true leprosy. The characteristics of the advanced stages of Lepra Arabum do not seem to have been unknown (Numb. xii. 10, 12; Deut. xxviii. 27, 35), and the reference to Egyptian leprosy seems to point to true leprosy, which was known in Egypt (Ebers). In Leviticus however, the earliest symptoms alone are given to determine the presence of the disease. The laxity in the enforcement of the rules in later times may be explained by the gradual decrease of true leprosy among the Jews, and the consequent limitation of Zaraath legislation to the minor skin affections. The terrible diseases, that decimated the army of Pompey, were largely leproid in character (Pliny), and the immunity of the Jews to all these is affirmed by Tacitus. Similar testimony to the freedom of the Jews from leprosy is afforded by Plutarch (Sympos.) and Aelian (De Natura animal), who assert the consumption of swine to be the cause of leprosy and skin disease (cf. T. B. Kiddushin 49B). The apparent anomalies are removed if Zaraath be regarded as a term covering many widely different skin affections. Modern science has discovered the special leprosy fungus, Bacillus Leprae, and has, on the whole, vindicated the Bible view of leprosy as contagious. Its hereditary character has been less clearly determined, but it is also less clearly implied in the Bible. The main points of hygienic interest are those referred to in the affected house,— the insistence upon declaration of disease, diagnosis, isolation, lustration, etc.

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20. **Judaism — Jewish Charities.** See JEWISH CHARITIES.

21. **Judaism — Alliance Israelite Universelle.** An organization with headquarters at Paris, France, having for its purpose the protection, improvement, and education of the Jewish people. Its activities have been directed, in the main, toward safe-guarding and educating Jews in Eastern Europe, Asia Minor, and North Africa. During the first half of the last century several attacks made on the Jews by fanatical mobs, owing chiefly to false charges of ritual murder, evoked fervent appeals for organization, to which apparently little heed was at first paid. Public sentiment began to crystallize after the Damascus blood accusation in 1840. A temporary cessation of difficulties produced indifference to the needs of organization when, on 23 June 1858, the world was startled by the announcement of the details of the Mortara case. Edgar Mortara, aged six, a son of Jewish parents, was forcibly abducted from his parents' home in Bologna by papal soldiers on the grounds that four years earlier, during a supposed spell of sickness, a servant, Anna Morisi, had secretly baptized the child.

Origin of the Alliance.— Public sentiment now became inflamed. The need of some central organization to watch over Jewish interests was keenly felt and the «Alliance Israélite Universelle,» founded in 1860, was the result. Six Parisian Jews, at that time but little known, but whose names have since become almost household words in Jewry, were chiefly instrumental in founding the Society. They were Aristide Astruc, later chief Rabbi of Belgium; Isidor Cahen, editor of the ‘Archives Israélites;’ Jules Carvallo, civil engineer; Narcisse Leven, lawyer; Professor Eugene Manuel; Charles Netter, merchant.

Objects.— The object of the Society is: «To defend the honor of the Jewish name whenever it is attacked; to encourage, by all the means at our disposal, manual labor and the pursuit of useful trades and professions; to combat, whenever necessary, the ignorance and vice resulting from oppression; to contend, by the power of persuasion and moral influence, for the emancipation of our brethren who still suffer under the oppressive burden of exceptional legislation; to advance and promote the complete enfranchisement of our brethren by intellectual and moral regeneration.» Article I of the Society's Statutes states its object: «(1) To toil everywhere for the emancipation and moral progress of the Jewish people; (2) To extend effective help to those who suffer persecution because they are Jews; (3) To encourage all publications calculated to promote these ends.» When it is remembered that about 75 per cent. of the Jews still dwell in lands in which modern concepts of justice, liberty, and equality are almost unknown, the herculean undertaking of the Alliance may, perhaps, be understood.

Management.— The Alliance is managed by a Central Committee of 62 persons, 23 of whom reside in France, and 39 in other countries. Its headquarters are located at 35 Rue de Trévise, Paris. The Central Committee is elected for nine years, one-third of the members retiring at the end of three years, being, however, eligible for re-election.

Methods.— The *modus operandi* of the Alliance is solely along lines of moral force. The results achieved have, therefore, been slow of growth. They are, however, permanent in character and are beginning to bear fruit in the most unmistakable manner. The work has naturally divided itself into three branches, (1) political; (2) educational; (3) literary. Political activity has not been resorted to with a view of intermeddling in the affairs of the powers, but of appealing to political leaders to secure justice. The necessity for such work arises from the fact that the Jews are followers of a religion which has no government to support it.

Political Activities.—While the undertakings of the Alliance in this direction have not been uniformly successful, they have served to stir the world's sluggish moral sense, and in many important respects to improve the political status of the Jews. Switzerland and Sweden first yielded to the appeals of the Alliance, and after these initial successes, Russia and the Balkan provinces were the European countries in which the strongest efforts were made, because in these lands the Jews suffered most from all kinds of disabilities. At the time when this Society was formed the lot of the Jews in the Balkan provinces was most unfortunate. At its instance remedial legislation was promised and when Adolphe Crémieux went to Bucharest in 1866 and pleaded with the Roumanian authorities, it was believed that Jewish emancipation had been effected. But conditions went from bad to worse, until in 1878 the Berlin Treaty in Article 44 (inserted in the main through the influence of the Alliance), demanded recognition of the political rights of Jews in the Balkan provinces. Servia and Bulgaria have been faithful to the terms of the treaty, but to this day Roumania considers the Jews as aliens. Roumania remains the scene of great activity on the part of the Alliance, large subventions being annually granted for charitable and educational purposes. In spite of persistent representations to the Russian government little success has been achieved in Russia. The political status of the Jews is that of aliens. Social, economic, civil, and religious disabilities of every character menace the progress of about 6,000,000 Jewish souls. During the famine of 1869, when Poland and the West-Russian provinces suffered, the Alliance came to the rescue of the unfortunate, provided funds for the purchase of food, helped many to emigrate to Occidental lands, took charge of several hundred orphans, and founded trade-schools for Russo-Jewish children in Western Europe. When the persecutions of 1881–83 were inaugurated, when the «May Laws» were put into operation, and the Pale was again made the compulsory residence of millions of unhappy Jews, the Alliance again became an angel of mercy for them. Kishineff, Odessa, Kieff are names which recall the recent barbaric massacres of many Jews, and during 1905 the Alliance became the agent of the world's beneficence, distributing over 3,000,000 francs among the sufferers. The soldiers wounded during the Russo-Japanese War, widows and orphans deprived of their natural protectors during the massacres, 8,000 workmen rendered penniless through riots and mob violence, emigrants who sought opportunity and liberty in foreign lands, have all been efficiently assisted by the ministrations of this «universal» agent. In Mohammedan countries Jewish disabilities are of a different character. Here the people suffer from poverty and lack of education, rather than from political inequality. Still, large sums of money have been spent by the Alliance in Morocco, Tunis, Egypt, Persia, and Turkey, to protect the Jews from the violence of the mobs incidental to the misrule prevailing in most of these countries. Its representations have been strengthened by the intervention and support of the British and French, and, in recent years, of the American, consuls, with gratifying results.

Educational Work.— The most hopeful work conducted is the educational activities designed for intellectual and moral improvement. The bulk of the world's Jewish population in 1860 resided in unprogressive countries, and the intellectual status of the majority was necessarily low. In 1862 a school was founded in Tetuan (Morocco), in 1864 another was opened in Tangiers, and in 1865 a third was started in Bagdad. In 1880 there were 34 schools; in 1890, 54; in 1899, 94 — 58 of which were for boys and 36 for girls, having an attendance of 24,000 pupils. To-day the Alliance conducts 132 schools, with an enrollment of more than 40,000 pupils, in Bulgaria, Turkey in Europe, Turkey in Asia, Egypt, Tripoli, Tunis, Algeria, Morocco, and Persia. Schools are free to the poorest children, who also receive, free of charge, and at the expense of the Alliance, a mid-day meal each day and one or two suits of clothes each year. Whenever possible the scholar must pay a fee, which, in the case of the most prosperous, is as high as 20 francs a month. The schools are open to children of all denominations, and non-Jews, as well as Jews, are found among the pupils and instructors. In some localities night-schools for adults are now being conducted. A Rabbinical seminary was founded in Constantinople in 1897. In order to provide instructors for the 132 schools conducted by the Alliance, a normal school was founded in Paris in 1867. As far as possible the teachers are selected from the communities in which they are to teach in later years, and are sent to Paris for tuition. The «Ecole Normale Israélite» has a magnificent building in the French capital in which, in 1905, 98 male and 45 female students were receiving an education to fit them for their profession. Theory and practice go hand in hand under the system of the Alliance. Elementary school education is supplemented by manual and agricultural training. On 5 April 1870 the Mikveh Israel (Hope of Israel) Agricultural School was founded in Jaffa, upon a grant of land of about 600 acres, sympathetically granted to the Alliance by an imperial firman of the Turkish government. Fortunately for the undertaking M. Charles Netter was ready to devote his energies to the development of the school, whose existence was due to his suggestion, and whose success has been greatly due to his initiative and capable administration. M. Netter died in 1882. The Jaffa Agricultural School has over 220 pupils. Graduates of this school have become the instructors of the colonists who have settled on the Baron Edmond de Rothschild colonies in Palestine and in the de Hirsch colonies in Argentina. Another agricultural school was founded in 1895, in Djedei, a few miles from Tunis. A tract of land of about 3,000 acres was purchased, suitable buildings erected, and in a few years there was an enrollment of over 210 pupils. The Alliance also provides means of earning a livelihood through training given in the trade-schools. In 35 different centres of the Near East, «apprentice-schools» are conducted in which children are taught remunerative trades. The trade-school in Jerusalem, founded in 1882, has been particularly successful.

Further Activities.— Another branch of educational work undertaken is directed toward the formation of public opinion concerning the Jews. It has spread abroad a knowledge of Jews and Judaism by means of help given to Jewish scholars by subventions granted to assist them while writing and publishing their works. It is said that no important work referring to Jews and Judaism has appeared during the past 35 years without some assistance being granted by this Society. The Alliance library consists of nearly 25,000 volumes.

Bibliography.— The ‹Bulletins,› annual, semi-annual, and monthly, published usually in French, and occasionally in English, German, Dutch, Italian, Judæo-German, and Hebrew. ‹Publication of the 25th Anniversary of the Foundation of the Alliance Israélite Universelle,› issued in 1885, and published in French, English, German, and Judæo-Spanish; ‹Publication,› issued in 1896, containing a review of work done from 1860–1896; French pamphlet by M. Nissim Behar, American Agent of the Alliance.

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22. Judaism — Jews in America. See Jews in America.

23 — Judaism — Present Status of the Jews Throughout the World. With the voluntary and enforced emigration which marks the Jew in every age, and to which the past century was as little an exception as the present bids likely to prove, it is difficult to regard the status of the Jews as fixed for any length of time. The population is as shifting as conditions. Within the past two and a half decades there has been a Jewish migration of fully 1,500,000 from Eastern Europe to western lands, and across the sea to North and South America, Australia, and South Africa. Even if the new environment be permanent adaptation takes time, and one must be prepared for inequalities in many ways. Yet it is possible to give an accurate and fairly comprehensive sketch of the present-day status of the Jews in every land.

Australia.— In the gradual settlement Jewish merchants and men of affairs took a prominent part, and as a result they have entered largely into colonial life, and form an important factor in its prosperity. Their population is about 20,000, with the greater number in New South Wales (7,000), Victoria (6,000), New Zealand (3,000), with communities in South and West Australia, Queensland, and Tasmania. The discovery of gold in 1892 drew emigrants to West Australia, and a flourishing Jewish congregation exists in Perth, although it is liable to decline, if the mines cease to attract, as happened in Coolgardie, where the synagogue built in 1896 was sold for a Masonic hall, owing to lessening numbers. Throughout Australia, in most of the capitals and many of the smaller towns, Jews have been mayors; the agent-generalship of New South Wales has been held by Sir Saul Samuel and Sir Julian Salomons. Many have sat in the various Parliaments, and some have been colonial ministers; for example V. L. Solomon (1899), premier of South Australia, and Sir John Vogel, long premier of New Zealand. In Adelaide J. Lazar, J. M. Solomon, and Lewis Cohen (1883–4) have been mayors; M. Lazarus has been president of its Chamber of Manufactures. In Melbourne Edward Cohen was three times mayor, E. L. Zox being his successor in Parliament. I. A. Isaacs was attorney-general (1894–99), his brother J. I. was a member of Parliament (1894), other members being N. Steinfeld of Ballarat, Joseph Steinberg of Bendigo, F. J. Levien of Geelong, Theo. and B. J. Fink, and D. B. Lazarus. In Sydney the name of J. G. Raphael is preserved in several of its streets; he with Charles Collins, L. W. Levy, and J. J. Cohen occupied official positions; George J. Cohen, Richard Gotthelf, and other Jews were presidents of the Chamber of Commerce; H. E. Cohen was one of the judges of the Supreme Court. In 1905 J. J. Cohen, Daniel Levi, and A. E. Collins were members of the Legislative Assembly. It must be added that intermarriages have been very frequent in Australia, particularly in Sydney. Exceedingly handsome synagogues are in Sydney and Melbourne, and smaller ones elsewhere. The better class of Jews are well represented in professional and mercantile life.

Africa.— It is not easy to give exact statistics as to the Jews in Africa, but to follow the figures given by Isidor Loeb, about 20 years ago their numbers were then 468,000 — the population of the different localities being Abyssinia, 200,000 (a palpable exaggeration); Algeria and Sahara, 43,500; Cape Colony, 1,500 (since then increased probably to 50,000); Egypt, 8,000; Morocco, 100,000; Tripoli, 60,000, and Tunis, 55,000. In Abyssinia exists a colony of Jews called Falashas, «emigrants,» who have other appellations in different parts of the country. Their origin is obscure, but they preserve Jewish customs. Agriculture is their chief occupation. They are ignorant of Hebrew, but preserve the Mosaic religion based upon the Ethiopic version of the Pentateuch. They are found in various districts of Abyssinia and have had an eventful history. In Algeria, the condition of the Jews was greatly improved by the French conquest, and their religious status is on a par with the Jews of France. The consistory of Algiers has five congregations, and 14 outlying communities; Constantine's includes 21 communities, and Oran 38. In 1891 Leroy-Beaulieu gave a total Jewish population of 47,564. Practically due to M. Drumont and the French clericals anti-Semitism raged in Algiers for some years, but has grown less violent. Of the Jews of Algiers a recent census showed a large proportion followed handicrafts. It has 19 synagogues, 13 being private. In South Africa the Jewish population may be stated to have reached nearly 50,000, including the Transvaal, 25,000; Cape Colony, 22,000; Natal, 2,000. Cape Town has four synagogues, and they are scattered in every district, the large influx of Russians being noticeable. Kimberley's synagogue has a memorial tablet to Jewish officers and soldiers who fell in the recent Anglo-Boer War. Natal has two synagogues. Jonas Bergthal (1820–1901) was a member of the Assembly, while in the '90s A. Fass and M. G. Levy held official positions; in the Orange Free State Isaac Baumann was twice mayor of Bloemfontein; M. Leviseur and W. Ehrich have had civic honors. In the Transvaal the Jews enjoy a large share of prosperity, and among the men of prominence can be mentioned Samuel Marks, the Barnatos, Neumann, Albu, Eckstein, Alfred Beit. In the latest Boer War, about 2,800 Jews fought on the British side and many were in the Boer ranks. Jewish services are held in Rhodesia, where communities are growing — Buluwayo has a synagogue, as well as in Bechuanaland and in Portuguese territory in Lourenço Marques. There are numerous Zionist societies, and the religious training of the young is steadily improving.

In Egypt, according to the census of 1898, the Jewish population numbers 25,200, of whom 12,693 are natives, 12,507 strangers. The condition of the Jews has been greatly improved of late decades owing to the work of the Alliance Israélite Universelle (q.v.), which established many schools. Cairo has 10 synagogues in all, with 10,000 Jewish inhabitants. Morocco had in the '80s of the last century about 40,000 Jews, although widely varying estimates are given. They are of two classes: the descendants of the early settlers, who are found mostly in the Atlas and hilly section; and of those who sought shelter in Morocco from Spain and Portugal. The former, speaking the Berber, are antagonistic to modern ideas; the latter form a progressive settlement, many speaking Spanish. In the ports they are fair linguists, are active in business, particularly in Mogador; and are employed by the foreign consulates. With the exception of a few under foreign protection all suffer from Moorish injustice, and are confined in the Mellah, or Ghetto, of each town. Such treatment has not been without its effect in making a spiritless people, who live in poverty, largely due to early child-marriages, while superstitions abound. The Jews of Tripoli number about 12,000 and share the superstitions of their environment. They have 18 synagogues, small and large, and are engaged in commerce and trade. Nearly 5,000 live in neighboring towns. Tunis, a dependency of France since 1881, grants equal privileges to Mohammedans and Jews — the latter number about 50,000 in the whole district — 30,000 of whom are in the city of Tunis. They are divided into two classes: the Tunsi, descendants of the first settlers; the Grana, descendants of the exiles from Spain and Portugal, and of Jews of Leghorn (Gorneyim). There are 27 synagogues, and while a few of the people are financiers and professional men, the great majority are petty traders. The other 12 towns in the regency contain about 12,000 Jews.

Asia.— The Jewish population approximately is thus divided: Asiatic Turkey, 300,000; Asiatic Russia, 115,000; British possessions, 20,000; Persia, China, etc., 30,000; total, about 465,000. They vary in their political status according to the political complexion of the countries which hold sway — Turkey, Russia, or Great Britain. Their status has gradually improved — Turkey since 1876 has instituted a close approach to civil and religious freedom, and has frequently made Jews public officials. In Yemen, Kurdistan, and Persia, their condition continues less favorable. In Asia Minor, half of whose Jewish population reside in the vilayet of Smyrna, they are active petty traders and handicraftsmen; schools, including an agricultural one, and workshops, are making the outlook bright for the future. In Asiatic Russia, the Caucasus, some of the Jews (who numbered about 58,000 in 1897) have become Mohammedans and Christians, and present strange types to the ethnologist. The Mountain and Georgian Jews present widely different traits. A curious sect are the Sabbatarians, who use Russian, not Hebrew, in their prayers, but conform to many Jewish customs. Siberia had 34,477 Jews, according to census of 1897. They have had to endure many exactions and their position is very anomalous; yet they are welcomed because of their energetic business methods. In Bokkara are about 5,000 Jews who wear a special badge and dwell in an enforced Ghetto. The cotton trade is largely in the hands of the Jews. In the British possessions, Aden has 2,500 Jews, who have almost monopolized the trade in ostrich feathers. At least 25,000 reside in British India, the greatest number in Bombay, where the Sassoons have done so much to educate and uplift the poor. In this city, too, can be found the Beni-Israel, a sect of black Jews, of whom about 5,000 live in Bombay and 2,000 elsewhere in the Bombay presidency, and about 2,500 in Calcutta. They speak the Mahrati and were originally oil men or oil pressers, as their native name implies. Many are educated men and have entered the professions. They have several synagogues, some very handsome. In Calcutta the Jews number many prominent men in trade. Although the vernacular of the rich Jews is Arabic, their habits and dress are European. Afghanistan has fully 40,000 Jews in the chief cities. They pay a war-tax, which exempts them from military service. They live in special quarters in the larger towns. Persia treats its Jews with continued exactions that have broken the spirit of the people, who engage perforce in the lowliest avocations. Teheran has 5,500; Ispahan, where their condition is a little better, about 3,700. China has flourishing communities of foreign Jews at Shanghai and Hongkong, who deal largely in opium and cotton. A native body of Jews reduced to 100 in number by the census of 1900 exists in Kai-Fung-Foo, in the province of Honan. Since 1870 their synagogue has been in ruins, and poverty has compelled them to sell their possessions, sacred and otherwise. Their origin is obscure. They are probably from Persia and have interesting traditions. Palestine has probably 45,000 Jews out of a total population of 500,000, with Jerusalem, Hebron, Safed, and Tiberias the favored places of residence. In Jerusalem, with about 23,000 Jews, including many colonies of foreigners in its suburbs, the poverty is universal, but the Rothschilds, the Alliance Israélite, and other organizations have done much to ameliorate conditions. Schools, common and technical, abound. There are 2,000 Jewish artisans in various callings, but the great majority are dependent on foreign charity. The other towns call for no special mention. In 1902 the total imports of Jaffa reached £405,550; exports, £203,390.

Europe.— In Austria, with the dawn of freedom in 1860, followed by the constitution of 1867, the status of the Jews began to improve, several were returned to Parliament, and Baron Anselm de Rothschild was made a peer; in 1903 there were three Jewish members of the House of Lords, the brothers Gomperz and Baron von Oppenheimer, while many are university professors in various lines, with a full quota of journalists, musicians, dramatists, scientists, scholars. Vienna in 1900 had 146,926 Jews, with a large proportion of conversions to Christianity, 559 in 1900, and 617 in 1904, due doubtless to anti-Semitism in the capital. They form one community, whose receipts in 1903 reached 2,243,449 kronen, expenses 2,147,506, and which is particularly rich in educational and charitable institutions. Belgium has about 14,000, with larger communities at Brussels and Antwerp. In the latter city, they number about 9,000. One of their principal industries is diamond cutting, which occupies about 750. Brussels has an important Jewish community, with many charitable societies and representatives in the arts and learned professions. Bohemia imposed some mediæval exactions as late as 1849, and even in later years there have been occasional Czech outbreaks, but the general prosperity has been uninterrupted. Prague has the largest Jewish community (20,000), while in about 150 of the smaller towns are included 50,000. In Bosnia 4,000 out of the 7,500 Jews reside in Yarajevo, where many are lawyers, physicians, and public officials. Bulgaria has 30,000, divided into 35 communities, the largest being Sofia, Rustchuk, and Philippolis. Since the Alliance Israélite has opened its trade schools, trading has been supplemented by handicrafts. The general prosperity has been somewhat affected by popular hostility (see JUDAISM — ANTI-SEMITISM) which promotes emigration to Turkey in Asia. Owing to their bravery in saving Sofia from destruction by the Turks in 1877, Prince Alexander decreed in 1879 that the fire brigade should be enrolled exclusively from Jewish citizens, with a place of honor at all processions. Denmark has 3,600 Jews, Copenhagen having the largest community (500), and include varieties of occupation from trade to agriculture; in the latter calling are landed proprietors and peasants. There are many intermarriages with the non-Jewish population. It is only since 1849 that complete civil and religious liberty was proclaimed.

France, with its 110,000 Jews, of whom about 65,000 live in Paris, offers an example of practical assimilation, for despite the existence of a certain social prejudice, many of them occupy prominent positions in every walk of life, in literature, art, science, law, the army, and in no other country do they include such an array of names known beyond their own country. The patriotism and generosity of the wealthier representatives have done much to strengthen the Jewish status, which has gained morally by the Separation Law. While the Jews of France are conservative, a reform movement has just begun in Paris, whose supporters are sanguine of success. Paris has an extended number of Jewish institutions, religious, benevolent, and educational, with five large synagogues and many smaller ones.

Great Britain.— The 160,000 Jews in London, forming the bulk of their number in the British Isles (estimated at 250,000), have attained the fullest civil and religious liberty, and their favorable condition has resulted in a fair, if not remarkable display of talent in art, science, literature, the law, and political life, while they have done more than their share in colonial expansion. They have held the office of mayor in a number of cities, including London, have entered Parliament where they belong to different parties, such is their individuality. Their influence is such that again and again have imposing meetings been held by prominent Christian divines and leaders throughout England to protest against the spirit of persecution in Roumania, Russia, and elsewhere. Within the past year or two the question of immigration has aroused much debate and ill-feeling, a new Alien Bill was passed, whose real purpose was to check Jewish arrivals from Russia, not from any Anti-Semitism, but a desire to prevent further overcrowding in the east end ot London. During the recent war in South Africa fully 1,000 Jewish soldiers participated. At present S. Alexander is professor of mental philosophy, and E. Schuster of physics in the Victoria University, Sir Philip Magnus is one of the chief authorities in technical education, Israel Abrahams is reader in rabbinics at Cambridge University, where lately C. Waldstein was Slade professor of fine arts. Solomon Hart, S. J. Solomon, and Simeon Solomon are prominent names in art, while S. L. Lee, I Gollancz, Claude Montefiore, Israel Zangwill are known in literature. The Jews of England have secured their present status largely because of the vigor with which they fought for their rights, and won public opinion in their favor, while their splendid record in philanthropy with names like the Rothschilds, the Goldsmids, the Mocattas, the Montefiores, has done much to add to their fame. In commerce and finance they number a large number of important firms in London, Manchester, and Liverpool. The condition of the Russian element in the chief cities is more or less a problem, whose solution requires patience and forbearance. The younger element soon becomes English, but the older transplants to English soil the Ghetto atmosphere — a phenomenon which is seen all over the world. In 1902, according to official data, the sum of £111,639 was spent by London Jewish charities. Of the Russian and Polish Jews in London in 1901, amounting to 28,574 males, 24,863 females, it was found that 24,164 males and 5,358 females earn their own living in a great variety of trades. The Jewish population of Ireland in 1901 was given as 3,771, the bulk residing at Dublin, 2,200; Belfast, 450; Cork, 400. Russian immigration is adding steadily to their numbers. Sir Otto Jaffe was lord mayor of Belfast (1899–1900), high sheriff a year later, and is now justice of the peace for that city, and consul for Germany. Lewis Harris and his son, A. W., were aldermen of Dublin; Trinity College, Dublin, has graduated many Jewish students. Scotland has almost its entire body of Jews in Glasgow and Edinburgh, about 9,000 in all; there are congregations in Dundee, Aberdeen, and Greenock. Recent immigration has built up the Scotch communities. Glasgow has 7,000 Jews, with three congregations, with several benevolent and educational societies. Two of their representatives are justices of the peace.

In Germany's various sections, the Jewish status is distinctly favorable, after centuries of conflict which has not wholly died away. Baden includes 27,000 Jews in 15 rabbinical districts, who enjoy equal rights with the other inhabitants. Bavaria numbers 55,000, with a long list of names who are adding to its strength in trade, and industry, and scholarship. Some are members of the Bavarian Diet, others are prominent in law and the learned professions. Fuerth has a number of Jewish industrialists in mirrors, bronzes, toys, and hardware, leaders in their line. In Nuremberg, Fuerth, and Bamberg they control the hop business; the cattle trade is entirely in the hands of the country Jews. In the duchy of Brunswick about 2,200 reside. In Elsass-Lothringen, despite the emigration of many Jews after the annexation, about 37,000 reside in the province, chiefly in Strasburg, Mühlhauser, and Colmar; they are largely manufacturers and merchants. Hesse-Cassel has 18,500; Hesse-Darmstadt in its three districts about 26,000, with numerous educational and charitable institutions, and with every calling open to them. Prussia in 1900 had a Jewish population of 392,332. Of its chief cities, Berlin has 19 synagogues and numerous educational and benevolent institutions, with a brilliant coterie of prominent names in all the arts and professions, trades, and industries, many being authorities in their callings, and prolific contributors to art, science, and literature. There are fully 110,000 Jews. Breslau has about 25,000 and here, too, in the various professions, particularly medicine and the natural sciences, they number very eminent names. They are in every trade and manufacture, and hold many chairs in the university. Hamburg has about 20,000. Within recent years it has had some prominent representatives in different fields — with many institutions, such as schools, hospitals, and synagogues. Hanover has a prosperous community of about 5,000, who number leaders in commerce and trade. Saxony, where the Jews were late in securing complete freedom, had in 1904, 12,196, 7,000 being in Leipsic, and 3,059 in Dresden; in both cities they are identified with the chief industries. In 1900 the Jews of Wurtemberg numbered 11,916. The criminal status of the whole population in that year was 0.089 per cent.; of the Jews, 0.083. Many charitable institutions abound, and there are handsome synagogues in the chief cities. In Stuttgart in 1903 there were 3,015 Jews, who include manufacturers, lawyers, and merchants of note, while they are members of the city superior court and of the faculty of its polytechnic and its conservatory of music. Greece has 10,000, with about 4,000 in Janina and Prevesa in Epirus, including Corfu, 4,000; Larissa, 2,750; Athens, 400. In Athens, the majority are of Levantine-Spanish descent, and are pedlers or artisans. In Corfu they are exporters and manufacturers. There are no restrictions on their progress in Greece under the present government. Although it was not until 16 May 1896 when Hungary declared Judaism a "legally recognized religion," the Jews have long attained prominence in varied lines of political, industrial, scientific, and artistic development, and contributed a long list of notable names. They have founded important institutions for religion, charity, and education, their new synagogues are among the handsomest in the Old World, and in their chief communities, Budapest (166,198), Szegedin (5,863), Temesvar (5,916), Presburg (7,110), they are prominent in every calling.

In Norway, where Jews have been allowed to live since 1851, their present number is hardly a thousand, who are engaged exclusively in industrial pursuits and are on the whole prosperous. The majority reside in Christiania, with the rest in Trondhjem and Bergen. Roumania's treatment of the Jews, marked by constant exactions and neglect of the provisions of the Treaty of Berlin (1878), has not only reduced the Jewish population to less than 225,000, but made their condition pitiable in the extreme. Mediæval conditions have led to wholesale emigration — at least 80,000 having left between 1898 and 1905, chiefly to the United States; and unless exactions cease their numbers are likely still further to decrease. Much poverty exists among the Jews, although there is a small wealthy class. From recent data as to the Jews of Russia, it appears (1897) that they number 5,189,401 or 4.13 per cent., a figure which has been reduced by steady emigration from cities large and small to all parts of the world. In the Pale of Settlement reside 93.93 per cent. of the Jewish population, or 11.46 of the total population. They are massed together most densely in Northwest Russia and Poland, where they form 14 per cent. of the entire population, figures which throw light on recent outbreaks. A number of agricultural colonies, 301 in number, including 10,721 families, with 68,959 population, who occupy 100,107 deciatines of land, exist in a number of governments, but these are necessarily limited. In 1898 the number of artisans in the Pale and Poland reached 500,986, or 13.2 per cent. of the total Jewish population. Technical training having been only recently introduced, old-time methods of learning prevail, save in some of the larger cities. Owing to keen competition the income of the Jewish artisans is insufficient to support their families, and extreme poverty with its attendant unsanitary surroundings prevail. In addition, in the Pale and Poland are 105,000 Jewish day laborers, about two per cent. of the entire Jewish population. Without the Pale, in the interior of Russia (1893) were 1,948 Jewish workshops compared to 24,020 belonging to non-Jews, being most numerous as tailors and metal-workers. Some idea of the great poverty in the Pale may be gathered from the number of loan associations, of homes of shelter for the transient poor, 226 in all, and similar institutions, of medical committees and hospitals, and of other charities for their benefit. From 1870–1904 the Russian emigration to the United States, chiefly Jewish, has reached about 725,000, due to political as well as economic conditions. It is not necessary to dwell upon existing legislation regarding the Pale, and until an enlightened government holds sway no permanent change for the better is possible. Despite unfavorable circumstances, the scholarly abilities of large numbers of the Russian Jews are evidenced by the Hebrew Renaissance among them, and the enthusiasm with which liberal studies are followed by thousands of young men and women. In literature, journalism, archæology, medical and natural science, jurisprudence, art, they show much activity. Old-time rabbinical education holds its own among the great majority of the people, while early marriages powerfully promote poverty. In 1899 the percentage of Jewish students to total number in the Russian universities was 10.9. According to the census of 1897, the Jews of Russia number 5,215,805 souls, or 4.2 per cent. of the entire population, and fully one half of all the Jews in the world. Yet they constitute 15.6 per cent. of the residents in urban centres. A striking illustration of Jewish concentration in towns is furnished by Berditscheff, where they number 41,617, or 78 per cent. of the total population, or by Warsaw, with 219,128, or 34.3 per cent. The birth rate of 1877 was 35.43 per 1,000, being less than other sections, except Protestants, 34.73. The rate of illegitimacy in European Russia was small — 5.4 per 1,000 births; among the Catholics 36. In 1897 the Jewish death rate was 17.82 per 1,000 as against 34.28 for orthodox Christians, and 22.76 for Roman Catholics. The predominant language among the Jews is Yiddish, 96.90 per cent. of the entire population using that medium. For insanity the Jewish figure (9.84 per 1,000) is greater than that of the Poles and Russians (8.51 and 9.54), but much less than the Letts (13.75), and the Germans (15.04). The May laws of 1881, which restricted the free movement of the Jews outside the Pale of Settlement (Russian Poland and 15 Russian provinces), set the stream of emigration into permanent motion toward all parts of the world. In one year alone (1904–5), in consequence of the Russo-Japanese War and internal disorders, 92,388 Jews left the country. It is estimated that in the past 20 years 1,123,000 have emigrated from Russia — more than one fifth of the whole of Russian Jewry. (See Dr. Arthur Ruppin's work issued by the German Bureau for Jewish Statistics. Berlin: Jüdischer Verlag 1906). In regard to age distribution the Jews have a higher percentage of persons under 10 years of age, owing to lower infant mortality, but in consequence of this excess of children 100 Jews have dependent on them for support two more than the orthodox Christians, three more than Catholics and Mohammedans, and six more than Lutherans. In Finland a movement is taking place in the early part of 1906 to put the Jews on a footing of equality with the rest of the population. They are found at Helsingfors and a few other places, and suffer from many political restrictions. Servia, since 1889, has abolished all anti-Jewish laws, but the Jews take little part in public affairs until their equality is more generally recognized by the people. They number about 7,500, chiefly in Belgrade (4,500), including a few lawyers, physicians, and engineers, with some State officials. Spain, whose early settlement by the Jews is attested by a tombstone unearthed in Adra, with a Latin inscription, which dates back to the 3d century, has within recent decades opened her territory to the Jews, very few of whom have settled on its historic soil. In 1858, under General Prim, the edict of expulsion was repealed, and in later years Senor Lapuya headed a movement to invite Russian emigrants to Spain, but without more than a limited response, although in time the settlers may be larger in number. Madrid has about 25 families, who hold holiday services — they came from Tunis, Mogador, Lisbon, Alexandria, etc. In Toledo, where but a few reside, the government ordered the restoration of El Transito (see SYNAGOGUE), formerly a Jewish place of worship, but which had been converted into a church. Seville had (1905) 200 Jewish families, the majority poor, being emigrants from Tangier and elsewhere in Africa. In this connection the Jews of Portugal may be mentioned. In 1903 they numbered 500 persons, the majority being merchants and shipowners. According to the constitution of 1826 they are not allowed to hold service save in places not bearing the signs of a public house of worship. Lisbon has 400 Jews, mostly natives of Gibraltar, Morocco, or the Azores. A number are prominent in science, letters, and the arts. There is one communal synagogue (1902), situated in an inclosure, and without any outward sign. The cemetery dates back to 1801. Switzerland, where civil and religious liberty exists apart from a statute (1903) declaring illegal slaughtering of animals according to the Jewish ritual law, has fully 12,000 Jews, with congregations in the larger towns, Zurich being the most important, with 2,500 Jewish population, as international in character as the city itself. In the Cantoral Council are two Jewish representatives and at the university, polytechnic, and gymnasiums are several Jewish professors and prival-docents. The Jews are mostly merchants, excluding the Polish and Russian immigrants who begin as pedlers but soon enter other callings. The canton of Bern has about 1,500, with many Jews as university professors. Basel has about 240 families.

Sweden grants full civil and religious freedom to the Jews, barring a few privileges which neither they nor any other non-Lutherans can obtain. There are synagogues in all of the larger cities, with a total Jewish population of fully 5,000. Turkey in Europe has (1904) 188,896, of whom the largest number are in Constantinople (65,000), Adrianople (17,000), Salonica (75,000). The condition of the young people has appreciably improved owing to the spreading of schools, technical, agricultural, and religious, by the Alliance Israélite, with 6,651 children in European and 6,299 in Asiatic Turkey. The Jews speak usually a mixture of Spanish and Hebrew, often a Judæo-German dialect, and rarely Turkish, although they are making strong effort to speak the latter more generally. They enjoy the same privileges as all «rayahs,» non-Moslem subjects. According to the constitution of 1876 the equality of all Ottomans is proclaimed before the law and in the short-lived National Assembly of the following year several Jews were among the members. The present Jewish administration, ratified by the Sultan in 1865, consists of three councils, a national assembly of 80, a temporal council of 7 lay members, and a spiritual council of 9 rabbis. Of the various Turkish communities, Salonica is the largest and most picturesque. While the majority are poor and engaged in all kinds of handicrafts and petty trade, the city has, with the professions represented, 37 synagogues, with numerous charitable institutions. Constantinople contains, among other callings, some wealthy wholesale merchants and bankers. The only glass works in Turkey is carried on by a Jewish manufacturer. The schools of the Alliance Israélite teach many handicrafts, but their graduates become largely accountants in financial institutions. Elias Cohen is physician to the Sultan; the civil list in the ministry of public instruction and the consular offices includes a number of Jews, 20 of whom are physicians and druggists.

North America.— With increasing Russian emigration within the past five years, Canada's Jewish population must reach at least 30,000, with 12,000 in Montreal, 2,000 in Manitoba, 4,000 in Toronto, and 8,000 in Quebec. There are several agricultural colonies in the Northwest, due to the gifts of Baron de Hirsch (1892), in a section called Assiniboia, at three settlements. Jews have sat in the Canadian Parliament, Mr. Nathan of British Columbia being the first to attain the honor. In 1845 there was only one synagogue in all Canada; now they exist in Toronto, Victoria, B. C., Hamilton, Winnipeg (2), Halifax, St. John, N. B., Ottawa, London, Quebec. It is of interest to note that Christian sympathizers in Montreal, headed by the Anglican bishop, contributed to the fund in aid of the Russian refugees. In their occupations the Jews are indistinguishable from other citizens. United States.— The history and development of the American Jews have already been described (see JEWS IN AMERICA); it only remains to gather a few additional facts and note further tendencies. In the effort to promote education, uplift the destitute, and Americanize the incoming masses of emigrants, the lines of demarcation between reform and orthodoxy seem to be growing fainter, and a spirit of conservatism, free from fanaticism of either extreme, appears to be growing. It is proposed (1906) to organize a kind of national assembly of entire American Israel, whose purpose is to champion the Jews in persecuting lands, and aid in their complete emancipation. Doubtless in time this congress, if successful, will develop into a national synod, with consequences good or bad for the Jew's development. Greater interest is being shown in agricultural and technical education, which will help in turning thousands to the soil, but divert thousands of the young to the arts and handicrafts. More energy, too, is being displayed in distributing emigrants from the congested centres of New York and elsewhere, although with increasing immigration the results are comparatively slight. Recent arrivals are of a better class on the whole, and include many who have ample resources. In the larger cities, however, the general character of the Jews is being unconsciously changed, owing to the gradual elimination of the distinctively American, English, or Portuguese type, and the appearance in every line of the Russian, who competes keenly with the less numerous German. But this is only a reflex of American phenomena in general, as the emigrant outnumbers the native, or appears to do so by reason of his aggressiveness in securing a foothold. The skilled Jewish laborers in New York city number (1905) 75,000, one third belong to the United Hebrew Trades, and two thirds are Russian, being found as well in the silk mills of New Jersey, the machine shops of Connecticut, and jewelry factories of Rhode Island. In 1903 in the New York State prisons out of 9,820 prisoners 257 were Jews; in the city prisons (1904) out of 3,251, 479 were Jews; in the Blackwell's Island workhouse for year 1904 were 1,036 Jews out of 19,520 prisoners. More than 60 per cent. of the students in the New York Normal and City College are Russo-Jewish emigrants or the children of Russian Jews, who include in their number in New York 400 physicians, 1,000 druggists, 300 dentists, 400 lawyers, 25 architects, and many in the professions of art, music, engineering, etc. The chief lines of commerce in which the Jews in New York are thus given, in the order of importance: Clothing manufacturers, jewelry jobbers, wholesale butchers, liquor dealers, leaf tobacco jobbers, cigar manufacturers, cloak manufacturers, chamois importers, leather and hides, manufacturers of overshirts, watch importers, artificial flowers and feathers, furs, undergarments, lace and embroidery, white shirts, hats, and caps. In 1905 the real property of synagogues and Jewish charitable institutions in New York city, exempted from taxation, was valued at $13,558,100. With the gradual settlement of the far West they are found among the pioneers in Alaska and the far Western plains.

South and Central America.—While Jews are to be found in all the more prosperous cities of the South American continent, their numbers are very small, except in the Argentine Republic, where agricultural colonies exist, swelling the Jewish population to 20,000. Brazil has 2,000, and there are about 4,000 scattered in the other States. A few are found in Panama, with an old cemetery; there is a small community in the City of Mexico. The Dutch colonies have supplied most of the 300 Jews in Dutch Guiana and Venezuela. Jews of German descent are the leading jewelers at Lima and Santiago. The only synagogues (2) are in Buenos Ayres; in the Argentine many of the Russian colonists have found their way to the chief cities. The imperial purchase of land for colonization by Baron de Hirsch included over 17,000,000 acres. Their present condition is fairly reassuring, but they require continual support and they cannot be regarded as entirely successful. Moïseville, the oldest of the colonies, in the Santa Fé province, is the next prosperous, with 1,200 settlers, and a good outlook for the future. Mauricio, in the province of Buenos Ayres, is less favorably situated and has 1,100 colonists. Clara, in Entre Rios province, is the largest, with 5,000 souls, who dwell in 19 villages. The future success of these colonies will depend on the independent character of the colonists. The equipment is thorough and has cost millions. In Santiago, Chile, there are many Jewish merchants of prominence but no organized congregation.

West Indies.— Jewish activity in these islands was early displayed and is still continued, although fluctuating from time to time, and declining sadly in some places. At St. Thomas, once the seat of an important Jewish community, hardly 50 survive. Jamaica shows a similar decline, with its diminished commercial importance. Its former historic settlements at Spanish Town, which had two congregations 60 years ago, Montego Bay, Falmouth, and Lacovia have passed away. Kingston has one fair-sized congregation, since the merger of the two existing in 1900. The Jews hold positions of prominence in various lines, but lose many of their best material through emigration to England or the United States. The hurricane of 1831 brought about a decline in the prosperous Barbados community, whose numbers have dwindled to hardly 20. Curaçoa has an influential body numbering about 1,100 in two congregations, including lawyers, physicians, druggists, merchants, members of the executive and colonial councils, judges, bank presidents, and officers in the militia. The Jews of Surinam number 1,500 and occupy a prominent position, being large property-owners.

Bibliography.— For the present status of the Jews, see Jewish Year-Books, issued annually in London and Philadelphia, as well as annual reports of Union of American Hebrew Congregations, Deutsche Gemeindebund, Alliance Israélite, Anglo-Jewish Association, American Jewish Historical Society, and similar societies. E. Adler's ‘Jews in Many Lands’ (Philadelphia, 1905) throws light on the condition of the Jews in the East and in scattered communities.

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Judas, or **Jude,** one of the twelve apostles. He appears in the apostolic catalogue of St. Luke as «Judas of James,» that is, son or brother of James; in St. Mark's and St. Matthew's list he is styled Thaddæus, of which Judas may be an abbreviation. Nothing is known of his life except what is ascribed to him by widely spread tradition. According to western legend he went in company with Simon the Canaanite to evangelize the Persians, and closed his life by martyrdom.

Judas Iscariot, ĭs-kăr'ĭ-ŏt (that is, of the family of Cariot in the tribe of Judah). One of the twelve apostles of Christ. He is styled the son of Simon, and was treasurer to the little company that attended Jesus, whom he betrayed with a kiss into the hands of the Jewish priests, for thirty pieces of silver. His divine Master addressed to him the mild reproof—«Dost thou betray the Son of Man with a kiss?» Remorse drove him to suicide.

Judas Maccabæus. See MACCABEES.

Judd, Garritt Parmlee, Hawaiian statesman: b. Paris, Oneida County, N. Y., 23 April 1803; d. Honolulu, Hawaiian Islands, 12 July 1873. In 1828 he went to Honolulu as a medical missionary, and in 1842 was appointed recorder and interpreter to the native government. He organized the first Hawaiian ministry for Kamehamaha III. in 1843, and held the portfolio of finance from 1844 until his retirement in 1853. He placed Hawaiian finance on a sound basis.

Judd, Orange, American journalist: b. near Niagara Falls, N. Y., 26 July 1822; d. Chicago, Ill., 27 Dec. 1892. He was graduated from Wesleyan University in 1847, became editor of the ‹American Agriculturist› in 1853, was its owner and publisher in 1856-81, and in 1855-63 was also agricultural editor of the New York ‹Times.› At Chicago he edited the ‹Prairie Farmer› (1883-8), which became the ‹Orange Judd Farmer.› In 1871 he gave to Wesleyan University the Orange Judd hall of natural science, in which he established in 1875 the first State agricultural experiment station.

Judd, Sylvester, American author and Unitarian clergyman: b. Westhampton, Mass., 23 July 1813; d. Augusta, Maine, 20 Jan. 1853. He was graduated at Yale College in 1836, and subsequently becoming a Unitarian studied theology at the Harvard Divinity School. In 1840 he was ordained as pastor of the East parish in Augusta, Maine, and continued to hold that pastorate till his death. In 1845 he published ‹Margaret, a Tale of the Real and Ideal,› a very noteworthy example of American fiction, In 1850 he published ‹Philo, and Evangeliad,› a didactic poem in blank verse, and in the same year ‹Richard Edney,› a romance. ‹The Church,› a collection of sermons, appeared in 1855.

Jude, Epistle of, a general or ecumenical letter reckoned among the canonical writings of the New Testament. The writer, while speaking with something like apostolic authority, does not claim to be an apostle. He is merely «the brother of James,» probably James the Just, the author of another general epistle. Difficulties have been raised about this book because of its resemblance to II. Peter, and it is quite uncertain which epistle was written first. It also contains references to two apocryphal books, the ‹Assumption of Moses› and the ‹Book of Enoch,› but as in the New Testament citations are made not only from uninspired, but even from heathen writers, this does not impair the authority or authenticity of the epistle. As to its date, the earliest probable is 64 A.D. and the latest 67 or 68 A.D. The contents include address and salutation; false teachers are condemned, their fate illustrated by Biblical examples; their wickedness specifically described and woe is pronounced upon them. The letter concludes with an exhortation to consider how the apostles predicted the coming of these mockers; to cling to the love of God; to treat such perverted ones with discrimination.

Judge, public officer to whom is committed the exercise of judicial power of the State in the administration of justice in its courts. It is his province to decide questions of law, and in cases in which facts are to be decided by a jury to instruct the jury as to the law which is applicable and to point out to them what the exact questions for their determination are. (See JURY.) He pronounces the sentence, or enters the judgment, of the court.

The word is not a technical one. The officers of the King's Court, when that tribunal began to take definite shape, were known officially as justices. Until the recent Judicature Acts in England it was customary formally, as well as popularly, to speak of the Judges of the superior courts at Westminster, though the members of the courts of King's Bench and Common Pleas were properly justices, and of the Court of Exchequer barons, and at the present time the members of the Supreme Court of Judicature, including the Lord Chancellor, the Lord Chief Justice, the Master of the Rolls and the Lords of Appeal are spoken of as the judges of that court. English judges are appointed by the Crown (this patronage being exercised by the Lord Chancellor, who is the head of the legal profession) from the leaders of the Bar, and hold office during good behavior.

In all the Federal courts, in all the higher courts of the several States and in most of the inferior Courts, judges must be trained in the law, though lay judges were common in the State courts of first instance until quite recent times. Federal judges are appointed by the President, by and with the advice and consent of the Senate, and hold office during good behavior, being removable only by impeachment. Any Federal judge who has served for ten years and is 70 years of age may retire on full pay for life. The choice of judges in the States is determined by the State constitutions. As a general rule they are elected for a term of years. The fear was quite generally expressed at the time the tendency to make the office an elective one became general, that judges so chosen would be inferior to those appointed by the State governors, but does not seem to have been justified by the result. In most of the State courts the small salaries paid and the limited terms of office prevent the leading members of the bar from seeking, and in many cases from accepting, the office of judge.

A judge must be impartial and any interest in the cause or the parties will disqualify him from presiding at the trial. While in office he is precluded from practising before the court of which he is a member, and he is commonly, and should be universally, precluded from practising before any court. He is not answerable to any suitor for the correctness of his rulings or decisions, and in the absence of positive fraud is not answerable in damages for any decision he may render. Every judge has power to punish for contempt of court in case of acts committed during the court's session, and even of such acts committed outside the court, though this latter power is to be exercised with care, and its limits are naturally not defined with certainty. For the peculiar functions exercised by American judges as interpreters of the Federal and State constitutions, see JURISDICTION.

Consult: Pollock and Maitland, 'History of English Law'; Blackstone, 'Commentaries' (Bk. III., ch. 4); Brodie-Innes, 'Comparative Principles of the Laws of England and Scotland' (Bk. I.); Kent, 'Commentaries'; Cooley, 'Constitutional Limitations.'

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Judge-advocate, a title given the prosecutor in a court-martial or military commission. In the United States the judge-advocate is generally a member of the judge-advocate-general's department. In Great Britain the duties of judge-advocate usually devolve upon a detailed staff officer, or the prisoner's commanding officer. The prisoner has a right to call on any regimental officer to speak in his behalf. See LAW, MILITARY.

Judge Lynch. See LYNCH LAW.

Judges, Book of, a book of the Hebrew scriptures which relates the exploits of successive rulers of Israel who delivered the land from the heathen, 'judge' in the Hebrew sense being used to designate the defender of a cause, and not necessarily a judicial magistrate. These judges were raised up at times of national emergency to assert the independence of the nation. Abimelech attempted to maintain the succession to this office as being the son of Gideon, but he failed, and the office was never hereditary. Samuel did indeed appoint his sons judges, but the government was at that time undergoing a transition to the settled form of hereditary dynasty.

The period comprised in the book of Judges is from Joshua to Samuel and Saul. In 1 Kings vi. 1, it is stated that from the Exodus to the building of the first temple was 480 years, and the time enumerated by the writer of the Book of Judges amounts to 410 years, but on the very probable hypothesis that some of these judges were of merely local authority, and judged Israel contemporaneously, this will be reduced to 299 years. As the accession of Saul is reckoned at 1037 B.C., we may roughly estimate that the judges ruled Palestine from 1336 to 1037 B.C. The book opens with a preliminary review of the condition of the tribes at the close of Joshua's wars, for the purpose of showing how imperfectly they had carried out the command «Go in and possess the land.» The succession of judges, occupied in repelling the encroachments, is the result of this dilatoriness and neglect. The main section of the work is taken up with the exploits of the judges, namely Othniel, who broke the yoke of Mesopotamia; Ehud, who threw off the oppression of Moab; Deborah and Barak, who drove off the northern Canaanites; Gideon, who repelled the Midianites; Jephthah, who fought with the Canaanites; and Samson, who contended with the Philistines. In regard to the public services of the other six we are told little. These are Shamgar, Tola, Jair, Ibzan, Elon, and Abdon. As an epilogue or appendix comes in the stories of idolatrous Micah, and the hideous outrage at Gibeah. The experience of Israel under the judges was educative. In their distress they appeal to Jehovah for deliverance and every answer to their prayer is a rebuke to their forgetfulness and a reminder of their duty to conquer and possess the land.

Judges' Cave, a crevice between some large fallen rocks on West Rock, New Haven, Conn., now a municipal park, which in 1661 was a temporary hiding-place for Goffe and Whalley, two of the English regicides.

Judgment, the decision rendered by the authority to which a question or issue has been submitted for determination. In a more restricted sense, the decision by a court of law of an issue raised by parties litigant, or the determination and declaration by such court of a legal right. There are many rulings by such a court which are not judgments, but determine merely some incidental question, and there are judgments which are interlocutory, as well as final judgments which put an end to the controversy. But every judgment in a judicial proceeding is an adjudication by the court of some right of a suitor, and until set aside or reversed, is the law governing such right.

In early times the solemn character of a court record and the means which the law furnished for the enforcement of an obligation thus established caused such a record to be adopted for the purpose of entering into an obligation as distinguished from resort to a court for the vindication of the obligation when disputed by the other party. A modern survival is found in the confession of judgment, by which a man causes his obligation to pay a sum of money to be entered upon the court records in the form of a judgment against him for the amount due. In consequence of the early practice — aided also by the fact that a judgment may be sued upon outside the jurisdiction of the court in which it was entered, like a contract — the older legal writers speak of judgments as a species of contract. But this classification has been shown to be unscientific by recent writers, since the courts have pointed out that these obligations are not contractual in either their origin or their incidents, and it is now customary to speak of them as *quasi*-contracts.

It is stated above that a judgment is interlocutory or final. In a suit for partition of real estate a judgment that partition be made is interlocutory, and is the basis of further proceedings which result in the final judgment establishing the partition. A final judgment is one which ends the controversy, at least as to some of the parties. It is a general rule that no appeal can be taken, except from a final judgment, and while there can rarely be a case of doubt as to the finality of a technical judgment, that is the decision rendered by a court of common law jurisdiction, questions frequently arise as to the finality of decrees (which correspond to judgments) entered by courts of equity. The test is whether the right is finally settled by the decree; for example, when a creditor has claimed to intervene in an equity proceeding to establish his right to share in a fund being distributed, a decree excluding him is final as to him and appealable, though in all other respects the suit remains undetermined by the court below.

A judgment of a competent court having jurisdiction of the parties and the subject matter is conclusive, except so far as it may be the subject of appeal to a higher court. The direct issue thus determined will not be re-tried by another court, and such a determination cannot be attacked collaterally except on the ground of fraud or lack of jurisdiction of the court in which the judgment was rendered. A judgment *in personam* binds only parties to the cause and those in privity with them; a judgment *in rem,* which is a judgment determining the *status* of person or property, binds all the world. Decrees of courts of admiralty are judgments *in rem* and conclusive of the *status* of the subject-matter of the cause upon every one. Decrees of divorce are judgments *in rem,* and determine the *status* of the parties to the proceeding. In the United States they are pronounced by the State courts in the administration of very diverse statutes relating to the subject of divorce, and as the courts of all the States, in addition to the general principles of comity observed between courts of different jurisdictions, are bound by the mandate of the Federal constitution requiring that «Full faith and credit shall be given in each State to the public acts, records, and judicial proceedings of every other State» many perplexing questions have arisen. These cases afford good illustrations of successful collateral attacks upon judgments on the ground of fraud or lack of jurisdiction of the court entering the judgment. It is now well settled that a decree of divorce may be successfully attacked collaterally on the ground of fraudulent collusion between the parties or lack of jurisdiction of the court pronouncing it over the person of the defendant. It is to be observed that a final judgment is conclusive of the particular cause, and finally determines the right therein litigated, and may be pleaded in bar of any future attempt to assert the right, except in a case in which there has been no determination on the merits; as for example, where the plaintiff has suffered a voluntary non-suit, that is, has elected in advance of a verdict to abandon his case. He loses that particular case and must pay the costs, but is not prevented from bringing another action.

In most of the United States a judgment for a sum of money found to be due, from the date of its entry, and without the issuance of a writ of execution, constitutes a lien upon the real estate of the judgment debtor; that is, a claim which must be paid out of the proceeds of any judicial sale of the property in its due order of priority as compared with other liens upon the same property. This lien usually extends only to real estate within the jurisdiction of the court in which the judgment was entered with provision for filing a transcript to create a lien in other counties of the same State in which the debtor owns real estate. A foreign judgment, in which are included the judgments of others of the United States, must be sued on and a judgment recovered upon it to make it effective in any of the States. In such suit no defense which could have been interposed in the original suit will be allowed to the judgment debtor.

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Judica, joo'dĭ-kạ («judge,» or «give sentence»), the first word in the 43d Psalm, used as an introit in the Church of England (1549) for the 3d Sunday in Lent, and in the Roman Catholic Church for the 5th Sunday in Lent. Hence «Judica Sunday» as a term to designate those several days.

Judic'iary, that branch of government concerned with the administration of justice, in cases civil or criminal; the system of courts of justice in a country; the judges collectively. For judiciary in the United States, see Court.

Judiciary in the Philippines. The United States government organized in 1902 a complete judicial system covering the whole archipelago, the municipal code providing for the trial of violators of municipal ordinances by the local *presidente,* other special laws authorizing the appointment of justices of the peace for trial of minor offenses, civil actions involving small amounts and the preliminary investigation of higher crimes, creating courts of first instance that are courts of record and of general jurisdiction, one being provided for each province, except in the city of Manila, where there are two judges. The courts of first instance hold sessions at least twice a year in the smaller provinces and in the more important ones three or four times. The archipelago is divided into 14 judicial districts outside the city of Manila, one judge for each judicial district, with a special tribunal for disposing of arrearages of litigation in the island of Negros. There is a Supreme Court, consisting of a chief justice and six associate justices, with adequate provisions for reporting the decisions of the court, and for representation of the government, general and local, in all litigation by the attorney-general, solicitor-general and their assistants, and provincial fiscals, with a special municipal system of courts for the city of Manila and with a notarial system for the archipelago. A considerable number of the judges in the various courts are native Filipinos. All the fiscals, or prosecuting officers in the islands are natives.

Judith, Jewish heroine. She was the widow of Manasses, a citizen of Bethulia. When Holofernes, general of King Nebuchadnezzar, according to the Book of Judith, besieged Bethulia, a city of unknown geographical position, she went armed with faith in Jehovah to the tent of the invader and was admitted because of her stately beauty. While he slept she cut off his head with his own sword, and thus delivered Israel. This incident has been a favorite subject with artists, for in the first place the Book of Judith is written with abundant literary point and skill and is naturally suggestive to the sculptor or painter. It is the subject of Donatello's bronze group in the Lanzi palace at Florence, and of many pictures, notably that of Cranach in the Dresden gallery, and those of Horace Vernet, 'Judith on Her Way to Holofernes'; and 'Judith in the Tent of Holofernes.'

Jud'son, Adoniram, American Baptist missionary: b. Malden, Mass., 9 Aug. 1788; d. at sea 12 April 1850. He was graduated from Brown University in 1807, and immediately after opened a private school in Plymouth, Mass. Skeptical views which he had held were overcome by his examination of the evidences of Christianity, and he was graduated from Andover Theological Seminary in 1810. With some of his fellow students at Andover he addressed a letter to the General Congregational association of Massachusetts which ultimately led to the formation of the American board of commissioners for foreign missions. Impatient at the slow progress of the American movement he embarked for England to consult with the directors of the London Missionary Society in regard to co-operation with that society by the newly formed American board. On his return to America he and three others were appointed missionaries to the Burman empire by the American board; they were ordained 6 Feb. 1812 and Dr. Judson, with his wife, sailed on the 19th for Calcutta. They were subjected for a full year to much annoyance by the East India Company's regulations, and finally took refuge in Rangoon (July 1813). Meanwhile they had adopted Baptist views, and had surrendered their connection with the American board. The Baptist general convention (now the American Baptist Missionary Union) organized in 1814 and immediately appointed Mr. and Mrs. Judson its missionaries. Established in Rangoon they applied themselves to the learning of the language, without grammar or dictionary; in April 1819 the first *zayat* was opened for Christian worship, and in 1820 the number of baptized converts was 10. The growth of the mission had excited the displeasure of the new viceroy, and Dr. Judson determined to appeal to the king for protection, but the plea was unavailing; later, however, their mission was transferred to Ava, at the request of the king. The sudden breaking out of war between the East India Company and the Burman government brought upon the missionaries the severest privations; in June 1824 Dr. Judson was arrested and thrown into prison, enduring the most brutal treatment until February 1826, when he was released on the demand of Sir Archibald Campbell, the English general. Removing to territory ceded by the Burman government to the English, he and his wife commenced missionary work at Amherst; shortly after Judson went with an embassy to Ava to negotiate a new treaty, and during his absence his wife died. On his return to Amherst he took up again his missionary work, where he was chiefly occupied in the translation of the Bible (completed 1834); and the preparation of a Burman-English dictionary. In April 1834, he married Mrs. Sarah Hall Boardman, and remained in Burma till 1845, when he visited the United States. Mrs. Judson died on the voyage. He was received in the United States with distinguished marks of respect by public meetings in many cities, especially by the Baptist missionary conventions at New York and Richmond. In July 1846, he again sailed for Burma with his third wife, Emily Chubbuck, and settled at Maulmain; took the pastorate of the Burman church there, and continued his work on the dictionary. In 1849, illness forced him to leave Maulmain, and he died on the voyage to the Isle of Bourbon. Consult: Lives by his son, Edward Judson (q.v.) (1883); Wayland (1853); Conant, 'The Earnest Man' (1856).

Judson, Ann Hasseltine, American missionary, wife of Adoniram Judson (q.v.): b. Bradford, Mass., 22 Dec. 1789; d. Amherst, Burma, 24 Oct. 1826. She was married to Dr. Judson in 1812, and sailed with him to Burma, where she took active part in all his missionary work. Her health compelled her to visit the United States in 1822–3, where her personal appeals were the means of largely increasing the missionary interest in the churches. Shortly after her return to Burma, her husband and other foreign residents at Ava were imprisoned, and she herself suffered many indignities; but by constant appeals to the king and the wise use of money and presents she was successful in relieving somewhat the sufferings of her husband and the other prisoners. She wrote 'History of the Burman Missions' (1822).

Judson, Edward, American Baptist clergyman: b. Maulmain, Burma, 27 Dec. 1844. He is the son of Adoniram Judson (q.v.) and came to the United States in 1850 after the death of his father. He studied at Madison (now Colgate) University, and was graduated from Brown in 1865. He was principal of the academy at Townsend, Vt. (1865–7) and subsequently professor of Latin at Madison (now Colgate) University. In 1875 he accepted the pastorate of the Baptist Church at Orange, N. J., then became pastor of the Berean Baptist Church, New York city, and later secured a site on Washington Square, New York, and erected the Judson Memorial Church (in memory of his father) of which he is pastor. Here he has built up an institutional church, with many different lines of work, including gymnasium classes, a dispensary, and a children's fresh air fund.

Judson, Emily Chubbuck («FANNY FORRESTER»), American writer: b. Eaton, Madison County, N. Y., 22 Aug. 1817; d. Hamilton, N. Y., 1 June 1854. She was the third wife of Rev. Adoniram Judson (q.v.) to whom she was married in 1846. As «Fanny Forrester» she achieved some little reputation as a writer of graceful sketches and poems, and besides the life of the second Mrs. Judson (1850), published 'Alderbrook' (1846); 'The Kathayan Slave' (1853); 'An Olio of Domestic Verses' (1852); 'Trippings in Author Land' (1846); 'My Two Sisters' (1854).

Judson, Harry Pratt, American educator: b. Jamestown, N. Y., 20 Dec. 1849. He was graduated from Williams College in 1870, was professor of history in the University of Minnesota 1885–92, professor of political science 1892–1907 in, and president since 20 Feb. 1907 of the

University of Chicago. His works include: ‘Cæsar's Army, a Study of the Military Art of the Romans’ (1888); ‘Europe in the Nineteenth Century’; ‘The Growth of the American Nation’ (1895); ‘The Higher Education as a Training for Business’ (1896); ‘The Government of Illinois’ (1900); etc.

Judson, Sarah Hall Boardman, American missionary: b. Alstead, N. H., 4 Nov. 1803; d. St. Helena 1 Sept. 1845. She was married on 4 July 1825, to Rev. George Dana Boardman, and on 16 July they embarked for Calcutta. They established the mission station at Maulmain, and Mrs. Boardman made rapid progress in the acquisition of the language. Transferred to Tavoy for a similar service, they worked among the Karens partly at the schools at Tavoy and partly by visiting their villages in the wilderness. After two years Mr. Boardman died, but she continued her missionary labors, and beside managing a school with great success, was accustomed to make long journeys among the mountains. In these excursions, assemblies of hundreds gathered around her and she conducted the worship and gave them religious instruction. In April 1834, she became the wife of Adoniram Judson (q.v.). She was perfectly familiar with the Burman language, and translated into Burmese the first part of Bunyan's ‘Pilgrim's Progress’ and various tracts, prepared a hymn book, and several volumes of Scripture questions for Sunday schools. Before the Peguans had a missionary, she acquired their language, and translated or superintended the translation of the New Testament and the principal Burman tracts into the Peguan tongue.

Juggernaut, jŭg'ėr-nât. See JAGANNATH.

Jugular (joo'gū-lạr) **Vein,** one of the large trunks by which the greater part of the blood that has circulated in the head, face and neck is returned to the heart. There are two on each side, an external or superficial, and an internal or deeper.

Jugurtha, joo-gėr'thạ, king of Numidia: d. Rome 104 B.C. He was a natural son of Masinissa. Micipsa, his father's brother, and king of Numidia after Masinissa (149 B.C.), adopted him and brought him up with his own sons, Adherbal and Hiempsal. Micipsa did his best to conciliate him, and declared him joint-heir to the crown with his two sons. But after the death of Micipsa, Jugurtha had Hiempsal murdered and drove Adherbal from the country. Adherbal appealed to Rome, and after several Roman expeditions into Numidia, Jugurtha was captured (106 B.C.), led in the triumph of Marius at Rome, and finally thrown into a dungeon, where he was starved to death.

Jujube, joo'joob, a spiny and deciduous shrub of the order *Rhamnaceæ* and genus *Zisyphus,* a native of Syria, whence it was introduced into Europe. The fruit is blood-red or saffron-colored, with a sweet, granular pulp. The species are numerous, and of several the fruit is wholesome and pleasant to eat, both fresh and dried, and forms an article of commerce; and in southern Europe it is used at table in desserts as a dry sweetmeat. *Z. Lotus,* which gave its name to the ancient Lotophagi, a shrub 2 or 3 feet high, is a native of Persia and the north of Africa. Its berries, which are about as large as a sloe, are collected for food by the Arabs of Barbary, are made into cakes, and a kind of wine is sometimes made from them. *Z. spina-christi,* or Christ's thorn, is said to have furnished the branches of which Jesus' crown of thorns was made.

Jujuy, hoo-hwē', Argentine, a province situated in the extreme northwest of the republic, between Bolivia and the province of Saltá. Nearly the entire area, estimated at 18,977 square miles, is occupied by mountains in which are extensive deposits of gold, silver, copper, mercury, salt, petroleum, and asphalt. Fertile valleys in the eastern part of the province produce sugar-cane, wheat, tobacco, and rice. There are immense forests and an abundant supply of water. The provincial capital, also called Jujuy, a town of about 10,000 inhabitants, is connected by railway with Buenos Ayres, and has two banks, a custom-house, a national college, a normal school for girls, and 7 public schools. The population of the province, according to the census of 1895, was 49,713. Estimated population in 1903, about 57,000.

Jukes, The, the name given to a family of New York State that had an unusual record of crime and pauperism. In 1874, Mr. R. L. Dugdale, while making investigations in behalf of the New York Prison Association, found several of the same family imprisoned for various crimes. Becoming interested in the subject, he traced the history of the family through several generations; they were descendants of the two sons of a backwoodsman, called Max, who married two of the Jukes sisters, one of whom is known as «Margaret, the Mother of Criminals.» Exact information was obtained in relation to 709 out of the 1,200 descendants and blood relations; of these, 140 had been imprisoned for crime, 280 had been paupers, dependent upon public support, and the large majority were of low physical and moral standard. Consult: Dugdale, ‘The Jukes.’

Julia, only child of the emperor Augustus; b. 39 B.C.; d. 14 A.D. She was his daughter by his second wife Scribonia, and was first married (25 B.C.) to her cousin, the young Marcellus, and afterward to Marcus Vipsanius Agrippa, to whom she bore three sons and two daughters. On Agrippa's death, in 12 B.C., she was married to Tiberius, who left her on account of her licentiousness. Augustus banished her to Pandataria, a desolate island on the coast of Campania, ultimately allowing her to live in Rhegium. After the death of the emperor, Tiberius treated her with great severity. She died in poverty and distress. Her son, Agrippa, had been put to death by Tiberius shortly before.

Julia Domna, Roman empress: b. Emesa, Syria, 170 A.D.; d. 217 A.D. She was the second wife of the Emperor Severus, and mother of Caracalla and Geta, and a distinguished patroness of art and science.

Julian, joo'lyạn, FLAVIUS CLAUDIUS JULIANUS), Roman emperor, surnamed the Apostate: b. Constantinople 17 November 331; d. 26 June 363. When hardly six years old his father and several members of his family were murdered by the soldiers of his cousin, the Emperor Constantius. He was brought up in the Christian religion, studied philosophy and letters, and resided in Athens, where he was induced to embrace Paganism. Having received command of an army against the Germans, he defeated them at Strasburg, and drove them beyond the Rhine. He also displayed great talent as an administrator in Gaul. The emperor now became jealous of Julian, and recalled his best troops under pretense that he wanted to employ them against the Persians. This order caused a rebellion among the soldiers, who proclaimed their leader Julian emperor in March 360, in spite of his own resistance. Constantius prepared to proceed against him, but soon after died, and Julian was generally recognized as emperor. He began by putting a stop to many abuses, and limiting the splendor of his court, and was thus able to remit to the people the fifth part of all their taxes. He sought to restore the heathen worship in all its splendor, and on that account opposed Christianity as much as was in his power, without, however, persecuting the Christians themselves. In 363 he headed an expedition against the Persians and took several cities. He was an able ruler, and had also a reputation as an author. Some of his works have come down to us, including speeches, letters, and satirical pieces; the latter are distinguished for wit and humor. He wrote also a work against the Christian religion, of which we have yet some extracts. Consult: Schwartz, ‘De Vita et Scriptis Iuliani Imperatoris’ (1888); Hoffmann, ‘Julianus der Abtrünnige’ (1880); Gardner, ‘Julian: Philosopher and Emperor’ (1895); Dill, ‘Roman Society’ (1899).

Julian, George Washington, American politician: b. Centerville, Ind., 5 May 1817; d. Irvington, Ind., 7 July 1899. He studied law and was admitted to the bar at the age of 21. In 1845 he was elected to the State legislature, as a Whig, but being a strong opponent of slavery he severed his party connection with the Whigs and became one of the founders of the Free Soil party in 1848. In 1849 he was elected to Congress; in 1852 was candidate for vice-president of the Free Soil party, and in 1856 a delegate to the first national convention of the Republican party, where he was vice-president of the convention and chairman of the committee on organization. In 1860 he was again elected to Congress, and served continuously for ten years. He was a member of the committees on the conduct of the war, on reconstruction, on the preparation of the articles of impeachment against President Johnson, and on public lands, being chairman of the latter. He opposed any monopoly of the public lands, was an advocate of the homestead system, and strongly favored giving the franchise to the negro. In 1868 he proposed a constitutional amendment providing for woman's suffrage. In 1872 he joined the Liberal Republicans, and after that became a Democrat; in 1885–9 was surveyor-general of New Mexico; and after 1889 retired from public life. He published ‘Speeches on Political Questions’ (1872); ‘Political Recollections’ (1884); and ‘Life of Joshua R. Giddings’ (1892).

Julian Calendar. See Calendar; Epoch.

Julien, Alexis Anastay, American geologist: b. New York 13 Feb. 1840. He was graduated from Union College in 1859, was resident chemist at the guano island of Sombrero 1860–4, studied geology and natural history there, and on the establishment of the Columbia School of Mines became an assistant in the quantitative laboratory. He was in charge of the department of microscopy there, 1885–97, and subsequently became instructor in geology. He has published valuable scientific reports included in the Geological Survey's ‘Geology of Michigan,’ vol. II. (1872); and ‘Geology of Wisconsin,’ vol. III. (1880); etc.

Julien, zhü-lĭ-ăṅ, **Stanislas Aignan,** French sinologist: b. Orleans 20 Sept. 1799; d. Paris 14 Feb. 1873. Possessed of an extraordinary linguistic faculty, he taught himself Greek, English, Italian, Spanish, Portuguese, and German, and in 1823 commenced the study of Chinese. At the end of a year he published a Latin translation of the philosopher Mencius. Henceforth ancient and modern Chinese, Manchu, the Mongolian tongues, and Sanskrit, were the subjects of exact and profound study. In 1832 he became professor of Chinese at the Collège de France; librarian at the Bibliothèque Nationale, 1839; president of the college, 1855; commander of the Legion of Honor, 1863. His most important works are: ‘Voyages des Pérelins Boudhistes’ (1853–8); ‘Syntaxe nouvelle de Langue chinoise’ (1869–70). Julien was the foremost Chinese scholar of his time.

Julius I., pope: d. 12 April 352. He became pope in February, 337, and was a staunch defender of Athanasius, who, under the protection of Julius, sought refuge in Rome against the enmity of the Eastern prelates.

Julius II., pope (Giuliano della Rovere, joo-le-ä'nō dĕl'lä rō-vā'rā): b. Albezuola 1443; d. Rome 21 Feb. 1513. He was elevated by his uncle Sixtus IV. to the rank of a bishop and cardinal in 1471, and subsequently held eight bishoprics and the archbishopric of Avignon. He was appointed papal legate to France in 1480 and in 1503 was elected pope. Immediately on his elevation to the pontificate he planned the complete re-establishment of the papal sovereignty in its ancient territory, and the extinction of foreign domination, and influence in Italy. Refusing to attend the Council of Pisa convened by the king of France, he in 1511 formed the «Holy League,» to which Spain, England, and Switzerland were parties. In 1512 he made open war against Louis XII., and the Fifth Lateran Council was convoked by him in the same year. The French defeated the papal army near Ravenna, but were soon after driven out of Italy. He was a far-sighted and patriotic sovereign, and a liberal and judicious patron of art and literature, Michelangelo, Raphael, and other great artists of the time receiving commissions from him. To procure means for building St. Peter's he ordered the preaching of indulgences, which was one of the immediate causes of the Reformation. Consult: ‘Life,’ by Du Mesnil (1873); Brosch, ‘Papst Julius II., und die Gründung des Kirchenstaates’ (1878).

Julius III., pope (Giovanni Maria del Monte, gō-van'nē mä-rē'ä dĕl mōn'tā): b. Arezzo 10 Sept. 1487; d. Rome 23 March 1555. He was made archbishop of Siponto in 1512 and of Pavia in 1520, and was appointed cardinal by Paul III. in 1536. He took an active part in the Council of Trent as papal legate, was elected pope in 1550, and in the following year reopened the Council of Trent, which had been suspended for two years. He endeavored to effect a union with the Nestorians, and commissioned Cardinal Pole to organize, in conjunction with Mary, the reunion of England with Rome.

Julius Cæsar. See Cæsar, Gaius Julius.

Julius Cæsar, Play of. The material for this stately drama, the noblest of Shakespeare's historical plays, was taken from Plutarch. The action covers nearly two years,— 46 to 44 B.C. See Cæsar, Gaius Julius.

July, the 7th month of the calendar, which in the Roman year bore the name of *Quintilis,* as the fifth in the computation of Romulus, even after Numa had prefixed January and February. Mark Antony effected a change in its name in honor of Julius Cæsar, who was born on the 12th of the month, and thenceforward by a decree of the senate it was called *Julius.* It originally contained 36 days. It is said that Romulus reduced them to 31 and Numa to 30. Julius Cæsar fixed the number at 31, which is still retained. The Dog-days are supposed to commence on the 3d of this month.

Jumbo, the name of a large African elephant for 25 years on exhibition at the Royal Zoological Gardens in London. The animal was purchased in 1882 by P. T. Barnum (q.v.), American showman, for $10,000, and for three years was exhibited in the United States. Jumbo was killed in 1885 by a railroad train in Canada. He was 11 feet 6 inches in height, and weighed 6 tons. His skeleton is preserved at the Smithsonian Institution, Washington, D. C.

Jumel, zhū'mĕl, **Eliza,** American heiress: b. at sea 1769; d. New York 16 July 1865. Her maiden name was Capet, and after her mother's death she was adopted by Mrs. Thompson, of Newport. She was a wayward, beautiful girl; at 17 she eloped with a British officer named Peter Croix, with whom she lived in New York. There she was greatly admired, and soon after her first husband's death married Stephen Jumel, who took her to Paris, where her social success was as great as in New York. After Jumel's death, she married at 61 Aaron Burr (q.v.), from whom she separated soon afterward. Her home during her last years was the famous Jumel mansion, built by Roger Morris in 1758, the home of Mary Philipse Rogers (q.v.) and Washington's headquarters during the New York campaign. It was bought by Madame Jumel in 1810, and is still preserved, its site being in Roger Morris Park, New York, which was opened 28 Dec. 1903.

Jum'na, or **Jamna** (Sanskrit Yamuna), a river of India which rises in the Himalayas, at the height of 10,849 feet. It flows in its upper course in a generally southwest direction, then bends to the southeast and, passing the cities of Delhi and Agra, falls into the Ganges, of which it is the chief tributary, at Allahabad (q.v.) after a course of 860 miles. Important irrigation works derive their supply of water from this river.

Jumpers, a class of religionists who manifest their devotion and feeling by jumping from the ground during the time they are assembled for worship and exhortation. They are said to have originated in the Methodist congregations of Wales during the preaching of Whitfield (1760). They were also called «Barkers» from the incoherent guttural sounds they uttered during their excitement. They still exist in some parts of the Eastern States, having emigrated to America after being repudiated by English Methodists.

Jumping Beans, various large seeds of euphorbiaceous plants infested with the larvæ of certain small moths (*Carpocapsa saltitans* and *Grapholitha sebastianæ*), which by their movements make the seeds roll, and even jump as if alive. The larvæ spin cocoons in the seeds, a large part of the interior of which they have devoured, and when ready to emerge as adults, push open a previously cut circular door which has been held shut by silken threads. Both species are found in Central America, Mexico, and the southwestern United States, where they are called «broncho beans.»

Jumping Hare, or **Springhaas,** a jerboa-like animal (*Pedetes caffer*) of South Africa, as large as a hare, and much resembling one, which is now set apart in a family (*Pedetidæ*) by itself. It will leap 25 or more times its own length, and where numerous does great damage at night to growing crops.

Jumping Mouse. See Jerboa.

Jumping Shrew, a curious little animal of Africa, one of the insectivora of the Elephant-shrew family (*Macroscelidæ*), which has very large hindquarters and moves by leaping like a jerboa. They inhabit rocky and desert places, remain in holes and hiding places during the day and go abroad at night in search of insect food. The best known, perhaps, is the Cape jumping-shrew of South Africa (*Macroscelidus typicus*), which is tawny brown, about five inches in length, has a long, flexible proboscis and a long naked tail.

Jumping Spiders, small spiders of the family *Attidæ,* which dwell in low vegetation, and are exceedingly agile. They are usually short and stout in form, rarely more than a quarter of an inch long, and are often brightly colored, especially in the case of the males, which take curious attitudes in order to display their ornaments to the females. Consult Emerton, ‹Common Spiders of the United States› (1902).

Jun'co, a genus of slate-colored and white sparrows, present in the United States mostly in winter. See Snowbirds.

Junction City, Kan., city and county-seat of Geary County, at the junction of the Republican and Smoky Hill rivers, 135 miles west of Kansas City; and on the Missouri, K. & T. and the Union P. R.R.'s. The two rivers here form the Kansas River, and make an important shipping point for grain, flour and limestone. A government military post, Fort Riley, is located three miles east of the city. It was settled in 1858 and under a charter of 1870 is governed by a mayor and city council.

The city owns the waterworks. Pop. (1890) 4,502; (1900) 4,695.

June, Jennie. See Croly, Jane G.

June, the 6th month in the calendar. The etymology is uncertain. Vossius gives three etymologies of the name — one from Juno; another from *jungo* (to join), referring to the union between the Romans and Sabines under Romulus and Titus Tatius; a third from *juniores* (the young men), Romulus having been said to have assigned the month of May to the elders, and that of June to the young men, when he divided the people into these two great classes, the former to serve in counsel, the latter in war. The name has also been traced to Junius Brutus, the first consul. It consisted originally of 26 days, to which it is said Romulus added four, and Numa took away one. Julius Cæsar again lengthened it to 30 days, and it has ever since remained unaltered.

June Beetle, or **Fig-eater,** a green and brown beetle (*Allorhina nitida*) of the family *Scarabæidæ* common in the central and southern United States. The adults often eat figs, peaches, small fruits, corn, etc. The larvæ are white grubs which resemble their northern relatives (see May Beetle), but are far less injurious since they normally feed upon decaying vegetable matter in the soil and not on living roots of plants. The adults may be decoyed away from ripe fruit by placing little piles of decaying fruit within their reach; but since they are probably beneficial they should not be destroyed.

June Berry. See Amelanchier.

June Bug. See May Beetle.

June Grass. See Blue Grass; Grasses in the United States.

Juneau, joo-nō', **Laurent Solomon,** American pioneer: b. L'Assumption parish, near Montreal, Canada, 9 Aug. 1793; d. Shawano, Wis., 14 Nov. 1856. He emigrated to Green Bay, Wis., and thence in 1818 to Milwaukee, where he was active in trade with the Indians. He was not, as has been sometimes stated, the first white settler on the site of Milwaukee. A grant of considerable land had there been made by the Indians to one Mirandeau, a previous resident, and of this grant, Juneau, on Mirandeau's death, secured possession. Juneau made the first survey of Milwaukee village, was its first postmaster and president, and the first mayor of the subsequent city. On ground presented by him, he helped to build the first court-house in the State. For years he was agent for the American Fur Company. A heroic statue of him was placed in Juneau Park, Milwaukee, in 1884. See Milwaukee.

Juneau, Alaska, city in the southern district, on a promontory between the Taku River and Lynn Canal, opposite Douglas Island, about 80 miles north of Sitka. It was settled in 1880, is incorporated, and has been selected by Congress as the capital of Alaska. From its situation in the mining region it has become a centre of trade in outfitters' articles and general supplies; while its exports, including gold, furs, and other products of Alaska, have grown to a considerable commerce. Among the manufactories are iron-works, breweries, sawmills, cigar factories, etc. In the vicinity are the Treadwell gold mine and the Silver Bow mines. Villages of the Auk and Taku Indians in the neighborhood are of interest to tourists. At Juneau is the United States land office for Alaska. Its public schools are well conducted, and its waterworks, electric-light system, and other public improvements give it all the essential conveniences of a modern American city. Cable service is established here. Pop. (1890) 1,253; (1900) 1,864.

Jung-Stilling, Johann Heinrich, yō'hän hĭn'rĭH yoong stĭl'lĭng, German mystical author: b. Grund, Hesse Nassau, Germany, 12 Sept. 1740; d. Carlsruhe, Baden, 2 April 1817. In the early part of his career he was by turns, a charcoal burner, school master, and tailor, and in 1771 went to Strasburg to study medicine. Here he became acquainted with Goethe, who has sketched him in ‘Aus meinem Leben.’ He was professor of political economy in the Universities of Marburg and Heidelberg, 1787–1806, and the remainder of his life was passed at the court of the Grand Duke of Baden. His writings, which include several romances as well as distinctly religious works, are more or less mystical in tone. Among them are ‘Geschichte des Herrn von Morgenthau’ (1770); ‘Geschichte Florentins von Fahlendorn’ (1783); ‘Theobald’ (1784–5, an English version of which appeared in New York 1846); ‘Das Heimweh’; ‘Theorie der Geisterkunde’ (1808, in English 1834); ‘Scenen aus dem Geisterreiche’ (1797–1801), and his famous autobiography ‘Heinrich Stillings Leben’ (1806). In the publication of this he was aided by Goethe. The work was completed in ‘Heinrich Stillings Alter’ (1817).

Jungfrau, yoong'frow (Ger. «virgin,» or «maiden»), a mountain of Switzerland, in the Bernese or Helvetic Alps, on the frontiers between the cantons of Bern and Valais, 12 miles southeast of Interlaken. It is one of the most magnificent mountains in Switzerland and the loftiest calcareous mountain in Europe; height 13,670 feet. It was first ascended in 1811.

Junghaus, yoong'hows, **Sophie,** German novelist: b. Cassel, 3 Dec. 1845. She became well known by the publication of ‘Kathe, the Story of a Modern Maid’ (1876). Later works of hers are: ‘The House of Eckberg,’ a study of life during the Thirty Years' War (1878); ‘Die Erbin wider Willen’ (1881); ‘Die Gäste der Madame Santines’ (1884); ‘Der Bergrat’ (1888); ‘Zwei Brüder’ (1889); ‘Zu rechter Zeit’ (1892); ‘Um das Glück’ (1896); ‘Junge Leiden’ (1900).

Jungle, an Indian term applied to a desert and uncultivated region whether covered with wood and dense vegetation or not, but in English it is applied to land covered with forest trees, thick impenetrable brushwood, or any coarse rank vegetation.

Jungle Books, The (1895), by Rudyard Kipling. The central figure in these books is the boy Mowgli, who, straying from his village home when an infant, had been lost in the forest, and there sheltered and nursed with her own cubs by a mother-wolf, and the hairy Orson. Joined to this element of human interest, and with the coloring of high romance, these stories picture the personal characteristics and social and political life of the gaunt wolf-family in their cave and the free republic of wolves. Unlike the talking beasts in Æsop's fables, those of the ‘Jungle Books’ are not men in hides and on all fours discussing human problems. Kipling's genius represents them thinking and behaving each according to his own peculiar beastly habit and experience, with great dramatic skill.

Jungle-cat, or **Chaus,** the common wildcat of India (*Felis chaus*). It is 26 inches long in head and body, has a short tail, reaching only to the heel, and is yellowish gray, more or less dark and unspotted, tinged with reddish on the sides, marked by a dark stripe from the eyes to the muzzle, and with reddish black ears slightly tufted. Another Indian «jungle-cat» is the handsome *F. ornata,* which is profusely spotted; it dwells in the desert regions of the Northwestern provinces. Both these cats are said to interbreed with domestic cats, and thus no doubt long ago influenced the varieties of the tamed stock.

Jungle-fever, a severe variety of remittent fever, prevalent in the East Indies and other tropical regions. It is characterized by the recurrence of paroxysms and of cold and hot stages. The remissions occur usually in the morning and last from 8 to 12 hours, the fever being mostly typically developed at night.

Jungle-fowl, the English book-name of a genus of pheasants, the source of domestic fowls, characterized by a fleshy frontal comb and wattles, and the peculiarly laterally compressed tail with its long, drooping, curved feathers. This genus (*Gallus*) is represented by several species in southern Asia, especially India, and the Malay and Philippine Islands. The common jungle-fowl (*Gallus gallus* or *bankiva*) is especially noteworthy as the original stock of our barnyard fowls. The wild birds, which are quite common in cultivated parts of central India and about the bases of the Himalayas up to an elevation of 5,000 feet, closely resemble some of the varieties of game cocks and hens. The sexes differ as in the domestic birds in size, character of tail feathers, combs, wattles, spurs and color. Although naturally living in flocks in the jungles and forests, these haunts are often forsaken for the purpose of feeding upon grain in the cultivated fields. They run with great speed, are tolerably good flyers and roost in trees. The cock crows and the hen clucks and cackles much as domestic fowls do. In the wild state the jungle-fowl is said to be monogamous; eggs to the number of 10 or 12 are laid in a simple depression in the ground lined with leaves and grass. Consult Darwin, ‘Animals and Plants under Domestication’; Tegetmeier, ‘Ibis’ (1891); and Blanford, ‘Fauna of British India.’

In Australia this name is often given to the mound-birds.

Juniata, joo-nĭ-ăt'ạ, a river of Pennsylvania formed at Petersburg, about six miles northeast of Huntingdon, near the centre of the State, by two streams rising in the Alleghany Mountains — the Little Juniata and the Frankstown Branch. Its course is winding, but it flows in a generally eastern direction for about 150 miles, entering the Susquehanna at Duncannon, 14 miles above Harrisburg. Along the greater part of its course the scenery is picturesque, often marked by grandeur where the river breaks through the mountains that rise in parallel ridges across its path. The Juniata is not a navigable stream, but from its source to its mouth its banks are followed by the Pennsylvania Canal and the Pennsylvania Railroad, the latter crossing the river several times.

Juniata College, a coeducational institution, located at Huntingdon, Pa.; established in 1876 under the auspices of the German Baptist Brethren. Special attention is given to the religious education of the students; one of its principal courses is the history and literature of the Bible. It has art, music, normal, and commercial departments, also a preparatory school. The courses lead to the degrees of bachelor of arts, and of English and sacred literature. In 1903 there were in attendance 350 students, and 21 professors and instructors were connected with the school. There were about 21,000 bound volumes and over 4,000 pamphlets in the library.

Junin, hoo-nēn, Peru, department in the interior; has an area of 23,347 square miles. It is located in the wildest parts of the Cordilleras. Agriculture is neglected and large deposits of silver remain unworked. A railroad connects the southern part with Lima on the coast. The capital city is Cerro de Pasco. Pop. of the department 394,393.

Junior Order of United American Mechanics. See UNITED AMERICAN MECHANICS, JUNIOR ORDER OF.

Ju'niper, a genus (*Juniperus*) of ornamental evergreen trees and shrubs of the order *Coniferæ,* consisting of about 35 species distributed mainly throughout the cooler parts of the northern hemisphere, but also in America extending to Mexico and the West Indies. The species have branches which spread in all directions from the main trunk and limbs, small, rigid, needle-like or scale-like opposite leaves; unisexual flowers, the two sexes usually upon separate plants, the staminate, yellow and in catkins, the greenish pistillate ones followed by fleshy, berry-like cones containing from one to six, sometimes 12 seeds, which may not attain maturity until the second or third year. The best known species in the United States is probably the Virginian juniper, red cedar or savin (*Juniperus virginiana*), to be found everywhere east of the Rocky Mountains, upon rocky and sandy soils, mountain sides, etc. It often attains 100 feet in height, its upright or spreading branches forming a handsome conical head. Its numerous attractive horticultural varieties are largely planted in parks and cemeteries. The trunks are highly prized for fence posts, being exceedingly durable; the handsome, red, heart-wood is valued for turning, cabinet work, cooperage, and especially for lead-pencils; but the tree is looked upon with disfavor by the orchardist, because it is one of the hosts of apple rust. See APPLE, paragraph *Diseases.*

The common juniper (*J. communis*) is a smaller species, rarely reaching 50 feet in height and usually less than 25 feet tall, and many of its numerous varieties less than 10 feet. It is widely distributed throughout the northern hemisphere, especially in the colder latitudes and altitudes. Like the preceding species its wood is valued, when of sufficient size, for posts, veneers, pencils, and for turning. The tree itself is also used for ornamental planting. Its bark is sometimes twisted into ropes and its long, tough, fibrous roots are used for making baskets. Its blue-black fruit, which it yields profusely, is used for flavoring certain liquors, as is also the oil obtained from them and from the twigs by distillation with water. This oil has been used in medicine as a stimulant, but is less popular than formerly. The Bermuda cedar (*J. bermudiana*) resembles the Virginian juniper, but is of stouter build, though it rarely exceeds 40 feet in height. Its wood is rather more fragrant than that of the preceding species, like which it is used. Formerly it was employed in the ships built in the Bermudas, but the forests which supplied this industry were mismanaged and the industry perished. Several other species are of more or less economic importance; for instance, the Spanish juniper (*J. oxycedrus*), a shrub which attains a height of about 12 feet, whose fruits yield a disagreeable smelling oil (oil of cade), used in veterinary medicine; and African juniper (*J. procera*), a useful timber species and probably the largest of the genus, often attaining heights of 150 feet in the mountains of eastern Africa, where it is native.

Junipers succeed best in moderately moist, sandy loam in open, sunny situations. They make excellent windbreaks and shelter belts, especially where the soil is too dry, rocky or gravelly for other trees. They may be propagated by seeds which, however, usually require two, sometimes three, years to germinate. Cuttings of almost mature wood are taken in the autumn from the needle-leaved kinds and grown under glass or in the open; species with scale-like leaves are generally side-grafted in the greenhouse during winter. Some of the shrubby species are propagated by layers.

Junipero, Miguel José Serra, mē-gĕl′ hō-sā′ sĕr′rä hoo-nē′pā-rō, Spanish missionary in America: b. island of Majorca 24 Nov. 1713; d. Monterey, Cal., 28 Aug. 1784. He became a member of the Franciscan order in 1729, in 1750 arrived in Mexico City as a missionary, and in 1750–69 was active among the native tribes. In 1769 he went to the site of San Diego Cal., where he founded a mission. He gathered about him a band of sixteen of his order, and these missionaries converted over 3,000 Indians, of whom Junipero himself is said to have baptized more than 1,000. Junipero instructed the natives in the arts of civilization, and the colonies which assembled about the mission stations constituted the first settlements in California. His headquarters were at Monterey, but he founded several other missions. Bret Harte incorrectly gives his name as Serro.

Ju′nius Letters, The. During the period between November 1768 and 21 Jan. 1772, there appeared in the London *Daily Advertiser* a series of mysterious letters aimed at the British ministry of that day, and signed by various pen-names — the most remarkable of them by that of one «Junius.» During the century ensuing, the authorship of these epistles has been assigned with some degree of probability. The merits of the ‹Letters› have been sufficient to give them a life all the more vigorous, perhaps, because they have been conjecturally assigned to Sir Philip Francis. The author was a man thoroughly cognizant of British politics; a vehement opponent of the government, and a fiery pleader for popular liberty. The dominant message is sounded in these words from the first letter of the series: «The admission of a free people to the executive authority of government is no more than compliance with laws which they themselves have enacted.» Much constitutional knowledge is shown in these trenchant attacks, which continually refer to the British Constitution as the bulwark of the people's rights. In manner, the letters are vigorous, bold, and among the finest specimens of impassioned invective and irony in English literature.

Junkers, yoong′kėrz, a name given to the younger members of the nobility of Prussia and the adjoining states. «Junkerthum» was a term of reproach used in the 19th century to designate the party of reaction in Prussia, which found its most strenuous supporters among the nobility.

Junk′in, George, American Presbyterian clergyman: b. near Carlisle, Pa., 1790; d. 1868. He was graduated from Jefferson College (Pa.) in 1813 and entered the Presbyterian ministry in which he became prominent as a leader of the party known as Old School Presbyterians. He founded Lafayette College at Easton, Pa., in 1832, and was its president till 1841, returning thither in 1845, after three years spent as president of Miami College at Oxford, Ohio. In 1848 he became president of Washington College (now Washington and Lee). He was an outspoken upholder of slavery, but was opposed to secession, and on account of his Union sentiments resigned the presidency of the college in 1861. Consult: ‹Life› by D. X. Junkin (1871).

Junks, large flat-bottomed vessels, from 100 to 150 tons burden, used by the Chinese. They have three masts, and a short bowsprit placed on the starboard bow. The masts are supported by two or three shrouds, which, at times, are all carried on the windward side. On the fore and main mast is a sort of lug-sail, of cane or bamboo.

Ju′no, the most exalted divinity of the Latin races in Italv next to Jupiter, of whom she was the sister and wife; the equivalent of the Greek Hera. She was the queen of heaven, and under the name of Regina (queen) was worshiped in Italy at an early period. She bore the same relation to women that Jupiter did to men. She was regarded as the special protectress of whatever was connected with marriage. She was also the guardian of the national finances, and a temple, which contained the mint, was erected to her under the name of Juno Moneta on the Capitoline.

Junot, Andoche, äṅ-dōsh zhü-nō, DUKE OF ABRANTES, French marshal: b. Bussy-le-Grand 23 Oct. 1771; d. Montbard 22 July 1813. He was intended for the bar, but on the outbreak of the revolution joined a volunteer battalion, and soon attracted notice. At the siege of Toulon, in 1793, he became secretary to Napoleon, and went with him into Italy and Egypt in the capacity of aide-de-camp. In Egypt he was advanced to the rank of general of brigade. In 1800 he was made commandant of Paris, and he particularly distinguished himself at the battle of Austerlitz in 1805. In 1807 he was sent with an army into Portugal, and made his entry without opposition into Lisbon, his success being rewarded with the title of Duke of Abrantes. On the arrival of the British he was defeated at Vimeira, and was then obliged to submit to the humiliating convention of Cintra. Although he subsequently took part in the campaigns (1809) against Austria, (1810) against Spain, and (1812) against Russia, he failed to retrieve his reputation. In 1813 he became insane, and lost his life by leaping from a window.

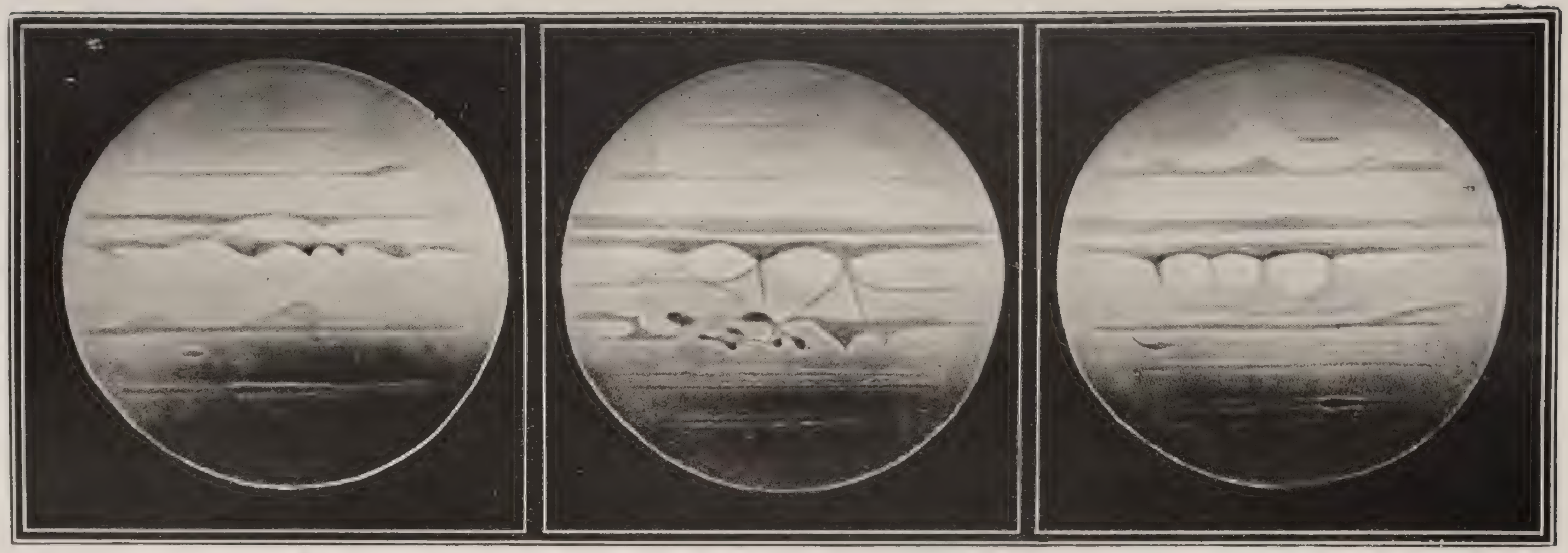
Junta, a high council of state; a term common in all Spanish-speaking countries. It was originally applied to an irregularly summoned assembly of the states, as distinguished from the cortes or parliament regularly called together by the authority of the king. In Cuba the term was adopted by the insurgents before the Spanish-American war, to designate the general legation of the Cuban republic abroad. This legation or junta was first appointed 19 Sept. 1895, by the Constituent Assembly that formed the insurgent Cuban government, which at the same time made T. Estrada Palma head of the junta and chief Cuban representative abroad, with authority to appoint ministers to all governments and to have control of Cuba's diplomatic relations and representatives throughout the world. The junta established its headquarters in New York, and was the organization through which the insurgents' friends outside of the island communicated with the Cuban soldiers in the field during the Spanish-American war. See CUBA.

Junto, The, a club formed in Philadelphia by Benjamin Franklin for mutual improvement. Morals, politics, and natural philosophy, as well as the social well-being of man, were the main subjects discussed. It continued for about 30 years. The name was also applied to an English Whig ministry in the reign of William III., the chief members of which were Admiral Russell, Somers, Lord Wharton, and Montague, the great financier. This was the first ministry ever made of one and the same party politics. It was the suggestion of Robert, earl of Sunderland, to William III., who shrewdly said, if all the ministers were of one party they would pull together.

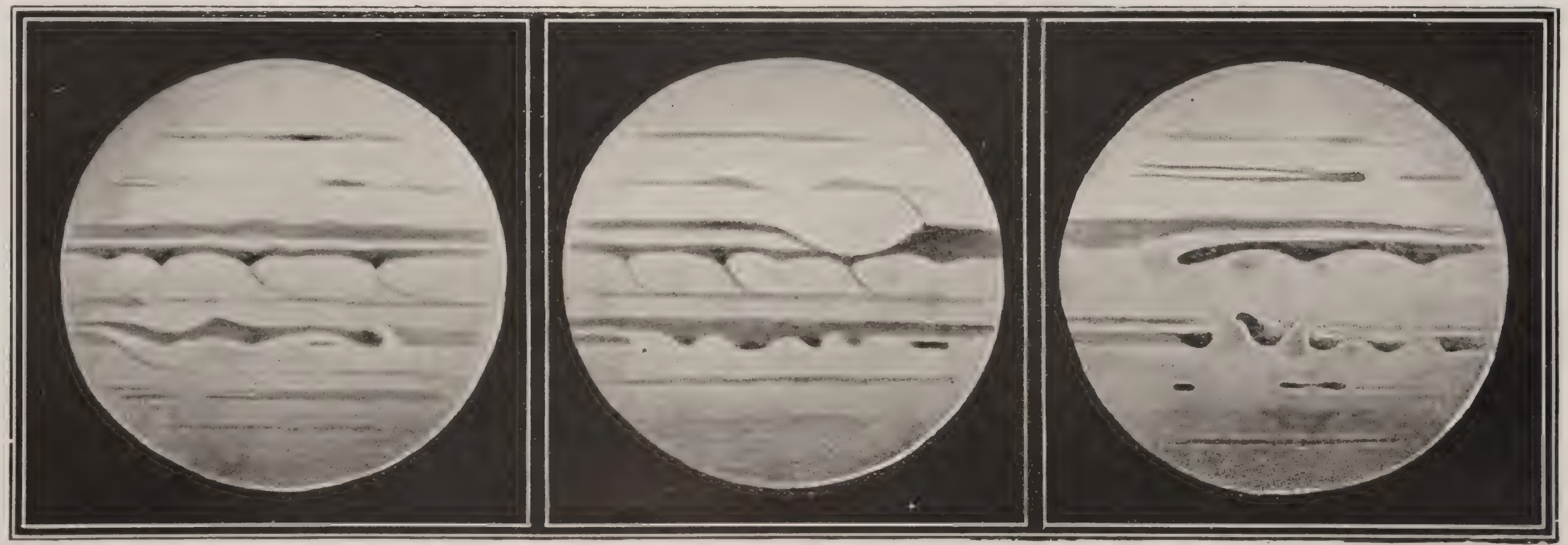
Jupati, joo′pä-tē, a palm (*Raphia tædigera*) of the tide-flooded lands of the lower Amazon and Pará rivers, remarkable for its leaves, probably the largest in the vegetable kingdom. The trunk is only 6 or 8 feet high, and 1 foot in diameter. The leaves rise nearly vertically from the trunk, bending out on every side in graceful curves, forming a magnificent plume 70 feet in height and 40 in diameter. Leaves have been measured 50 feet long, and the leaf-stalk is often 12 or 15 feet long below the first segments of the leaf, and 4 or 5 inches in diameter, perfectly straight and cylindrical, and when dried light and strong as the quill of a bird. The Indians split it into laths for a variety of purposes — window-shutters, boxes, bird-cages, partitions, and even entire houses being constructed of it, with the addition of a few supporting posts at the angles. The fruit, a large oblong drupe, has a bitter oily flesh.

Jupiter, joo′pĭ-tėr, **or Juppiter,** the supreme deity of the Latin races in ancient Italy, the same as the Greek Zeus. As the supreme deity Jupiter received from the Romans the title of *optimus maximus* (best greatest), and as the deity presiding over the sky he was considered as the originator of all the changes that took place in the sky. From him accordingly proceeded rain, hail, and the thunderbolt, and he it was that restored serenity to the sky after it had been obscured by clouds. Hence the epithets of Pluvius (rainy), Tonans (thundering), etc., were applied to him. The most celebrated of his temples was that on the Capitoline Hill dedicated to him as Jupiter Optimus Maximus, jointly with Juno and Minerva. He was represented with a sceptre as symbolical of his supreme authority. He was the guardian of all property; and every Roman was believed to be under his protection, and that of his consort Juno, the queen of heaven. White animals were offered up to him in sacrifice, his priests wore white caps, and his chariot was represented as drawn by four white horses. See JUNO.

Jupiter, the largest planet of the solar system, and the fifth (excluding the asteroids) in order of distance from the sun. Its mean diameter is about 85,000 miles; polar diameter about 82,000; its mean distance from the sun 475,692,000 miles; its period of revolution round it 11 years 10⅓ months; its orbit is inclined to the ecliptic at the angle 1° 18′ 40.3″. The inclination of its axis is 3° 5′ 30″, so that changes in the seasons must be almost unknown; its volume is 1,300 times that of the earth, but its mass is only 300.857 times. Jupiter has five moons, the last was discovered by Barnard, at Lick Observatory in 1892. The other four were discovered by Galileo in 1610 and are visible through an ordinary telescope. They are at average distances of from 267,380 to 1,192,820 miles from the planet; they appear to make one revolution on their axis while passing once round the planet. Europa, the smallest, has a diameter of 2,099 miles, somewhat less than that of our moon; Ganymede, the largest, has a diameter of 3,436 miles. The planes of their orbits are nearly the same as the ecliptic and the orbit of Jupiter. The disk of Jupiter is crossed in a direction parallel with the equator by three or four vividly marked bands or belts; other of these belts vary in density and distinctness. Spots also appear and remain for some time on its surface. In particular, a large red spot of varying dimensions has been observed from time to time. Professor George Washington Hough sums up the results of his 23 years of observations of Jupiter somewhat as follows: First, its equatorial belt changes both in size and position slowly and gradually. Second, the fainter belts also vary. Third, the circular white spots are very permanent in latitude, but are not fixed in position one with another. Fourth, the dark spots of the same size as the circular white spots are not so stable as they, and probably lie at the level of the equatorial belt. Fifth,



1896, MARCH, 2d. 6h, 30m. G.M.T. 1897, MARCH, 9d. 11h. 55m. G.M.T. 1898, APRIL, 4d. 9h. 55m. G.M.T.



1899, APRIL, 15d. 12h. 10m. G.M.T. 1900, APRIL, 20d. 14h. 15m. G.M.T. 1902, JUNE, 26d. 14h. 31m. G.M.T.

CHANGES IN THE ASPECT OF THE PLANET JUPITER OBSERVED AT VARIOUS TIMES.

the large, irregular white spots near the equator make one rotation in 9 hours 50 minutes. As to the constitution of the planet, Prof. Hough concludes that the matter at the visible boundary of Jupiter has a density about half that of water (the average density of the planet is 1.37 times that of water). The medium at the boundary is in the nature of a liquid. In it the great red spot and the circular white spots are located. In such a medium all motions would be slow and gradual and the shape and size of an object would be very permanent. The equatorial and polar belts may be located on the surface or at a higher level than the red spot. In middle latitudes within 20° of the equator the higher atmosphere carries a layer of dark matter. In this envelope are formed the openings that we call white spots, and by unequal distribution black spots. The belts may be assumed to be some sort of vapor of considerable density. The planet is at a high temperature, but not self-luminous.

Jura, joo'rä, a chain of mountains in central Europe, partly belonging to France, partly to Switzerland, between which they form a sort of natural barrier, extending from southwest to northeast, and exhibiting a number of parallel ridges. The greatest length is nearly 200 miles, from Belley in France, department of Ain, to the banks of the Rhine; and the greatest breadth about 60 miles, between the Lake of Geneva and the banks of the Doubs. The principal geological formation is the Jura limestone, with greensand, belonging to the lower cretaceous series. Stalactite caves are numerous. The two chief rivers having their source in the chain — the Ain and the Doubs — are both French. They descend from its western slopes, and belong to the basin of the Rhone. The highest peaks of the Jura are Crêt de la Niège, Reculet, Mont Tendre, and Dôle, all over 5,500 feet.

Juras'sic, a system or series of formations with like characteristics, and containing fossil remains indicating a time occupying the first half of the Mesozoic period, and characterized by many changes in the distribution of sea and land, especially in the northern hemisphere, where the present continental areas were apparently represented by archipelagoes. The formations of this period take their name from their prominent exposure in the Jura Mountains; but are known in Great Britain as the Oölites because there made up of granular (oölitic) limestones below the Cretaceous and above the Lias, from the latter of which the series is separated by no very definite boundary. In America synchronous formations are, indeed, called «Juratrias» and represent the transition from the Permian to the Cretaceous. The Jurassic is represented somewhat in South America and in the western United States, as in the highly fossiliferous «Como stage» beds of Wyoming, and the auriferous state of California, but most strikingly in the brown «bird-track» sandstones of the Connecticut Valley, in Nova Scotia, and in the red rocks that crop out along the eastern foot of the Alleghanies from New Jersey to South Carolina. During this period most of the globe now dry land was covered with shallow seas which were the abode of a great variety of lowly fishes and reptiles. On land it was the height of the age of reptiles, and especially of dinosaurs (q.v.) and pterodactyls. Toward its close the progenitors of birds appeared in the shape of *Archæopteryx* (q.v.), and traces of mammals are found. Consult authorities mentioned under GEOLOGY.

Jurel, joo'rĕl, or **Xurel,** a fish of the genus *Caranx,* especially *C. crysos,* more widely known as the yellow mackerel and hard tail. Unlike most members of this tropical genus, the jurel is common as far north as Cape Cod. In Florida and the Gulf States it is an important food-fish, caught in seines during the spring and summer when in shallow water for the purpose of spawning. It is migratory, and like most wandering fishes carnivorous and voracious.

Jurisdiction includes both the right to exercise authority (*imperium*) and the field within which such authority may properly be exercised (*dominium*), whether its limits be territorial or personal. In early law, jurisdiction in the second sense was rather personal than territorial, and the same must be true wherever distinct races occupy together the same territory. While the tendency is to gradually work out a system of law applicable to all inhabitants, the state must of necessity recognize the fact that its subjects of different races will consent to be governed only by separate and often contrasting systems. Such is the case, for example, in British India to-day. So, too, jurisdiction was divided according to the subject matter, and the Church secured and jealously maintained authority over all matters of conscience, and managed to extend the jurisdiction of the ecclesiastical courts to very important questions, including marriage, legitimacy, wills, and administrations, and to actions affecting the personal rights of the clergy.

The Constitution of the United States discriminates clearly and sharply between the executive, the legislative, and the judicial powers of government, and its provision that the Constitution and the laws of the United States made in pursuance thereof shall be the supreme law of the land, taken in connection with the provision that the judicial power shall extend to all cases arising under the Constitution, forms the basis of a jurisdiction which, at least in the extent to which it has been carried, is without precedent outside of the United States. It is by virtue of these provisions that the Federal courts exercise the power of declaring void acts of Congress or of the State legislatures which conflict with the Constitution of the United States. To this power and the energy and ability of the Supreme Court in its exercise, are due the vigor and efficiency of the Federal government and the establishment of its supremacy within the field of its jurisdiction. This feature has been imitated in the several State constitutions with results unquestionably beneficial as a whole, and so important that the courts have come to be spoken of as the guardians of the constitution. But one result not so fortunate is that the legislative branch of the government, though in theory as much bound by constitutional restrictions as though there were no authority to which an appeal against the validity of its enactments can be taken, is manifesting a disposition to disregard them altogether, leaving the whole question of constitutionality to the courts. As our system of government provides no method by which the question can be raised, except in the course of a litigation in which one party relies upon the right conferred by such a statute, there are possibly many unconstitutional acts in force in the various States. A more important consideration is that a disposition on the part of the judiciary to interfere with matters properly legislative may thus be created, and lead to forced constructions by which any law which the judges believe to be bad is held obnoxious to the constitution — resulting in illogical and inconsistent decisions, and a weakening of the authority of the courts.

The Constitution provides that the judicial power of the United States shall extend to controversies «between citizens of different States.» The purpose was to open the way for legislation which would provide a tribunal in which the right of a citizen of any State to pursue his legal remedies could not be denied; probably, too, to afford him a tribunal less likely to be affected by local prejudice than a State tribunal of first instance, probably a county court. It is not contended that anything further was designed, but upon this clause depends the most extensive and, except for the provision as to constitutional interpretation which we have just considered, the most important, body of Federal decisions. The tendency of the Supreme Court was at first to hold that the Federal court should administer the law of the State in which it was sitting and that while a citizen of Pennsylvania, for example, having a claim against a citizen of New York, might, if he saw fit, bring his action in the Federal, rather than in the State, court — the law to be applied would be the law of the State of New York. But this rule has been departed from in the later decisions, and while the Federal courts still hold themselves bound to follow the interpretation put upon State statutes by the State courts (unless, of course such statutes are attacked as in conflict with the Constitution of the United States), they hold themselves free to disregard the interpretation of the common law by the State courts, and the system of law built up within the State by the adjudications of its courts, and to adopt their own interpretation, and follow their own judgment. That the Federal courts are popular is shown by the fact that the most important litigation, estimated on the basis of the amount at stake is, where possible, usually brought before them, notably proceedings against corporations and especially the foreclosure of corporation mortgages where it is quite common for the trustee for the bondholders to be a corporation or individual of an other State, or where a committee of bondholders, or even a single bondholder, residing outside the State which is the domicile of the debtor corporation, is the plaintiff. This is sufficient to give jurisdiction to the Federal court.

We have therefore a most interesting condition of concurrent jurisdictions applying to every inhabitant of the United States. The Federal courts are courts of limited jurisdiction — limited to authority expressly conferred by the Constitution and laws of the United States, but once jurisdiction is established, unlimited in the scope of its exercise. Congress has prescribed that the jurisdiction shall only exist when the matter in controversy has a pecuniary value exceeding $2,000, and that actions shall be brought only in the district within which the plaintiff or the defendant resides, and has made provision for the removal from the State courts of causes which might originally have been brought in the Federal courts. Some of the States have attempted to prevent this increasing jurisdiction of the Federal courts; for example, by the passage of acts providing as a condition of a license to a foreign corporation to do business within the State, that such corporation, if sued, would not remove the cause into the Federal court. Such acts are manifestly unconstitutional, and have been so declared.

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Jurisprudence. See Law.

Jury, twelve impartial men legally competent to act, who, under the sanction of their oaths, determine by their unanimous verdict the innocence or guilt of the accused in a criminal trial, or decide the issues of fact which are contested between plaintiff and defendant in a civil trial.

The jury is the characteristic feature of English or Common law, distinguishing it from the systems of Continental Europe derived from the law of the Roman Empire. It is peculiar in itself and incidentally it has produced characteristic developments of our law not found in the Roman or Civil law systems, of which perhaps the most noteworthy is our law of Evidence. The history of the jury system has been most thoroughly and ably investigated, especially in recent years.

Its function has completely changed. Originally those persons from the vicinity who had knowledge of the subject matter were summoned to court to state, upon their solemn oaths, what the common opinion of the neighborhood was as to those facts which formed the basis of the criminal charge to be tried, or the basis of the right to possession or enjoyment of land which was at issue, which were the typical cases of early days. It seems to have been soon established that 12 substantial men were a sufficient number to determine this question. As the judicial system developed, courts came to have more extended territorial jurisdiction, and litigation grew more extensive. Attendance of 12 persons acquainted with the facts of each cause to be tried would impose an intolerable burden upon the community, and our forefathers worked out the plan of submitting their legal controversies to the decision of an impartial jury sworn to determine the facts in issue upon testimony given under oath by witnesses summoned by the parties.

Students of English and American history would probably unanimously agree that as a part of our system of civil government the jury has been a valuable institution. There can be no doubt of its educational value, and of its importance in making each freeholder who served on a jury feel that he was individually performing an important public duty. Juries played a conspicuous part in defense of popular rights against attempts at tyrannical exercise of authority by the executive government. In the libel cases of the 18th century the contest was bitterly fought, the judges, under the lead of Lord Mansfield, maintaining that whether a document was libellous or not libellous was a question of law for the court (that is, for the judge) to determine, the jury being limited to finding affirmatively or negatively the fact of publication; while the juries, on the other hand, contended for their right to find general verdicts («guilty» or «not guilty»). The contest was settled by Fox's Libel Act in favor of the right of the jury to determine the guilt or innocence of the accused.

Students of law differ as to the merits of the jury system. Arguments drawn from the supposed mental inferiority of juries need not be considered, since this is not an inherent defect, and there is no more reason why a community should have inferior jurymen than inferior officials of any other class. But weighty objections of an essential character have been suggested. The chief is as to the requirement of an unanimous verdict, which, it is argued, must constantly produce a disagreement and failure to reach a conclusion, or the sacrifice of opinions conscientiously held by some of the jurors. There is no doubt that this requirement is an essential feature of the jury system as known to English law; it has been expressly so decided by the Supreme Court of the United States which, in interpreting the clause of the Federal Constitution which provides that in civil suits in the Federal courts «the right of trial by jury shall be preserved,» has held that this requires the unanimous verdict of 12 men. A small number of the States have modified the system by providing for juries of less than 12, or of verdicts rendered by a vote less than unanimous. When such legislation is not in conflict with the State constitution it is lawful, as is doubtless the provision authorizing the service of women on juries.

Another objection is the doubt as to whether the jury is the best means of arriving at determinations of fact. This controversy has been bitterly fought, one side maintaining that the jury is not fitted, either by training or capacity, to decide fairly and intelligently doubtful questions of fact, and that one of its most important functions, that of assessing damages, is not properly performed, especially where the requirement of unanimity necessarily leads to compromise verdicts. On the other hand it is argued that the jury, if properly drawn, represents the average intelligence of the community, and that when it does so, no fairer tribunal can be discovered, and not, perhaps, very consistently, that in civil matters control of the case is really in the judge, who by careful instructions can usually so direct the jury as to bring about an intelligent verdict, or, as a last resort, can set aside one which is clearly wrong, and award a new trial.

A verdict of acquittal in a criminal proceeding finally disposes of the charge against the defendant both by the common law and, in this country, by the provisions of the Federal Constitution (and of most, if not all, of the State constitutions) that no person shall «be subject for the same offense to be twice put in jeopardy of life or limb.» Doubtless from this arose the doctrine that in criminal cases the jury are judges both of law and fact, which caught the popular fancy, is not without the weight of respectable judicial authority to sustain it, from the time of Junius, who upheld it in opposition to Lord Mansfield, has been a favorite doctrine of popular leaders, and only in recent years may be regarded as finally disposed of. The doctrine was discussed by Chief Justice Mitchell, of Pennsylvania, in a capital case in 1891, and pronounced by him to be «unsound in every point of view, historical, logical, or technical,» and in 1895 the Supreme Court of the United States (speaking by Mr. Justice Harlan) reached the same conclusion and held that in the courts of the United States it is the duty of the jury in criminal cases to receive the law from the court, and to apply it as given by the court, subject to the condition that by a general verdict a jury of necessity determines both law and fact as compounded in the issue submitted to them in the particular case. Mr. Justice Gray filed a long and able dissenting opinion concurred in by Mr. Justice Shiras, and in this case, reported in 156 United States Reports (page 51), all the arguments on both sides can be found.

The grand jury is, historically, a sort of representative committee of the people of the district throughout which the jurisdiction of the court extends, charged with the duty of reporting to the court offenses which have been committed which they consider should be inquired into, and persons whom they believe to have committed criminal acts for which they should be punished. Its development into the modern grand jury is not well understood. The highest authorities on our early legal history say of it, «The details of this process will never be known until large piles of records have been systematically perused. This task we must leave for the historian of the 14th century.»

The grand jury as an existing institution consists of a number of persons drawn from the same class as the ordinary or petit jurors. At the common law the number summoned was 23. They are sworn to the faithful discharge of their duties, and the court then delivers a charge to them, calling their attention to the duties they are to perform, either generally or with reference to any matters of special public interest falling within their jurisdiction to which the court thinks proper to direct their attention, and they can then proceed to business. All indictments are submitted to them and, according as they determine, after hearing the prosecutor's evidence, whether they are well founded or not, they indorse them «true bill» or «ignoramus» (or equivalent words). In the former case the accused is held for trial, in the latter discharged. It is the custom for them to make report to the court on such matters as seem to them of public interest and importance, and to make such recommendations as seem good to them. The report made by them of any offense from their own knowledge or observation, without a bill of indictment laid before them, is called a Presentment.

For the history of the origin and development of the jury, consult: Pollock and Maitland, 'History of English Law'; Thayer, 'Preliminary Treatise on Evidence at the Common Law' (chapters ii.–iv.); Stephen, 'Commentaries on the Laws of England' (Bk. V., ch. xiv.); Stubbs, 'Constitutional History of England'; Cooley, 'Constitutional Limitations.' For a discussion of the merits of the institution under modern conditions which is generally accepted as full and impartial, consult 'The System of Trial by Jury,' by the late Mr. Justice Samuel F. Miller (21 Amer. Law Review, 859). For the origin of the grand jury: Pollock and

Maitland, 'History of English Law' (Bk. II., ch. ix., § 4). JOHN DOUGLASS BROWN,
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Jusserand, Jean Adrien Antoine Jules, zhŏṅ ädrēäṅ äṅ-twän zhül zhü-sĕ-rän, French diplomat and author: b. Lyons 18 Feb. 1855. He was educated at the Faculté de Lyon, in 1878, entered the French ministry of foreign affairs as consul at London; subsequently held other posts in the ministry, among them that of chief of the bureau of Tunisian affairs, and that of associate sub-director of the protectorate; in 1887–90 was councillor of the French embassy in London. In 1890 he became minister to Denmark, and in 1902 ambassador to the United States. His best known work is his 'Les Anglais au Moyen Age: La Vie Nomade et les Routes d'Angleterre au 14me Siècle' (1884; trans. by Smith as 'English Wayfaring Life in the Middle Ages' 1892), which was crowned by the Académie. Of his further writings, the following have appeared in English: 'The English Novel in the Time of Shakespeare' (1890); 'A French Ambassador at the Court of Charles II.' (1892); 'Piers Plowman' (1894); 'English Essays from a French Pen' (1895); 'A Literary History of the English People,' vol. I. (1895); 'Shakespeare in France under the Ancient Régime' (1899).

Juste, Theodore, Belgian historian: b. Brussels 11 Jan. 1818; d. August 1888. He was secretary of the Belgian board of education and as such made many beneficial changes in the national methods of instruction. He was a prolific writer on Belgian and French history, the most noteworthy of his works being: 'Historie élémentaire de la Belgique' (1838); 'Histoire de la révolution Belge de 1790' (1846); 'Précis de l'histoire du moyen âge' (1847–9); 'Le soulèvement de la Hollande eu 1813, et la fondation du royaume des Pays-Bas' (1870); 'Guillaume de Taciturne' (1873); 'Léopold I. et Léopold II., rois de Belges' (1878); 'Les fondateurs de la Monarchie Belge' (27 vols., 1865–81); 'La révolution de juillet, 1830' (1883); etc.

Justice, Department of, in the United States, an executive branch of the government, the supreme head of which, the attorney-general, is appointed by the President and confirmed by the Senate. He is a member of the cabinet, according to the provisions of the Act of Congress of 19 Jan. 1886, ranking fourth, after the Vice-President, in the line of succession to the Presidency in case of a vacancy in that office, and his salary is $8,000 a year.

The office of attorney-general was established in 1789, almost at the beginning of the government, being provided for by the great act that established the federal courts, but the department of justice was not organized into a separate department nor placed under the charge of the attorney-general until 1870, when by the act of 22 June of that year, the establishment of this department brought under his control all United States district attorneys and marshals and secured uniformity in the trial and prosecution of cases. By this act the solicitors from the interior, navy and treasury departments and the examiner of claims of the state department were also brought under the control of the department of justice.

As head of the department of justice, the attorney-general is the chief law officer of the government, is the legal adviser of the President on any questions of law which may arise in the conduct of administrative affairs, and is also required by statute to give his advice and opinion, when requested, to the head of any executive department on any question of law arising in his department. The attorney-general represents the government in all cases at law to which it may be a party, but he rarely argues the case in person, this work being performed by his subordinates, whom he appoints, or by special counsel whom he is authorized to employ in cases of especial importance to the government. The attorney-general passes upon the validity of the title to public lands or other property to be purchased by the government for the erection of public buildings or for other public purposes; he also exercises general superintendence and direction over the attorneys and marshals of all the districts in the United States and the Territories as to the manner of discharging their respective duties. The supervision of the penal and reformatory institutions of the United States, the supervision of the revision and codification of the criminal and penal laws, the recommendation of judicial appointments, the administration of the national bankruptcy laws, etc., are other duties which come under the direction of the department of justice.

The solicitor-general, whose office was created in 1870, ranks as second officer of the department of justice; takes the place of the attorney-general in the latter's absence, and also has charge of the conduct of cases in the courts at Washington.

Justice, Lord, a person invested with royal authority in England for a short time, during the absence of the monarch. Queen Victoria and her successor Edward VII. have never appointed lord justices in their absence; George IV. was the last king of England to do so. The powers of lord justices have been confined to pardoning or reprieving convicts, summoning or proroguing parliament, disposing of treasury funds, and making church preferments. In the absence of the viceroy from Ireland lord justices have sometimes been appointed to perform his functions.

Justice of the Peace. See COURT.

Justification. Under this head fall many intricate problems toward the solution of which theology contributes in its discussions of that very abstract subject: Grace. The term explains itself and no matter where it is applied the fundamental idea is the same and means pardon, acquittal, readjustment, restoration. In divinity it alines itself very closely with atonement and imputation (q.v.). No matter how opinions may differ as to its nature, there is agreement on this, that justification may be defined as that process whereby fallen man is forgiven his transgression and restored as much as is compatible with his changed condition to the state and privileges which were his before his disobedience. All Christians admit that this repristination came and comes through Christ. It has been and is the duelling ground of the two religions which have most largely divided the world. Relating to this topic the attitude of Catholics and Reformers is antipodal. The leader of Protestantism is clear in his affirmation. Catholic teaching and dogmatic enunciation is not one whit less positive. The question is cardinal for both. In the process of justification the agent is God through Christ; the object, man. The crux of the difficulty is how does God effect it and how is man affected by it. Is righteousness imparted or infused? Luther and his disciples consider justification as imputed to the individual. This restored condition is something outside himself, with which he has nothing to do. "The justified man is not only acquitted as innocent but regarded as having perfectly obeyed the Law in the person of Christ. There is to him the non-imputation of sin and the imputation of righteousness." "The faith doth not shut out repentance, hope and the fear of God in every man justified, but it shutteth them out from the office of justifying." (Church of Eng. Homily.) It becomes imperative for every attempt to solve this problem to consider man's will and divine grace. Luther apprehensive lest by any concession he might minimize the value of the latter denied free will in human nature and asserted that by faith, a strong faith in the special mercy of God and by that alone man was justified. To use his own words (Cap. 2 ad Galat.): «Faith, without and antecedently to charity, justifies.» Faith does not cause justice in any way — it is not the cause but the organ of justification. Man is in no way intrinsically affected by it and its essence is in the imputation of the justice of Christ. Calvin referring everything to the elect teaches that faith once received can never be lost, that is, a man justified is so forever, independently of his actions. Baptism is not necessary for salvation. The predestination of the elect is their salvation. The breaking up of Protestantism into the many denominations which now exist, necessarily brought variants in this doctrine, yet it may be put down as the generally accepted formula. The idea was not new if we are to credit what Saint Augustine says (De fide et oper. 14) wherein he remarks that even in the time of the apostles some, not understanding, concluded from the epistles of Saint Paul that faith alone was necessary for salvation, whereupon Peter, James and Jude wrote to instruct the faithful that such was not the meaning of Saint Paul's words. The Catholic theology has been reproached with emphasizing the worth of man's works to the detriment of divine grace. The doctrine of Catholics is that the Pope, councils, the fathers, the doctors and the apostles, and hence Christ, affirmed that justification is of a nature to require, except in infant baptism, good works on the part of man to ripen unto salvation. Faith alone will not suffice. It is gratuitous and unmerited save through Christ. It is supernatural. It is a created gift and when bestowed, as in justification, the recipient becomes inherently just, not accidentally nor vicariously. Initial justification is infused in baptism, which sacrament incorporates the one baptized into and with the mystical body of Christ, his church, and lives by grace, which is living of the life of Christ as an engrafted branch lives the life of the vine. In this incorporation, since Christ is Son of God, is founded the adoption and heirship of the baptized as sons of God. What is said of baptism is held concerning justification as administered by the other sacraments. It is not contended that by it sin is blotted out «historically,» that is, sins committed do not cease to be part of man's past, but are remitted in as much as they are provocative of God's anger and as truly pardoned as if the sinner had never rendered himself guilty of them; they are effaced in the moral order and in the physical order the stains they leave on the soul are washed out, stains which make the soul displeasing to God. Natural powers, no more than the Mosiac law, suffice for salvation which is to be reached through Christ only and for which in the adult some disposition of his own contributing is requisite. Moreover, while by justification sin is remitted, this remission calls for an interior disposition and renovation of soul, whence justification is a quality superadded to the soul to which it is inherent and therefore is more than transference or imputation. The fruits of justification are the rendering of man pleasing to God, just, beautiful, like unto Christ, a living member of Christ and God's son by adoption, heir to the kingdom of heaven, a participant in the divine nature (*consors divinæ naturæ*) and capable of condign merit. When a man is justified there is within him a special indwelling of the Holy Spirit. There is no understanding with accuracy these different theories of justification save by a thorough inquiry into the views of theologians on the very abstruse questions of the incarnation and grace.

Bibliography.— Denziger, 'Enchiridion'; Humphrey, 'The One Mediator'; Mohler, 'Symbolism'; Newman, 'Justification'; Oxenham, 'The Catholic Doctrine of the Atonement'; the works of Luther, Melancthon, Calvin, etc.; Decrees of the Council of Trent; Systematic Theologies; Art, Rechtfertigung, Kirchenlexicon.

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Jus'tin I., Byzantine emperor: b. 450; d. 1 Aug. 527. He was a peasant of Dacia and rose from the rank of a common soldier to be commander of the imperial guard, and on the death of Anastasius I. in 518 became emperor. He relegated the civil administration to the quæstor Proclus, and between them the empire was governed with a fair amount of success. Consult Bury, 'Later Roman Empire' (1889).

Justin II., Byzantine emperor: d. 5 Aug. 578. He succeeded his uncle Justinian I. in 565. Beset with enemies outside the empire and harassed with internal discord, he in 574 solved his difficulties by abdicating in favor of Tiberius, captain of the guard. During his reign northern Italy was conquered by the Lombards, and the Persians took possession of several Asiatic provinces of the empire.

Justin (MARCUS JUSTINIANUS JUSTINUS), a Latin historian, who probably lived at Rome in the 2d or 3d century A.D. He made an epitome of the general history of antiquity by Trogus Pompeius, a native of Gaul, who lived in the time of Augustus, and whose work is no longer extant. This epitome, although incorrect in detail, is valuable for its compressed reproduction of the old histories. The first English version, by Goldingé, appeared in 1574.

Justin Martyr (Justinus Martyr), a Christian apologist and martyr: b. Flavia Neapolis, Shechem, Palestine, 100 A.D.; d. Rome 165. He began active life as a professor of Platonic philosophy, and subsequently embraced Christianity without abandoning Platonism. He was a staunch adherent of the Christian party in the empire, a keen confuter of Gnosticism, and an unwearied defender of the Christian doctrine of the Logos. In every department of Christian dogmas he stood foremost as a teacher. Eventually he went to Rome (150 A.D.) and during ten years of activity he wrote his ‘Apology,’ with a supplement known as the ‘Second Apology,’ addressed to the Emperor Marcus Aurelius. He afterward had a controversy with a Jew, an account of which is embodied in his ‘Dialogue with Trypho the Jew.’ He was put to death for his faith, and his day on the Church calendar is 31 April. Consult: Migne, ‘Patrologia’; Semisch, ‘Justinus der Märtyrer’; Aubé, ‘Justin, Philosophe et Martyr’ (1874).

Justin'ian I. (Flavius Anicius Justinianus), surnamed the Great, emperor of the East: b. of Gothic peasant parentage at Tauresium, Illyricum, probably 11 May 483 A.D.; d. 14 Nov. 565. Patronized by his uncle, Justin I., who, from a Thracian peasant, had become emperor, he so flattered the senate and dazzled the people that he was made consul, and took the title of *Nobilissimus.* On the death of his uncle, with whom he had latterly shared the imperial power, he was proclaimed emperor, and married an actress named Theodora. During his reign the party disputes of the Greens and the Blues became so violent, that in his attempt to quell the tumults the emperor's own life was in jeopardy, and a great part of Constantinople was destroyed by fire. Aided by his generals, he was able subsequently to restore to the Roman empire a part of its former possessions, as when Belisarius in 523 and 529 defeated the Persians, and achieved victories in Africa, and when Narses put an end to the Ostrogoth rule in Italy. Turning his attention to the laws, Justinian commissioned ten learned civilians to draw up a new code, and the result was the ‘Corpus Juris Civilis,’ or body of civil law. He took great interest in building cities, fortifications, and churches; among the latter he rebuilt the church of St. Sophia at Constantinople. To maintain his public munificence he oppressed the people with taxes. Consult Finlay ‘History of Greece’ (1880); Hodgkin, ‘Italy and her Invaders,’ Vol. IV. (1880); Bury, ‘Later Roman Empire’ (1889); Hutton, ‘The Church in the Sixth Century’ (1897); Gibbon, ‘Decline and Fall of the Roman Empire’ (ed. by Bury 1896–1900).

Justinian II., surnamed Rhinotmetus, Byzantine emperor: b. 669; d. December 711. He succeeded his father, Constantine IV., in 685, and was deposed and banished for his cruelty, by his general, Leontius in 695. He regained his throne ten years afterward, and was overthrown by Philippicus Bardens and killed.

Jute. Two species of plants yield the jute of commerce, *Corchorus capsularis* and *C. olitorius.* They are tall shrubs, 8 to 15 feet high, the fibre being produced in the bark, and known as bast fibre. Supposed to be indigenous to India, where the species grows wild, cultivated to a limited extent by other Eastern people, as the Chinese and Malays, *C. olitorius* is naturalized in all parts of the tropics to the shores of the Mediterranean. Jute was introduced into the United States by the Department of Agriculture in 1870 (see various articles in Monthly Reports of this department 1870–5), and was found to be adapted to cultivation along the line of Gulf States from Texas to South Carolina. It should be noted that the China jute of commerce is not jute at all, but a similar bast fibre derived from *Abutilon avicennæ.* This plant was experimented with in New Jersey 25 years ago, though unsuccessfully, the fibre being wrongly called American jute. In India many kinds of jute are recognized, all being known under local trade names, which are unimportant here. The value of jute as a textile lies wholly in its fineness, silkiness and adaptability to spinning, low cost of the raw material being another advantage. Several American fibre plants classed as weeds yield a better, whiter, and stronger fibre, though they cannot be utilized for economic reasons. (See special report on bast fibres, No. 6, Office of Fibre Investigations of the Department of Agriculture.) The fibre of jute, compared with other textiles, is quite inferior, the bleached filasse soon losing its whiteness and becoming a dingy, dirty brown, while its strength rapidly deteriorates. Nevertheless it may be regarded as one of our most useful fibres — too useful in certain directions, as its fineness and lustre, as well as cheapness, adapt it most readily to purposes of adulteration, and as it takes colors easily it can be stained or dyed to imitate many of the other fibres, though such frauds can be readily detected. The uses of the fibre are many, and it enters into all classes of textiles from woven fabrics of great beauty to coarse ropes and bagging. In the manufacture of fabrics it goes into curtains, chair coverings, and other forms of upholstery, carpets, webbing, burlap and bagging (especially cotton bagging), and it has been employed for imitation silk fabrics, although for this purpose the fibre requires a special treatment in order to subdivide it more finely and render it more glossy. The fibre is also made into all kinds of cordage, either honestly, as jute, or as an adulterant, considerable quantities having been used in past time for the manufacture of binding twine. It is largely employed for fine and coarse twines, small rope, sash cords, etc., and where cheapness is a desideration it fills the demand. During the fiscal year ending 30 June 1902 we consumed 131,192 tons of jute and jute butts, costing $4,480,000. The jute was worth $48, and the jute butts $24 per ton. The commercial use of jute dates back less than a century, the first exports in noticeable quantity (about 18 tons) having been made, to England, in 1828. By 1850 the exports had reached 30,000 tons; in 1871, 310,000 tons. Now some 800,000 acres are cultivated in jute, more than half of this area comprising nine districts of northern Bengal. Both high and low lands are employed for this culture, although the larger part of the crop is produced upon the «churs» or lands of recent alluvial formation along the rivers. In this country the «river bottoms» would be favorable for the culture, in localities of the South, where the requisite conditions of heat and moisture prevail.

Twelve to fifteen pounds of seed is the average quantity sown per acre, though Spon gives nearly double this amount. In India the yield is about 400 pounds of fibre per acre. Little or no cultivation is given the crop save thinning out where overcrowded. The plants mature in three months and the crop is harvested with a bill hook or sickle at the time when the flowers have begun to show and the seed has not yet appeared. If the plants are allowed to seed, the fibre will be stronger and heavier, but harsher. In some districts, after harvesting the stalks are stacked in the field, until the leaves drop off, while in other localities stacking is not practised. The stalks are sorted as to length into three sizes, and made into bundles that one man can carry. The extraction of the fibre is accomplished by steeping the bundles in stagnant water, covering them with jungle plants, clods of earth or cow dung. When the setting is completed the ryots go into the water waist deep, and by thrashing the surface of the water with the stalks, assisting the loosening of the bark with the fingers, the fibre is separated from the wood. Afterward it is wrung out and hung upon lines to dry. Little may be said regarding jute culture in this country. Machinery would need to be used for stripping the fibre, and there are no practical machines; furthermore at the low prices which prevail for the imported jute, it is doubtful if it could be made a paying crop. The plant is adapted to cultivation in the United States and produces a superb fibre, but it would not be able to compete with India jute at 1½ to 2½ cents per pound. See Special Report (No. 8) office of Fibre Investigations of the Department of Agriculture; 'Dictionary of the Economic Products of India' and various Bulletins of the Royal Gardens, Kew, England. See CORDAGE; CORDAGE INDUSTRIES; FIBRE; INDIA.

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Jutiapa, hoo-te-ä'pä, Guatemala, a department bounded on the north by Jalapa and Chiquimula; on the south by the Pacific Ocean; on the southeast by Salvador; on the west by Santa Rosa. It has an area of 1,563 square miles. The principal industries of the department are cattle-raising and the cultivation of coffee. Sugar, tobacco, and fruits are also grown. Capital, Jutiapa. Pop. about 50,000.

Jut'land, the peninsular portion of Denmark (q.v).

Juvenal (DECIMUS JUNIUS JUVENALIS), a famous Roman satirist. The evidence for his life, while fairly abundant, is of so dubious and conflicting a character that it is impossible to reconstruct the poet's career with any certainty. It is probable, however, that he was born at Aquinum, about 60 A.D., and that he was known, during the first half of his life, simply as an accomplished declaimer and rhetorician. After the accession of Trajan in 98, he began to publish satires in which, with extraordinary force and indignation, he described the conditions of life at Rome, for the most part as they existed during the reign of Domitian, 81–96. An inscription found at Aquinum records an offering to Ceres by a certain Junius Juvenalis (the stone was broken, so that the first name is lacking), tribune of the first cohort of Dalmatians, *duumvir quinquennalis* of the town, and priest of the deified Vespasian. This man has been generally identified with the poet (cf. *Sat.* 3, 319–320), but may be only a kinsman of his. There is a consistent tradition that he was banished for a number of years because of offense given to an imperial favorite, the actor Paris, but neither the time nor place can now be determined. He was apparently an intimate friend of Martial (who mentions him in three epigrams, VII. 24 and 91; XII. 18), though the two men were widely different in their outlook upon human life. The date of Juvenal's death is not known, but the fifth and last book of satires, comprising 13–16, was published in 128, and he may have lived seven or eight years thereafter.

In the hands of Juvenal, satire becomes almost a new literary type. Horace, who brought to perfection the method and manner of Lucilius, the first of the Roman satirists, says of his art (*Sat.* 1, 10, 9–14) that it aims at terseness, at a style that changes from grave to gay, that suggests now an orator who is a poet also, now a polished and witty talker who masks his strength. But Juvenal's passionate revolt against the hideousness of a time of which he could see only the dark side, gives to his verse one unchanging tone. For him satire is invective, biting, pitiless, and unrestrained, the expression of a towering moral indignation. Such humor as there is is always grotesque or of the grimmest kind. This is true, at least, of the first nine poems, which alone are really satires upon the Roman life that he knew. The remaining seven (the sixteenth is, of course, a mere fragment) are rather moral essays of a general character. He is, however, singularly deficient in power to discriminate. Mere offenses against good taste are classed with atrocious crimes: "Orestes (unlike Nero) did not mix poison for any of his relatives; he never sang upon the stage; he did not write an epic upon the Fall of Troy" (*Sat.* 8, 219–221). Such passages (and they are numerous) have raised at times the question of Juvenal's sincerity. But this should not be doubted. He was, on the one hand, swayed by the intense and narrow prejudices of a Roman of the old school; on the other, his long rhetorical training had developed to the utmost an inborn capacity and love for epigrammatic phrase. The possession of this power, while it sometimes led him astray, is one of his just claims to greatness. No Roman writer lends himself more admirably to effective quotation, none can describe a scene with more graphic realism.

The best text is the Jahn-Bücheler (Berlin 1893). There are excellent editions by J. D. Lewis, with a translation (2d ed. New York 1882), J. E. B. Mayor (London, Vol. I., 4th ed., 1889; Vol. II., 3d. ed., 1881); Pearson and Strong (Oxford 1892); L. Friedländer (Leipsic 1895); J. D. Duff (Cambridge 1900); H. L. Wilson (New York 1903). Dryden translated five of the satires. There is a spirited verse translation by Gifford (London 1817); and good prose translations by Strong and Leeper (New York 1882), and S. G. Owen (London 1903). Dr. Samuel Johnson's paraphrases of the third and tenth satires in his 'London' and 'The Vanity of Human Wishes' are deservedly as famous as the originals. See also J. Dürr, 'Das Leben Juvenals' (Ulm 1888); C. Martha, 'Les Moralistes sous l'Empire Romain' (Paris 1865); G. Boissier, 'La Religion Romaine' (Paris 1884), and 'L'Opposition sous les Césars' (Paris 1892).

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Juvenile Offenders. In the United States the law with regard to juvenile offenders varies in the different States. The number of reform schools reported in 1900 was 82; instructors employed 578; pupils attending school, 22,692, and 14,673 in industrial departments. The total number of inmates was 24,925. The value of grounds and buildings was $18,873,587. The expenditures on buildings and grounds amounted to $605,010; for salaries and other expenses, $2,800,281, making a total expenditure of $3,405,291. The number of assistants, not including instructors in school departments, was 1,788. There were 16,609 white inmates and 2,784 colored inmates; 8,514 were of native parents, and 4,122 of foreign-born parents. Those that could only read when admitted were 2,207 and 1,595 could neither read nor write. The number committed to the institutions during the year was 11,676 and the number discharged 11,990. When discharged from the schools many of the pupils possessed a trade and were provided with good homes; all could read and write; the majority had received the equivalent of a common school education.

In Great Britain, in the eye of the law persons are considered capable of committing crime at the age of 7, and are punishable like other persons. But in England and Ireland, whenever a person under the age of 16 is convicted and sentenced to be imprisoned, the court or magistrates may also sentence him to be sent to a reformatory school for not less than two or more than five years. Such sentence, however, cannot be passed on an offender under 10 years of age, unless his offense is by law punishable with penal servitude or imprisonment, or unless the sentence come from a superior court, such as a court of assize or of quarter sessions. Children who have not yet committed crime, but are in a vagrant and neglected state, may also be sent to an industrial school.

Jux'on, William, English prelate, archbishop of Canterbury: b. Chichester, Sussex, 1582; d. London 4 June 1663. He was educated at Oxford, took orders and after holding church livings (in 1609 at Oxford, and then in 1614 at Somerton), in 1621 succeeded Laud as president of St. John's College. In 1627 he was appointed vice-chancellor of the university, and about the same time chaplain in ordinary to Charles I., who gave him the deanery of Worcester, and then the bishopric of London (1633). He attended the king on the scaffold. His fidelity cost him his bishopric, but at the Restoration he was made archbishop of Canterbury.

K

K the eleventh letter in the English and other alphabets of the modern languages of western Europe.

The character is derived, through the Greek, from the alphabet of the early Phœnicians, where its form is that of K reversed, ꓘ. The k represents the sound produced when the back of the tongue is brought into contact with the palate and the breath expelled. The sound-value of k is the same in all languages; but k is not employed in the modern Latin languages save in spelling foreign words or names. Nor does it occur in Latin save as an abbreviation (K or Kal.) for Kalendæ, K for the name Cæso, or for Carthago, etc.

In English the c of the Latin orthography of words from the Greek is always retained, even when it represents the sound of k, for example, sceptic, pronounced skeptic; and we are beginning to pronounce ceramic keramic. We even substitute c for k in Greek words and names, though in reading Greek we give to the k always its hard guttural sound: hence for us Alkibiades is (in sound) alsibiades, and even Kimon is simon.

The k in Greek names suffers a similar change in the modern Latin languages; but in German speech the true k sound in such names is retained: Ankyra, not ansyra, Korkyra, not corsyra; Kephalos, not sephalos.

In Anglo-Saxon and in Gaelic the k is always represented by c.

The guttural sound of k seems to have stood unchanged in ancient Greek and Latin, whether represented by that letter or by c; but in the modern languages derived from the Latin the k sound underwent great changes, becoming a sibilant equal to s, as «sezar» for Cæsar, or being «palatized» into the sound tsh, for example, Gr. kyriake, Ger. kirche, Scotch kirk, Eng. church; to produce this change the middle of the tongue, instead of the back of it, is brought into contact with the palate; in French pronunciation the k-sound of c in Latin words, as camera, carbo, carnalis, is changed to sh, and the words are written chambre, charbon, charnel.

Kaaba kä′bä, or kä′ạ-bạ. See **Caaba.**

Kabbala, kăb′ạ-lạ. See Cabala.

Käbul, kä-bool′, or **Cabool,** Afghanistan, capital of the country and of the province of Kabul, situated at the west extremity of a spacious plain, in an angle formed by the approach of two ranges of hills, and (with the exception of a suburb) on the right bank of the Kabul River, which is spanned, in or near the city, by several bridges. It stands at the height of about 6,000 feet above the sea-level, and has a delightful climate in summer, but the winter is severe. The houses are in general slightly built of mud and unburnt bricks, and there are no public buildings of any importance, though many of the mosques are spacious and commodious. Kabul is now becoming an important centre of trade with India and central Asia, and its population is greatly increased in the summer season by the influx of traders and others. Estimated pop. 75,000.

Kabyles, kạ-bīlz′. See Berbers.

Kadi, kä′dĭ or kā′dĭ. See Cadi.

Kadiak, käd-yăk′, an island of Alaska, situated southeast of the peninsula of that Territory. It is about 100 miles long and 60 miles wide, has a rocky mountainous surface, and an irregular, deeply indented coast, with some good harbors. Near the coast the soil is somewhat fertile, but little of it is profitable for agricultural purposes. The interior is mostly covered with low forests of pine and other trees. Bears and foxes are common, but other fur-bearing animals have become comparatively rare. The salmon-fisheries afford the inhabitants their chief occupation. Pop. about 2,000.

Kadiak Bears. See Bears.

Kaffa, käf′fä. See Feodosia.

Kafir-bread, käf′ėr-brĕd, the edible spongy pith of the stems and cones of any of several species of cycads (q.v.) growing in South Africa, especially *Encephalartos caffer*. This substance resembles sago in its farinaceous character.

Kafir-corn, Indian millet (*Sorghum vulgare*) extensively cultivated by the half-civilized negroes of south-central Africa. It is called kaoliang by the Chinese. See GRASSES; MILLET.

Kafiristan, kä-fē-rĭs-tän′ (Persian, «land of the infidels»), a region of central Asia northeast of Afghanistan, on the south slope of the Hindu Kush, and having as its southern boundary the Kabul River. Formerly the name was vaguely given to a much greater territory; it is now restricted to a country with an area of about 5,000 square miles, nominally under the government of the Amir of Afghanistan, but virtually belonging to an independent people. In the northern portion, which is mountainous, the surface is rugged and broken; in the south the land is mostly level or moderately undulating. Much of the soil has a high degree of fertility, and is adapted, especially in the valleys, to the cultivation of fruits and cereals of various kinds. Grapes are largely produced, from which is made an excellent wine. The number of the inhabitants is estimated at 200,000. They are said to be skilful workers in wood and metals, but their main pursuits are agricultural and those pertaining to the herding of cattle, sheep, and goats. In many of their traits — in features, complexion, beliefs, manners, and customs — they differ much from neighboring tribes, appearing to be of Aryan extraction, and they claim descent from soldiers of Alexander the Great. They are not without dissensions in the various tribal divisions in which they exist, but their isolation in a region of natural strength has enabled them to maintain a kind of political unity despite internal discords, as well as to preserve their independence against the invasions of other tribes. They have no literature, and in their language appear mingled traits of the Indo-Iranian dialects in their Iranian and Indian divisions. In religion they have largely withstood Mohammedan influences and preserved many of their tribal forms. Consult: Biddulph, ‹Tribes of the Hindu Kush› (1880); Leitner, ‹Kafiristan› (1881); McNair, ‹A Visit to Kafiristan› (Proc. Royal Geog. Soc. 1884); Robertson, ‹Kafirs of the Hindu Kush› (1896).

Kafirs, kaf′ėrz, **Kaffirs, Kaffres**, or **Caffres** (from Arabic *Kafir*, infidel or unbeliever), the principal race inhabiting southeastern Africa, a branch of the great Bantu family. The name is now chiefly restricted to the tribes occupying the coast districts between Cape Colony and Delagoa Bay. They differ from the negroes in the shape of the head, it being more like that of Europeans; in the high nose, frizzled hair, and brown complexion, which becomes lighter in shade in the tribes of the more southern districts. They are a tall, muscular race, the average height being from 5 feet 9 inches to 5 feet 11 inches, and frugal and simple in their habits. Their chief occupation is raising and tending cattle, and hunting; garden and field work is mainly performed by women. They are of a peaceful disposition, but in times of war they display considerable bravery, tactical skill, and dexterity in the handling of their assagais or spears, shields, and clubs, as has been shown in their engagements with the British forces. There are several distinct branches or families of Kafirs, but the tribes which recent events have specially brought to the front are the Pondos, the Fingoes, the Zulus, and the Swazi. Kafirs, especially of the Zulu tribe, are distributed in large numbers over Natal and Cape Colony, and have become to some extent civilized. Frequent hostilities have taken place between the British and one or other of the Kafir tribes, beginning almost with the first acquisition by Britain of the Cape Colony.

Kagoshima, Japan, a city in the island of Kiushiu, capital of Satsuma province, and of the prefectural ken of the same name, on the northwest shore of Kagoshima Bay. The town is well built and is an important industrial centre with a considerable export trade. The celebrated Satsuma porcelain is manufactured in suburban Tanoura. Kagoshima was the feudal seat of the powerful Shimadzu daimios, and in 1863 was bombarded and destroyed by the British owing to the murder of an Englishman; the reigning daimio refusing satisfaction. Here in 1877 Saigo (q.v.) set up the standard of rebellion, and here also he was overwhelmingly defeated a few months later. Pop. (1898) 53,481.

Kagu, kä′goo, the native name of the remarkable bird (*Rhinochetus jubatus*) peculiar to New Caledonia, where it was discovered only in 1860, and is now rapidly disappearing. It is the only species of a distinct family most nearly related to the sun-bitterns. The kagu is about the size of a domestic fowl, with short wings, rather long legs, a ralliform beak, and a long crest. When the wings are folded, the colors are mottled gray, the wings and tail barred with a darker shade; but when they are spread, the wings are seen to be barred and spotted with white and black arranged in a conspicuous pattern. The kagu is noteworthy for the extraordinary dances and antics which it performs.

Kaguan, kä-goo-ăn′. See COLUGO.

Kahn, Julius, American politician: b. Kuppenheim, Baden, 28 Feb. 1861. Removing with his parents to California in 1866, he was educated in the public schools of San Francisco, and for ten years followed the theatrical profession. It failed to satisfy his ambition, however, and in 1890 he returned to San Francisco, where he studied law. In 1892 he was elected to the legislature of California, being admitted to the bar in 1894. He was elected to the 56th and re-elected to the 57th Congress as representative from the 4th district of California. He has championed with much energy the anti-Chinese bill and is regarded as one of the leaders of the movement to prohibit Chinese immigration to the United States.

Kahoka, kä-hō′ka̤, Mo., city and county-seat of Clark County, on the Keokuk & W. railroad, 20 miles west of Keokuk, Iowa. It is an important shipping point for a large farming and stock-raising region and there are numerous grain elevators, besides flour-mills, brick yards, and fruit canning establishments. The city is governed by a mayor and council elected biennially. Pop. (1890) 1,425; (1900) 1,818.

Kai-fung, kī-fŭng′, or **K'ai-Feng-Fu**, China, a walled city, capital of the province of Ho-nan, 450 miles southwest of Peking, and 11 miles distant from the Ho-ang-ho, or Yellow River. It was the capital city of China from 960 to 1129 and was then known as Pien-liang. The city has been visited 14 times by flood, 9 times by earthquake, and 6 times by fire. Kai-fung is a station on the New Hankow-Peking railway. It has a large commercial trade with the interior. Pop. about 150,000.

Kai-ping, kī-ping′, China, town in the province of Pe-chi-li, 80 miles north of Tien-Tsin. It is the centre of a large coal field, over 9,000 persons being employed in the mines. The output is over 800,000 tons annually. A branch railroad connects Kai-ping with the Trans-Siberian Railway.

Kaietur (kä-ẹ-toor′) **Fall,** a famous waterfall in British Guiana, on the Potaro River, a tributary of the Essequibo. It was discovered in 1870. Its total height is over 800 feet, and the sheer descent of the water 741 feet, the width of the hard rock over which it plunges being 370 feet. The water has worn a great cavern in the softer underlying layers, and against the dark background thus formed the whiteness of the spray is contrasted with magical effects. The scenery about this great waterfall enhances its beauty and grandeur.

Kailas, kī′läs, the highest summit of the Gangri Mountains in Tibet, between the sources of the Indus and the Brahmaputra, having an altitude of over 20,000 feet. It is a sacred mountain of the Hindus, who formerly regarded it as the abode of their gods.

Kain, kān, **John Joseph,** American Roman Catholic archbishop: b. Martinsburg, W. Va., 31 May 1841; d. Baltimore 13 Oct. 1903. Educated at St. Mary's Seminary he was ordained priest in 1860 and was for several years stationed at Harpers Ferry, W. Va. In 1875 he was consecrated bishop of Wheeling, and in 1893 he was appointed titular archbishop of Oxyrychia as coadjutor to Archbishop Kenrick of St. Louis, succeeding to the archbishopric of St. Louis on the death of Archbishop Kenrick in 1895. Owing to failing health Bishop Glennon of Kansas City was made coadjutor in 1902, and succeeded him.

Kairwan, kīr-wän′, Tunis, a town 80 miles southeast of Tunis the capital, situated in a barren, sandy plain, and surrounded by a wall; founded about 670. It is connected by rail with Tunis and with the port of Susa, 30 miles distant. It ranks next to Tunis in population and trade, and is one of the holy Mohammedan towns; it was formerly almost inaccessible to Christians. Under the administration of the French, by whom it was taken in 1881, many modern improvements have been made, among which not the least important is a good water-supply. It has a variety of useful manufactures, including morocco, carpets, copper utensils, saltpeter, etc. Kairwan was the first seat of Saracenic empire in Barbary, and still has many fine relics of its ancient grandeur in the fragments of beautiful architecture which abound there, besides a number of interesting mosques, one of them being of great magnificence. Pop. (1900) about 27,000.

Kaiser, kī′zėr, a title, the German equivalent for emperor. The Romans added the name of Cæsar to their own kings in honor of the «divine Julius,» and this passed to Kaiser in the 10th century. When the Holy Roman Empire was dissolved the imperial title was retained by the House of Hapsburg, the head of which since 1804 has borne the title of Emperor (Kaiser) of Austria.

Kaiser-Franzensbad. See Franzensbad.

Kaiser Wilhelm Land. See New Guinea.

Ka′ka, a large, slow-flying, brownish parrot (*Nestor meridionalis*) of New Zealand, which inhabits forests, where it goes about in noisy flocks, and nests in hollows of trees. Its food is miscellaneous, but consists principally of nectarous flowers and of the grubs hiding under bark, which it tears away by its powerful hawk-like beak. A near relative is the Kea (q.v.); and other species on New Zealand, Norfolk and neighboring islands have become wholly extinct since the occupation of those islands.

Kakabek′a Falls, a cataract of the Kaministiquia River, Ontario, Canada, 14 miles west of Port Arthur. The falls, which are noted for their picturesqueness, have a height of 130 feet, and their width is about 450 feet.

Kak′apo, the Maori name of a large ground-keeping, owl-like parrot (*Strigops habroptilus*), which is now nearly extinct, owing to its inability to withstand the dogs, cats, rats, etc., introduced by civilization, in addition to which its flesh is good to eat. Its terrestrial habits have led to such a reduction of the wing-muscles that the keel has nearly disappeared from the sternum and the bird is practically flightless.

Kak′ar, a sportsman's name for a muntjac (q.v.).

Kakarali, kăk-a̤-răl′ĭ, a South American tree (*Lecythis ollaria*), whose timber is much used in British Guiana for piling and structures exposed to salt water, since it endures well, and resists the boring of shipworms and the attacks of barnacles. The Indians beat its bark until it separates into thin layers convenient for use.

Kalahari (kä-lä-hä′rē) **Desert,** a region of South Africa, extending from the Orange River to Lake Ngami, and from lon. 26° E. nearly to the west coast; partly in British, partly in German territory; called a desert because it contains little water; but besides grass and creeping plants there are large growths of bushes, and also trees; great herds of antelopes roam over its plains; and on the game thus provided, as well as on the vegetable products, particularly water-melons and large tubers, a great number of Bushmen and Bakalahari subsist. The Kalahari is remarkably flat, and is intersected in different parts by the beds of ancient rivers. The soil is in general a light-colored soft sand, but in the ancient river-beds there is a good deal of alluvium, which, when baked hard, is so retentive that in some cases pools formed by the rain contain water for several months.

Recent studies have brought to light very interesting facts regarding the limestone basins of this region, peculiar formations, in which can be traced the influence of higher animal life on the shape of the earth's surface. These crater-like depressions served as watering-places for the large wild animals, and the crowding of great herds to these places, to drink and bathe, changed them from simple depressions to the walled basins which they now are, elephants and other animals, by rolling in the mud and rubbing against the walls, giving to the hollows their depth — sometimes 20 to 30 feet — and a diameter commonly of several hundred yards. The water in these basins contained lime carbonate in solution, and with the water drunk by the animals this carbonate disappeared, and the fresh spring-water absorbed another supply from the rock, thus deepening the depression. Scientists estimate that 600 to 800 years may have passed before the natural water-pools became basins. It is surmised that similar depressions in calcareous districts of the American prairies are due, in the same way, to the enormous herds of bisons which formerly inhabited them.

Kalakaua (kăl-ạ-kow'ạ) I., **David,** king of Hawaii: b. 16 Nov. 1836; d. San Francisco, Cal., 30 Jan. 1891. He was the son of Kepaakea and Keohokalole, the niece of Kamehameha I., and was elected, 12 Feb. 1874, to succeed Lunalilo, and reigned till his death. In 1887 he was compelled to grant a new constitution, which very greatly restricted the royal authority.

Kalamazoo, kăl-ạ-mạ-zoo', Mich., city, railway centre and county-seat of Kalamazoo County; on the Kalamazoo River, and on the Michigan C., the Lake Shore & M. S., the Kalamazoo & S. H., the Grand Rapids & I., and the Chicago, K. & S. railways; 143 miles west of Detroit, 60 miles southwest of Lansing, and 45 miles south of Grand Rapids. It is in a rich agricultural region, the chief products of which are celery, fruit, and grains. Unlike the average city in western Michigan, Kalamazoo never was a lumber town. Located in the midst of a broad area of prairie land and oak openings, it was from the beginning an agricultural centre, with fresh-water, inland lakes in all directions and with the Kalamazoo River flowing along its eastern portion.

Industries. — Few cities of the United States of a corresponding population show such a diversity of industrial occupations. In 1904 there were 157 factories employing 6,499 persons, and representing an investment of $9,617,880. The chief manufactures of the city are paper, patent medicines, women's clothing, playing cards, wagons and carriages, machinery, caskets, coffins, foundry products, windmills, furniture, and flour. The nine paper mills employ more than 2,000 workers; the card factory, 900; the regalia and clothing factories, 1,000. The celery-raising industry, by which Kalamazoo is perhaps best known, employs more than 700 skilled workmen, chiefly from Holland, and represents an annual output valued at nearly $2,000,000.

Banks, Commerce, etc. — The seven national and savings banks reported in 1904: $650,000, capital; $539,367, surplus; $5,169,032, loans, discounts, and stocks; and $5,485,828, deposits. The total bank clearings were $35,450,000. The freight shipped and received in 1904 aggregated 325,342 tons. The total postal receipts were $534,354.

Institutions, etc. — Some of the prominent public institutions are the Kalamazoo College, opened in 1855 under the auspices of the Baptist Church; the Michigan Female Seminary, founded in 1886 under the auspices of the Presbyterian Church; Nazareth Academy (R. C.), one Normal School, Borgess and Queen City hospitals, Saint Anthony's School for feebleminded children, Michigan Asylum for the Insane, Academy of Music, and the public library. Other prominent buildings are the Y. M. C. A., the City Hall, several fine churches, and the high school. The streets are well paved, and the electric light plant and waterworks owned and operated by the city.

Government, History and Population. — The government is vested in a mayor, public commissioners, and a council of nine members, elected annually. The school board is chosen by popular election. Kalamazoo was settled in June, 1829, by Titus Bronson of Connecticut. It was incorporated as a village in April, 1843, and for many years enjoyed the distinction of being the largest village in the United States. It was made a city in April, 1884. Pop. (1880) 11,937; (1890) 17,853; (1900) 24,404.

Charles S. Hathaway,
Kalamazoo Board of Trade.

Kalamazoo, a river which has its rise in the northwestern part of Hillsdale County, Mich., and flows west and northwest into Lake Michigan. From the source to the city of Kalamazoo it makes three southward curves, but from Kalamazoo the course is generally northwest. Its whole length is about 200 miles, only 50 of which are navigable. At the mouth is a good harbor for vessels of about 100 tons. The water-power is extensive, and has been of great value in the development of the southwestern part of Michigan. Allegan, Kalamazoo, Battle Creek, and Marshall are on this river.

Kalb, Johann, yō'hän kȧlb, Baron de, officer in the American Revolution: b. Huttendorf, Bavaria, 29 July 1721; d. Camden, S. C., 19 Aug. 1780. After serving in the French army as lieutenant he became a brigadier-general in 1761. He came with Lafayette to America in 1777, and offering his services to Congress was appointed a major-general in September of that year. After serving under Washington in Pennsylvania and New Jersey till the spring of 1780, he was appointed second in command in the Southern army under Gates. He fell mortally wounded at the battle of Camden, S. C., in the following August, dying three days after. In 1886, on the 106th anniversary of the battle, a bronze statue of the baron was unveiled at Annapolis, Md. Consult Kapp, ‹Leben des amerikanischen Generals, Joh. Kalb› (Stuttgart 1862; New York 1870).

Kale, or **Borecole,** a cruciferous plant (*Brassica oleracea*, var. *acephala*), differing from cabbage most strikingly in the non-formation of heads, the leaves being loose and free. It is largely cultivaled as a pot-herb, especially in the South, where it generally withstands the winter. It is rather coarse in texture and flavor, but frosts modify both somewhat. In some sections it is extensively used for cattle-feeding. One of the largest producing regions is that in the vicinity of Norfolk, Va., which ships about 200,000 barrels to the markets each year. The varieties cultivated in America are nearly all treated as annuals, being grown from seed much like late cabbage. Some varieties, however, are perennial and may be propagated by cuttings, etc. For cultivation see Cabbage.

Kaleege, kạ-lēj', or **Kalij, Pheasants,** a sportsmen's name in India for the pheasants of the genus *Genæus*, which range along the foothills of the Himalayan range and eastward to the China and down the Malay Peninsula to Java. They are of medium size, richly dressed, with flattened crests, naked cheeks and spurs on the male. White is conspicuous in the plumage of most, so that they are sometimes called silver pheasants, especially the Chinese species (*G. nycthemerus*), frequently seen in parks and menageries. All are attractive as game birds, especially the Himalayan white-crested and black-crested.

Kaleidoscope, ka-lī′dō-skōp, an optical instrument invented by Sir David Brewster in 1817. It consists of a tube through the length of which pass two mirrors or reflecting planes, which are hinged together along one edge, and make with each other an angle of 180 degrees; while the one end is fitted up with an eye-glass, and the other is closed by two glasses, at a small distance from each other, between which are placed little fragments of glass or other colored objects. The eye looking into the tube perceives these objects multiplied, and the slightest moving of the instrument produces new figures.

Kalends. See CALENDS.

Ka′ler, James Otis, «JAMES OTIS,» American writer for young people: b. Winterport, Maine, 19 March 1848. His most popular juvenile tale is ‘Toby Tyler’ (1880). Among his other very numerous books may be named: ‘Raising the Pearl’; ‘Tom and Tip’; ‘When Israel Putnam Served the King’; ‘The Wreck of the Circus.’

Kalevala, kä-lĕ-vä′lä, **The,** the great Finnish epic. It is composed of ancient popular songs, orally transmitted until the early 19th century, when they first began to be collected for literary purposes. Scattered portions were published in 1822 by Zacharias Topelius. But the present form of the poem is due to Elias Lönnrot of Helsingfors, who traveled among the peasantry, and recorded the material exactly as he heard it. His first edition (1835) contains 12,078 lines in 32 runes (cantos); a second edition (1849) 22,793 lines in 50 runes. Lönnrot was the first to arrange the runic verses as a systematic whole. The poem is in eight-syllabled trochaic verse, alliterative but unrimed. An idea of its style may be obtained from the ‘Hiawatha’ of Longfellow, largely an imitation. There is a complete English rendering by J. M. Crawford (1888).

Kali, kä′lē, a Hindu goddess represented with four arms, wearing a necklace of skulls, and the hands of slaughtered giants round her waist as a girdle. Her eyebrows and breast appear streaming with the blood of monsters she has slain and devoured. One hand holds a sword, another a human head. She is the goddess of death and destruction, and goats and other animals are sacrificed on her altars.

Kalidasa, kä-lĭ-dä′sä, the greatest poet and dramatist of India. Native tradition assigns him to the 1st century B.C., but western scholars place him as late as the 6th century A.D. He was one of the nine «gems,» or poets, at the court of King Vikramanditya, but the fact that several monarchs were so named makes his date no more definite. His most famous work is the drama ‘Sakuntalā,’ translated by Sir William Jones in 1789, and highly praised by Goethe. This translation helped to call the attention of the Occidental world to Sanskrit studies. Kalidasa wrote two other plays, the ‘Vikramorvaśī’ and ‘Mālavikā and Agnimitra,’ and considerable lyric verse. Many doubtful works have also been attributed to him with various degrees of probability. His literary value has long been conceded. The most recent English version of the ‘Sakuntalā’ is that of Edgren (1894).

Kalisch, kä′lĭsh, **Isidor,** American rabbi and author: b. Krotoschin, Prussia, 15 Nov. 1816; d. Newark, N. J., 11 Nov. 1886. Educated at the universities of Berlin, Breslau, and Prague, on the outbreak of the revolution of 1848, he left Germany, and after a brief stay in London came to New York in 1849. For some years he officiated as rabbi in Cleveland, Cincinnati, Milwaukee, Indianapolis, Detroit, and Leavenworth, Kan. In 1868 he established a school in New York, which did not succeed. In 1870 he was called to Newark, N. J., as rabbi, and two years later to Nashville, Tenn. In 1875 he returned to Newark, where he devoted himself until his death mainly to literary work. He was a versatile author, and his works cover a wide field, from a volume of German poems and a translation of Lessing's ‘Nathan the Wise’ to a decipherment of a Phœnician inscription found near Sidon, a sketch of the ‘Sefer Yetsira,’ a Kabbalistic work. He took an active part in the American Jewish reform movement and was a frequent contributor to the Jewish press.

Ka′lium, another name for the metal potassium, whence its symbol K is derived.

Kalmar, käl′mär, or **Calmar,** Sweden, city, the capital of Kalmar Län (county); on Kalmar Sound, at a place where the distance to the island of Oland is not more than five miles. Kalmar is about 190 miles, in direct line, southwest of Stockholm. A part of the city is on the mainland, and a part on three small islands. The town, which was formerly strongly fortified, though the fortifications are now in great part leveled, has a good harbor, a handsome cathedral, and a fine castle, in which, on 20 July 1397, the «Union of Kalmar» was signed, which settled the succession to the three northern kingdoms upon Margaret of Denmark and her heirs. The commerce of the town is considerable, and it has manufactures of matches, chicory, and tobacco, and some ship-building. Pop. (1902) 12,847.

Kal′mia. See MOUNTAIN-LAUREL.

Kal′mucks, a nomadic, warlike Mongol race, inhabiting parts of the Chinese empire, Siberia and European Russia. They have been great warriors from very early times, fought many bloody battles with the Tartars, with the Chinese, and among themselves, and made predatory expeditions as far west as Asia Minor. They are intrepid soldiers, splendid horsemen, and troops of them are attached to almost every Cossack regiment. Physically the Kalmucks are small of stature. They number altogether perhaps 700,000.

Kalong′. See FLYING-FOX.

Kal′pa, in Hindu chronology, a day, or a a day and night of Brahma, or a period of 4,320,000 or 8,640,000 solar-sidereal years. A great kalpa comprises the life of Brahma.

Kalpi, käl′pē, or **Calpee,** British India, a town in Jalaun district, Northwest Provinces, on the right bank of the Jumna, about 45 miles south-southwest of Cawnpore. The original town stood on the plain, remote from the river; but repeated Mahratta incursions induced the inhabitants to remove it to its present position among extensive ravines, where there is a small fort, which commands the navigation of the Jumna. It carries on a considerable trade, principally in cotton, and is noted for its manufactures of paper and refined sugar, the latter said to be the finest in the world, but too high-priced to be in general demand. During the Sepoy mutiny Kalpi became a principal rendezvous of the revolted Gwalior contingent, which was signally defeated, first by Sir Colin Campbell, in the vicinity of Cawnpore, on which it had previously made an unsuccessful attack, and afterward at Kalpi itself by Sir Hugh Rose, 26 May 1858. Pop. (1901) 15,124.

Kama, kä'mä, the largest tributary of the Volga, rises in the Ural Mountains, on the eastern frontiers of the Government of Vyatka, in Russia; flows first north, then northeast into the Government of Perm, then circuitously south-southeast to the town of Perm, then southwest into the Government of Kasan, and about 40 miles below the town of that name, after a course of about 1,200 miles, joins the left bank of the Volga, almost doubling its volume. It is navigable almost throughout its whole course, and a canal connecting it with a tributary of the Dwina, gives water communication between the Caspian Sea and the Arctic Ocean.

Kama, or **Kâmâdîva**, in Hindu mythology, the god of love and marriage. The accounts of his origin vary in the sacred writings of India. According to one authority he sprang from Brahma's heart. His wife is Rati or «Pleasure.»

Kamakura, kä-mä-koo'rä, Japan, village, about 11 miles south of Yokohama. It is said to have been founded in the 7th century. From about 1190, for 400 years it was the political centre of Japan, the residence of many of the powerful men, and frequently the battle-ground for supremacy and power. It is no longer visited as a ruling city, but as a beautiful place, with many interesting relics of antiquity. See DAIB TSU.

Kama'la, a plant and drug known, under various names, to Indian and Arab physicians, as a specific against the tapeworm. It occurs as a brick-red powder, adherent to the fruit of the euphorbiaceous plant *Rottlera tinctoria,* formed by minute roundish, semi-transparent granules, mixed with stellate hairs. The active principle of the powder lies in the 80 per cent of resin it contains, which also supplies the coloring matter, called rottlerin, used as a silk dye.

Kamas'si, a South African tree related to the oleander (family *Apocyanaceæ*), the wood of which is extremely hard and durable, and is used in wagon-building, for tool-handles and similar purposes. The tree bears fragrant flowers.

Kambodja, kăm-bō'ja, a Burmese tree (*Plumeria acutifolia*) related to the oleander, which is commonly used as a shade-tree in the villages of that country.

Kamchatka, käm-chät'kä, or **Kamtchatka**, Siberia, a large peninsula of the Russian empire, 850 miles long from north to south, and of irregular breadth, the maximum being about 250 miles. It has an area of 100,000 square miles. The coasts are dangerous of approach on account of outlying reefs. A lofty range of volcanic mountains traverses the country in a southwesterly direction, with many peaks between 7,000 and 16,000 feet high. The snow line, in lat. 56° 40', is at an elevation of 5,260 feet. Dittmar, a Russian traveler, devoted three years to the exploration of the geology of Kamchatka. He traced five successive formations, and found 17 volcanoes in active operation. Numerous rivers have their rise in the heights. The Kamchatka, with its affluent the Yelovka, is navigable for 150 miles. The most fertile portion of the peninsula for agricultural purposes lies along the valley of this river. The Russian settlers here raise oats, barley, rye, potatoes, and garden vegetables, but the rest of the country is little adapted for culture. The climate is very severe; the winter lasts nine months, and frost is common at all seasons. The mean annual temperature at Petropavlovsk on the east coast is 28.5°, while at Tigil on the west it is 43°. The average temperature of summer at the former place is 55.5°, and that of winter 19°, but the thermometer has been known to fall as low as —25°. Earthquakes are frequent and violent. Animal life is very abundant, and fish swarm in the seas and rivers. The wild animals, yet abundant in the more sequestered localities, are bears, wolves, reindeer, argalis or wild sheep, black, red, and gray foxes, ermines, sables, and otters. Wild fowl are very numerous. The principal varieties of fish are herrings, cod, and salmon. Whales are numerous in the adjacent seas. The mountains are covered with forests of birch, larch, pine, and cedar, of considerable size in the south, but diminishing northward until the northernmost portion of the territory is covered only with reindeer moss.

The Kamchadales, the principal native tribe, are of diminutive stature, but stout, with flat features, small eyes, thin lips, lank black hair, and scarcely any beard. They are a peaceable, honest, lazy, and intemperate race. In winter they reside in a sunken hut, in summer in one elevated on poles some 13 feet from the ground. Their dress is equally adapted to the changes of temperature, being of fur in winter and nankeen in summer. They are nominally governed by their own chiefs, under the jurisdiction of the Russian *ispravnik,* or chief judge, and the most of them are Greek Catholics. Dog trains are used as the means of transport. The other principal tribe are the Koryaks, who live north of lat. 58°. While the Kamchadales are hunters and fishermen, with fixed habitations, the Koryaks are a wandering tribe, subsisting on the produce of the reindeer, and differing from them in language and mode of life. The commerce of Kamchatka is chiefly with Okhotsk. Its exports are furs, skins, oil, etc. Its imports are flour, sugar, dry goods, whiskey, rice, and coffee, almost all passing through the port of Petropavlovsk, the capital, on Avatska Bay. Pop. of capital, 8,000.

Kamehameha, kä-mä''hä-mä'hä or kä-mĕ-hä'mĕ-hä, the name of five kings of the Sandwich or Hawaiian Islands. KAMEHAMEHA I., surnamed the «GREAT»: b. 1753; d. Kailua, Hawaii, 8 May 1817. Becoming head chief of part of the island of Hawaii in 1781 he presently subdued the entire group of islands, becoming ruler of the whole in 1811. He was progressive in his views and encouraged intercourse with Europeans. He was succeeded by his eldest son, KAMEHAMEHA II. (LIHOLIHO):

b. Hawaii 1797; d. London 14 July 1824. He was intemperate but treated the missionaries kindly, professed Christianity, and recommended his subjects to do likewise. Anxious to secure the friendship of England he went thither with his queen, Kamamalu, but both died soon after arriving in London. He was succeeded by his brother KAMEHAMEHA III. (KAVIKEAOULI), surnamed the "GOOD": b. 7 March 1814; d. Honolulu 15 Dec. 1854. He came to the throne in 1833, the islands having been ruled by a regency since 1824. He introduced a constitutional form of government in 1840, and the independence of the islands was acknowledged by the United States in 1842 and by Belgium, Great Britain, and France in 1844. The more important public offices in his reign were filled by foreigners. He was succeeded by his adopted nephew KAMEHAMEHA IV. (ALEXANDER LIHOLIHO): b. 9 Feb. 1834; d. Honolulu 30 Nov. 1863. He married in 1856 Emma, adopted daughter of Dr. Rooke. In 1860 he founded the Queen's Hospital in Honolulu, personally soliciting subscriptions for this object, in which he took the deepest interest. His elder brother, Lot Kamehameha, succeeded him as KAMEHAMEHA V.: b. 11 Dec. 1830; d. Honolulu 11 Dec. 1872. He proclaimed a new constitution (less democratic than its predecessor), in 1864, satisfactory to the majority of the Hawaiians but distasteful to the foreign population. He never married and left no heir to the throne.

Kamehameha, Order of, an Hawaiian secret society founded in Honolulu in 1864 by Kamehameha II., the then reigning king of the Sandwich Islands. The order is divided into three classes. The badge of the order is a white enameled cross with gold rays surmounted by a crown.

Kamerun, kä-mĕ-roon'. See CAMEROONS.

Kames, Lord. See HOME, HENRY.

Kamila, kä-mē'lä, or **Kamala,** the glandular hairs of a small euphorbiaceous tree (*Mallotus philippensis*), widely distributed in eastern Asia and Australia. They are ground into a resinous powder which imparts a deep brick-red color to alkaline liquids, alcohol, ether and chloroform, and forms a rich dye especially applicable and extensively used for silk. The same name variously spelled is given to the tree.

Kaministiquia, ka-mĭ-nĭs-tĭ-kē'ạ, a river in Canada which has its rise near Lake Nipigon in the province of Ontario, and flows south into Thunder Bay, an inlet of Lake Superior. The town where the Canadian Pacific railroad crosses this river is named after the river. Along the course are several expansions of the river or lakes. Before the railroad entered this section this river and its tributaries formed important routes of travel. Its advantages for transportation were of great importance to the government at the time of the Riel Rebellion (q.v.) in 1870.

Kaminski, kä-mēn'skē, **Stephan,** American Polish Catholic Independent bishop: b. German Poland, 26 Dec. 1859. He was educated in Poland, came to the United States in 1884; was ordained priest in 1893; was rector of various parishes; from 1897 edited and published the 'Warta,' a Polish weekly; and in 1898 was consecrated bishop. He was a leader in the independent church movement.

Kammat'ograph, The, a photographic camera in which a circular glass plate takes the place of the celluloid film for moving the pictures. The plate can be made to rotate rapidly by means of a multiplying gear, and at the same time to traverse laterally. A small lens forms an image upon the plate, and when the plate is put in motion these images are multiplied into a series of pictures arranged in a spiral. The plate is developed in the same way as an ordinary negative, and a positive is then taken from it. To display the pictures it is only necessary to place the positive in the camera and to arrange it so that the beam from the lantern close to it can pass through the lens. The plate is then rotated as before, the succession of pictures projected upon the screen reproducing the original movement. About 600 pictures can be photographed during the motion of a single plate at the rate of 12 or 14 a second.

Kam'loops, Canada, city in the province of British Columbia; on the Thompson River at the junction of the north and south branches, and on the Canadian Pacific railroad; about 255 miles northwest of Rossland and 260 miles northeast of Vancouver. The place where the city now stands was once used as a trading post by the Hudson's Bay Company, but a permanent settlement was made in 1820. Its growth was slow until mining began in the vicinity, and in 1892 it was incorporated. It has several manufacturing establishments, the chief of which are lumber-mills, mining-implement works, wagon factories, tanneries, and a woolen mill. The waterworks and the electric-light plant are owned by the city. The government seat for the Yale District is Kamloops, and the Dominion and Provincial governments have here land and registry offices. It has a mild climate, and in the vicinity in the river valley are many fine farms. Nearby are mountains and small lakes noted for the beauty of their scenery. Pop. (1902) 1,671.

Kampen, käm'pĕn, or **Campen, Jacob de,** Dutch Anabaptist leader. When he and his followers were driven out of Upper Germany, they attempted to diffuse their dogmas over the Low Countries. In 1534 John of Leyden nominated him bishop of Amsterdam, but on attempting to take possession of his see, he met with a cruel death at the hands of the people.

Kampen, or **Campen, Jan van** (so called from the town of Kampen), Dutch scholar: b. Kampen, Holland, about 1490; d. Freiburg 1538. He was professor of Hebrew at Louvain 1519–31. He wrote a Latin paraphrase of the Psalms, which has been translated into the chief European languages.

Kampen, Nikolaas Godfried van, Dutch historian: b. Haarlem 15 May 1776; d. Amsterdam 15 March 1839. He became professor of English and German in the University of Leyden in 1815. Among his historical and literary works, many of which were translated into German, are: 'History of the Literature of the Netherlands' (1812); 'History of French Domination in Europe' (1815–23); 'History of the Influences of the Netherlands Outside of Europe'

(1831–3). Consult: ‹Life,› by S. R. Van Campen (1887).

Kampen, or **Campen,** Holland, a town and port in the province of Overyssel, 45 miles east-northeast of Amsterdam, on the Yessel near its influx into the Zuyder Zee, and where it is crossed by a bridge. Its principal buildings are a church of the 14th century, an elegant town-house, built in an antique style, and a custom-house. A theological school is located here. Anciently it was one of the most flourishing of the Hanse towns; and its commerce after a period of decline has again to some extent revived. Its manufactures also suffered, but it still produces machinery, steam-engines, hosiery, cigars, etc. It has also ship-building yards. Several canals intersect it, and a railway line from Germany through Zwolle terminates here. Pop. (communal) 20,000.

Kamphausen, Adolf Hermann Heinrich, ä'dōlf hĕr'män hĭn'rĭH kamp'how-zĕn, German theologian: b. Solingen 10 Sept. 1829. He was educated at Bonn, in 1855 became secretary of Karl Josias Bunsen, whom he assisted in the latter's ‹Bibelwerke,› and in 1863 was appointed professor of theology at Bonn. In 1871–90 he was active as a member of the theological commission for the revision of Luther's translation of the Old Testament. He resigned all professorial duties in 1901. His publications include: ‹Das Lied Moses› (1862); ‹Die Hagiographen des Alten Bundes nach den überlieferten Grundtexten übersetzt› (1868); ‹Das Buch Daniel› (1893); ‹Das Verhältnis des Menschenopfers zur israelitischen Religion› (1896). He also edited Daniel (1896) for Haupt's ‹Polychrome Bible.›

Kan-Su, kän-soo', an inland province of China, in the northwestern part; area, about 125,380 square miles. At one time Shan-Si, on the east, was a part of Kan-Su, and until 1865 its jurisdiction extended over a much greater extent of territory than at present. The capital is Lan-Chau. The province is rich in minerals and hunting for the sake of the fur is one of the chief occupations. Tobacco of a superior quality is raised in this province. Pop. about 10,000,000.

Kanakas, kạ-nak'az, a popular name given the natives of Hawaii, New Caledonia, New Hebrides, and other islands in the South Seas.

Kananur, kä-nạ-noor', or **Cananore,** British India, a seaport town in the district of Malabar, presidency of Madras, 44 miles northwest of Calicut. It forms a municipality, and contains various public offices, jail, dispensary, schools, custom-house, etc. There are Anglican, German, and Roman Catholic missions here, and a number of mosques. It has a small trade by sea, but its chief importance is as a military station and the headquarters of the Malabar and Kananur force, being garrisoned by one European and one native regiment. There is a fort of triangular area, built by the Dutch and occupied by them till 1766. Pop. 27,418.

Kana'ri, or **Canari,** a tree of the genus *Canarium* (q.v.), many species of which flourish from India to Australia and the Philippines. The foliage is abundant and handsome, and the wood is hard, heavy and suitable for cabinet-work, house-trimming, etc. The fruit is a drupe with a hard oily kernel, which forms the particular food of the great cockatoos of the region. The kernel of *C. commune,* known as Java almond, is eaten by the natives either fresh or roasted; and the Amboynese dry it, grind it and bake the flour. Some other species also furnish edible kernels; and from all an oil may be pressed, said to be better than cocoanut oil, both for cooking and for use in lamps. An oil is obtained from the bark resembling balsam copaiba (see COPAIBA). These trees also yield the medical resin elemi, and a gum called black damar.

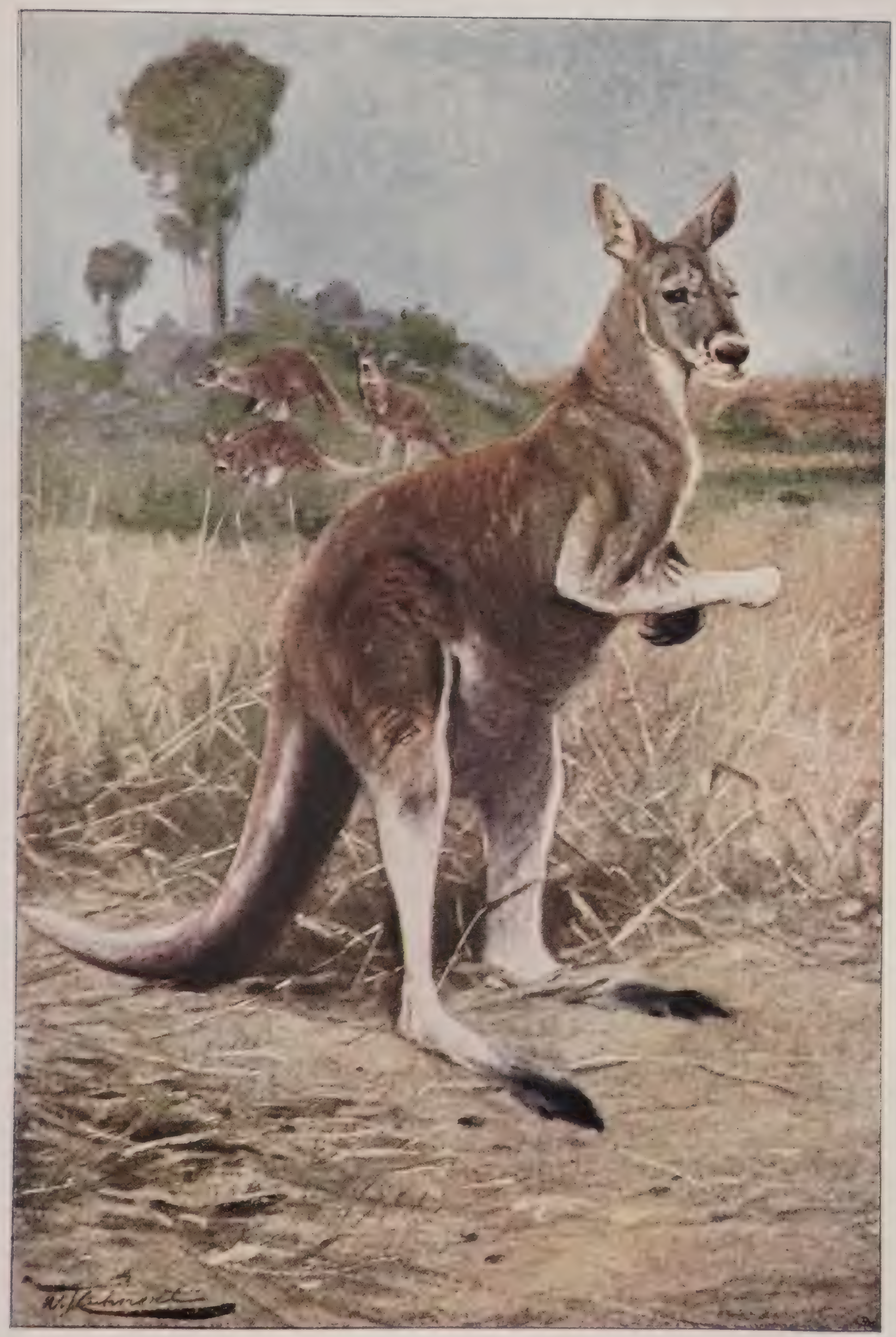
Kanawha River. See GREAT KANAWHA RIVER.

Kan'chil, the smallest species of chevrotain (q.v.). It inhabits Java and neighboring islands, is less than a foot tall, and is proverbially quick and clever in its movements and hiding in the forest. Its scientific name is *Tragulus javanicus.*

Kandahar, kän-dä-här', or **Candahar,** Afghanistan, one of the largest cities of the principality, on a fertile and well-cultivated plain, 3,484 feet above the sea, 200 miles southwest of Kabul. It is enclosed by a mud wall 27 feet high, with a large tower at each of the four corners, 54 semi-cylindrical bastions, and a broad and deep ditch in front, capable of being filled with water from the river. There are six gates, each protected by double bastions. The circumference of the city is nearly four miles. One of the most imposing buildings is the octagonal, domed structure containing the tomb of Ahmed Shah. It is claimed that this city was founded by Alexander the Great. Kandahar is chiefly supported by the transit trade, but it has important manufactures of felt and silk. It was held by the British in 1839–42, and again in 1879–81. Pop. variously estimated at from 25,000 to 100,000.

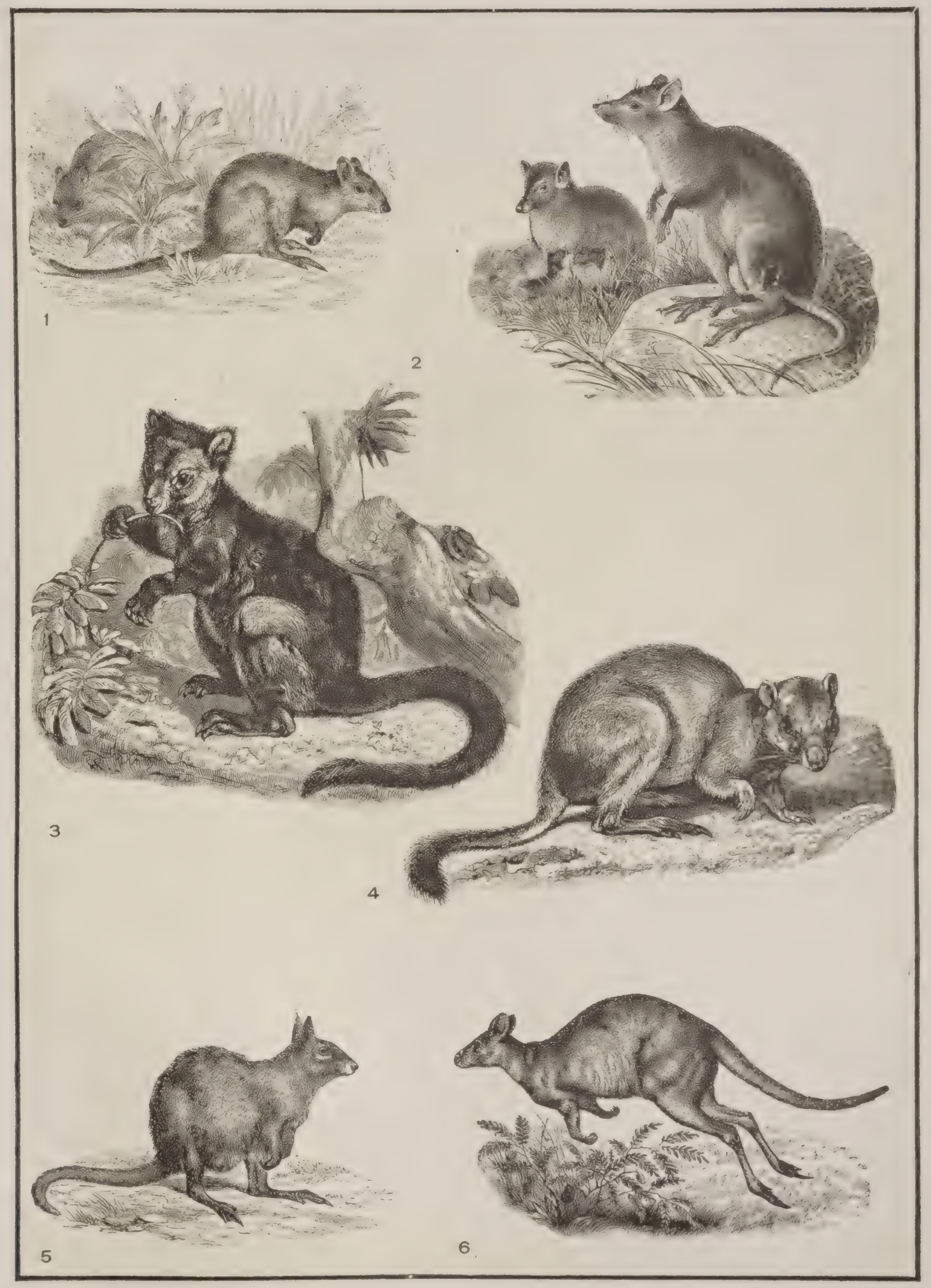
Kandy, kän'dē, or **Candy,** Ceylon, one of the chief towns on the island, is situated near the centre, 72 miles northeast of Colombo, at the height of about 2,000 feet. «Kandy is uniquely beautiful — the most charming little town in the world,» travelers usually describe it. It is situated in a valley surrounded by hills, and boasts an artificial lake, Buddhist and Hindu temples, including the Daladá Máligáwa, the most sacred Buddhist temple in the world. This contains the so-called relic of Buddha's tooth, and also many ancient manuscripts written in Pali and Sanskrit. «The Pavilion,» or official residence of the governor, is one of the finest structures in Ceylon. Kandy is connected by railroad with Colombo. The botanic gardens of Peradenia are three miles from Kandy. Kandy was the capital of the ancient kings of Ceylon. Pop. (1901) 26,915.

Kane, Elisha Kent, American Arctic voyager: b. Philadelphia 20 Feb. 1820; d. Havana, Cuba, 16 Feb. 1857. He was graduated as M.D. in the University of Pennsylvania in 1842, and shortly afterward became surgeon to the American embassy to China. After extended travels in India, Egypt, and the continent of Europe he returned to America in 1846, and was employed in the government survey of the Gulf of Mexico. In 1850 he obtained the appointment of senior medical officer to the expedition of two vessels, the Advance and the Rescue, which sailed from



GIANT KANGAROO (*Macropus rufus*).

KANGAROOS.



1. Kangaroo Rat.
2. Hypsiprymnodon.
3. Tree Kangaroo.
4. Rock Kangaroo.
5. Hare Wallaby.
6. Pademelon Wallaby.

New York on the 22d of May in that year in search of Sir John Franklin. On the return of the expedition Dr. Kane published ‹The United States Grinnell Expedition in Search of Sir John Franklin — a Personal Narrative.› On the 31st of May 1853, the Advance alone, under Dr. Kane's command, sailed again from New York to resume the search, and proceeding up Baffin's Bay and through Smith's Strait, reached lat. 78° 43′ N. Here the Advance remained frozen up for 21 months, and was finally abandoned because provisions were becoming scarce and scurvy and other diseases had made their appearance. The object now was to reach the Danish settlements in Greenland, about 1,300 miles distant. This long and perilous journey, partly in boats and partly in sledges, was accomplished, after 10 weeks of severe privation, with the loss of only one man, and that by an accident. In 1856 Dr. Kane published: ‹The Second Grinnell Expedition,› and was awarded gold medals from Congress, the New York legislature and the Royal Geographical Society. Consult: Elder, ‹Biography of Elisha Kent Kane› (1857); Greely, ‹American Explorers› (1894).

Kane, John Kintzing, American jurist: b. Albany, N. Y., 16 May 1795; d. Philadelphia, Pa., 21 Feb. 1858. He was graduated from Yale in 1814, was admitted to the bar in 1817, entered practice in Philadelphia, was elected to the Pennsylvania legislature as a Federalist in 1823, later became a Democrat, and supported Jackson in the canvass of 1828. In 1845 he became attorney-general of Pennsylvania, in 1846 United States district judge for Pennsylvania, in 1856 president of the American Philosophical Society. He won distinction by his legal attainments and his decisions in patent and admiralty law, but his commitment of Passmore Williamson for contempt of court in an action under the Fugitive Slave law was attacked by the Abolitionists.

Kane, Sir **Robert John,** Irish chemist: b. Dublin, Ireland, 24 Sept. 1809; d. there 16 Feb. 1890. He was educated for the medical profession and in 1832 became a member of the Royal Irish Academy. In the same year he founded the ‹Dublin Journal of Medical Science› and was its editor for two years. From 1834 to 1837 he was professor of natural philosophy to the Royal Dublin Society; in 1846 originated the Museum of Industry in Ireland. He was knighted the same year, was president of Queen's College, Cork, for several years prior to his resignation in 1873, and in 1876 was elected president of the Royal Irish Academy. He wrote: ‹Elements of Chemistry› (1842); ‹Industrial Resources of Ireland› (1884); etc.

Kane, Pa., borough in McKean County, on the Baltimore & O., the Philadelphia & E., the Pennsylvania, and the Pittsburg & W. R.R.'s, 95 miles southeast of Erie, 175 miles north of Pittsburg and 122 miles from Buffalo. There are here several of the largest window glass factories in the world, plate glass and bottle factories, lumber-mills, wooden-ware factories and other flourishing industries. There are extensive natural gas and oil wells and deposits of silica in the surrounding country which are of great commercial benefit to the town. On account of its elevation of 2,000 feet, Kane is an attractive summer resort, with good hunting and fishing grounds in the vicinity. It was first settled in 1859 and became a borough in 1887. The government is vested in a burgess and a council of 9 members elected every three years. Pop. (1890) 2,944; (1900) 5,296.

Kang-Hi, käng-hē′, or **K'ang-Hsi,** emperor of China: b. 1655; d. 1722. He succeeded his father, Shun-Chih, founder of the Manchu dynasty, in 1661, but until he was 14 the government was administered by a regency. Kang-Hi not only greatly strengthened his empire, but extended it and governed with vigor and wisdom. He was favorably inclined toward the progress of Christianity; manifested great interest in the arts and sciences of the Europeans, and liberally patronized the missionaries. During his reign many important books were published under his oversight, such as the ‹Imperial Dictionary›; a literary concordance in 110 volumes styled ‹Pei-Wen-Yun-Foo,› and two large encyclopædias.

Kangaroo′, an Australian marsupial of the family *Macropodidæ.* The word is derived from a native name of the giant kangaroo. The *Macropodidæ* are readily distinguished from other marsupials by their shape. The head is small, with large mule-like ears; the neck slender, the trunk narrow before and very massive behind; the fore limbs small and weak with five toes and used chiefly as hands; the hind limbs long, extremely powerful, four-toed, and serving as the chief organs of locomotion; and the tail thick, heavy, and muscular, serving to support the body, in combination with the hind legs, as on a tripod. The dentition is noteworthy, having a somewhat rodent-like appearance. There are three pairs of incisors above, presenting a sharp cutting edge which the single pair of lower incisors passes like the blade of a shears. Canines are reduced to one in the upper jaw. The premolars are two on each side of each jaw. The four pairs of molars are flat-crowned and more or less cross-ridged, as well as tuberculate. The kangaroos are strictly vegetarian, and in Australia represent the deer, antelopes and hares of other regions. About 50 species belonging to 12 or 15 genera have been described from Australia and the neighboring islands. The giant kangaroo (*Macropus giganteus*), the largest, is frequently exhibited in zoological gardens. This, the first of the kangaroos known to white men, was discovered by Capt. Cook during his exploring voyage in 1770, and was described under the name *Didelphys gigantea* from specimens brought home by him. When standing erect in the attitude of scenting danger it is nearly as tall as a man, and when in full flight propels itself by bounds of 12 to 15 feet. On account of its destructiveness to herbage on the sheep-ranges, as well as for sport, it is much hunted by the colonists, a favorite method being coursing. When brought to bay by the hounds it proves no mean antagonist, and frequently kills a dog by seizing it in its arms and ripping it open with the great hind toe. As in other kangaroos the hind feet have a peculiar structure; the fourth toe is enormously developed and furnishes almost the sole support; the fifth is of moderate size; in sharp contrast the second and third toes are minute, slender, and bound together so that only their sharp claws project from the skin, their only function being to comb and cleanse the fur.

The one or two young are born in an exceedingly helpless state, and after being placed in the pouch of the female remain attached by their mouths to the nipples for several weeks or months; at first they are quite incapable of sucking, and the milk is injected into their mouths by the periodical contraction of the muscles of the mammary glands. Even after they are able to run about, they return to the mother's pouch for temporary rest and shelter. Closely related are the red kangaroo (*M. rufus*) and other species inhabiting the mountains, and the numerous species of large and small wallabies or brush-kangaroos, some of which inhabit New Britain and New Guinea, as well as Australia. The rat-kangaroos (*Potorous* and related genera) are a small group of species somewhat resembling rats and rabbits in size and habits. They are nocturnal and obtain their food largely by digging roots. The genus *Dendrolagus* includes the arboreal tree-kangaroos. Fossil forms are exhumed from the Pleistocene rocks of Australia very similar to modern genera, but some of the older ones were much larger than any existing species. Consult: Thomas, ‹Catalogue of Marsupialia, and Monotremata in the British Museum›; Gould, ‹Monograph of the Macropodidæ,› and ‹Mammals of Australia,› and Aflalo, ‹Natural History of Australia.›

Kangaroo-rat, a small and pretty jerboa-like rodent of the southwestern United States. It has very long and strong hind legs, and runs by a series of leaps with great swiftness. It inhabits arid regions, dwells in extensive burrows of its own digging, and feeds mainly upon sunflower-seeds, great quantities of which are stored up for winter use, when the burrows are warmly furnished with grass. It belongs to the pocket-mouse family (*Heteromyidæ*) and is named *Perodipus ordi* by systematists. Consult: Stone and Cram, ‹American Animals› (1902).

Kangaroo-mice are smaller American rodents of the genus *Perognathus*. See POCKET-MICE.

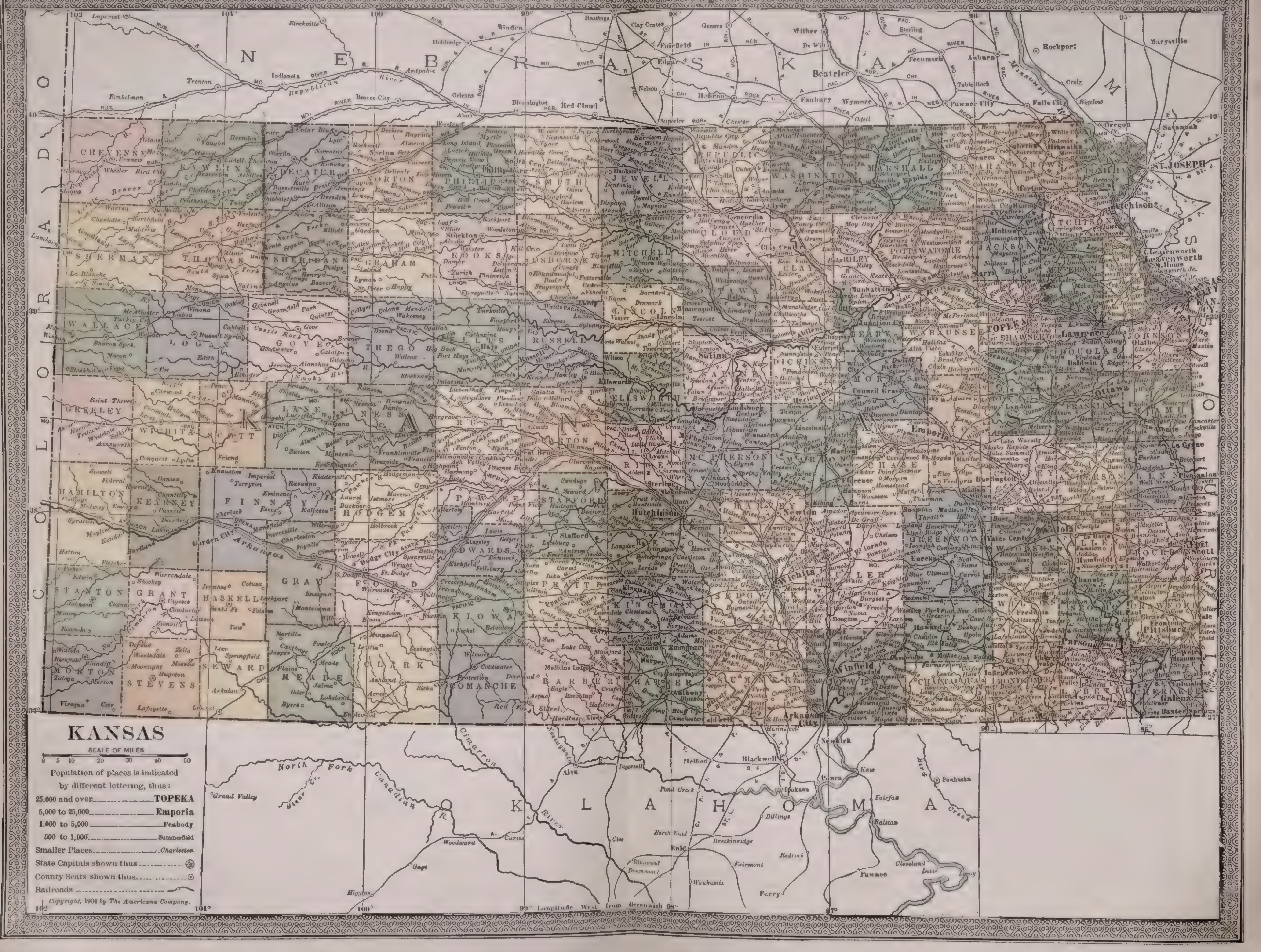
Kankakee, kăn-kạ-kē', Ill., city, county-seat of Kankakee County; on the Kankakee River, and on the Illinois C. and the Cleveland, C. C. & St. L. R.R.'s; about 133 miles northeast of Springfield and 56 miles south of Chicago. It was settled in 1850 and incorporated as a city in 1854. The water-power of the Kankakee River is extensive at Kankakee, and as a result the city is largely engaged in manufacturing. It is situated in an excellent agricultural region, and its good railroad facilities make it an important commercial centre for a large extent of country. The chief industrial establishments (1903) are agricultural implement works, in which are employed 600 men; piano factories, 250 men; furniture factories, 500; knitting works, 250; sewing machines, 300; and stone quarries, 250. Some of the other manufactures are starch, flour, wagons, bricks, tiles, nails, foundry products, mattresses, cigars, some dairy products. The churches are two Methodist Episcopal, one Presbyterian, four Roman Catholic, one Lutheran, one German Methodist, one Reformed Lutheran, one Seventh Day Adventist, and one Christian Science. The educational institutions are the public and parish schools, Saint Joseph's Seminary, a Conservatory of Music, and in Bourbonnais Grove, a suburb of the city, Saint Viateur's College, and Notre Dame Academy. It has the Illinois Eastern Hospital for Insane and the Emergency Hospital, a public library, the Y. M. C. A. building, and the city buildings. There are two national banks and two savings banks with a combined capital of $300,000. The government is vested in a mayor, who holds office two years, and a council of 10 members, one half of whom are elected each year. The council elects the administrative officials and the health and local improvement boards. Pop. (1890) 9,025; (1900) 13,595.

Kankakee, a river of northern Illinois, which has its rise in the northern part of Indiana, flows west and southwest and enters Kankakee County in Illinois. From where it receives the waters of the Iroquois from the south, the course changes to the northwest until it enters Grundy County, where it unites with the Des Plaines River and forms the Illinois.

Kano, kä-nō', in the province of Sokoto, in West Africa, the chief town of the extensive Sudanese sultanate annexed by Great Britain in 1903. Kano is the point of convergence of many caravan routes and is the principal market and centre of trade in the interior of Africa. Leather and cotton goods are extensively manufactured and dyeing is carried on. On account of its industries Kano has been called the Manchester and Birmingham combined of the Dark Continent. The annual attendance of the market at Kano exceeds 1,000,000 persons from all parts of Africa; Morrell estimates the attendance as twice as large. The market is held daily throughout the year and is believed to have existed at this place for over 1,000 years. Sign language is largely used by the heterogeneous crowd in making bargains. In addition to native wares and produce, such as ivory and ostrich feathers, European merchandise and ammunition are on sale. The objectionable feature of the market is the trade in slaves, a characteristic that will doubtless disappear under British rule. The wall surrounding Kano is reported to be 16 miles in circumference. The houses are chiefly of adobe and the streets are wide and clean. Kano was captured by the British in 1903. Pop. (estimated 1892) 120,000. See also SOKOTO.

Kansas, one of the great States of the Middle West, the 21st to be admitted into the Union, and a centre of human activity and achievement from its beginning. In less than 50 years a vast commonwealth has been erected, exceeding in population and resources many of the older States. The historian, George Bancroft, designated Kansas as «the miracle of the age.» The name is derived from the Indian word «Kanza,» having the dual significance of «wind» and «swift.» In popular nomenclature Kansas is known as «the Sunflower State.» Its State motto is *Ad Astra per Aspera* — «through difficulties to the stars.» The State is situated in lat. 37° to 40° N., lon. 94° 40' to 102° W.; bounded on the north by Nebraska, on the northeast and east by Missouri, on the south by Oklahoma and Indian Territories, and on the west by Colorado.

Early History.— The territory forming the present State of Kansas was a part of the Louisiana Purchase of 1803, except a fraction in the southwest corner acquired from Texas in 1850. It is claimed that Coronado visited the country as early as 1541, and there are evidences



KANSAS

SCALE OF MILES
0 5 10 20 30 40 50

Population of places is indicated by different lettering, thus:
25,000 and over.................. **TOPEKA**
5,000 to 25,000.................. **Emporia**
1,000 to 5,000.................. **Peabody**
500 to 1,000.................. Summerfield
Smaller Places.................. *Charleston*
State Capitals shown thus.................. ⊛
County Seats shown thus.................. ⊙
Railroads..................

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of French and Spanish expeditions in later years. The Lewis and Clark Expedition, planned by President Jefferson, reached Kansas in June 1804, and, two years later, the expedition commanded by Zebulon Montgomery Pike, who gave his name to «Pike's Peak,» crossed the territory from the Missouri River to the Rocky Mountains. The expedition of Major Stephen H. Long was made in 1819, and in 1824 was established the «Santa Fe Trail,» the famous highway of Kansas, extending 400 miles directly across the Territory, and from Independence, Mo., to Santa Fe, a distance of 780 miles.

This was the beginning of the development and growth of Kansas. The outposts of civilization were being extended westward from the Mississippi River. The Indians of Missouri and other Mississippi Valley States were concentrated with the tribes already occupying the country west of the Missouri River. These included the Osage, Shawnee, Pawnee, Delaware, Kickapoo, and Kansas tribes, to which were added the Cherokee and other tribes from the States of the south, the Ottawas, Pottawatamies, Wyandottes and others from Ohio, Michigan and Indiana. Kansas became Indian Territory, and remained such from 1830 to 1854. Occupation of the country by white settlers was fraught with peril and hardship, and only accomplished by marvelous heroism, perseverance and endurance. To aid in the work of civilization missions were established on the frontier, and military posts located at Fort Leavenworth, Fort Scott and Fort Riley.

Territorial Days.— The admission of Kansas as an organized Territory dates from 30 May 1854, when President Pierce signed the Kansas-Nebraska Act. This brought on what may be termed the political troubles of Kansas, and later, as a result of the slavery agitation, precipated the great armed conflict between the North and the South in 1861-5. It was on Kansas soil that the first battle was fought for the freedom of the negro, and it was Kansas that developed the heroic figure of John Brown. From the time Congress took the first step for the admission of Kansas, with or without slavery, the Territory became the scene of contention, pillage and bloodshed. The pro-slavery men of Missouri endeavored to gain control of the Territory in 1854, and established the first city, Leavenworth. Soon afterward an anti-slavery colony from Massachusetts settled at Lawrence. No more hostile factions ever struggled for supremacy on this continent.

Andrew H. Reeder, of Pennsylvania, was appointed to be the first governor of the Territory. At the first contest for territorial delegate to Congress the slavery men of Missouri crossed the river and participated in the election, the candidate of the pro-slavery party being successful by reason of these illegal votes. The Free-soilers protested and held indignation meetings at Lawrence and other points. The Missourians repeated the same tactics at the election in the spring of 1855 for representatives to the legislature. When the legislature met at Pawnee the pro-slavery members were in the majority, and controlled the proceedings, even to the extent of driving out the Free-soil members and changing the seat of government.

The Free-soil party repudiated the acts of the legislature and refused to abide by them. Governor Reeder was removed from office and succeeded by Wilson Shannon, of Ohio. John W. Whitfield was elected delegate to Congress by the pro-slavery party, and Ex-Governor Reeder chosen to the same position by the opposition, but Congress refused to give either delegate a seat. A Free-soil constitution was adopted in December 1855, under which Charles Robinson was elected governor, but the election was repudiated by President Pierce, who had recognized the «bogus» legislature. The Free-soil legislature ignored the action of President Pierce, and, to meet this and other menacing circumstances, the military forces of the United States government were placed in command of Governor Shannon. Governor Robinson and Congressman-elect Reeder were indicted for high treason. The pro-slavery party received large accessions from Georgia, Alabama and South Carolina. In the troubles resulting from this conflict of authority the Emigrant Aid Society Hotel and the 'Herald of Freedom' and 'Kansas Free State' printing offices at Lawrence were destroyed, and the town of Osawatomie — the home of John Brown — was sacked and burned.

Struggles for Statehood.— A bill for the admission of Kansas as a State was passed by the lower house of Congress in June 1856, but was defeated in the Senate on account of the recognition it gave to the Free-soil constitution. A meeting of the Free-soil legislature in Topeka was dispersed by United States troops acting under orders from President Pierce. By this time the interest in the Kansas struggle became general throughout the United States. The suppression of slavery became a national instead of a state issue. While Congress debated and legislated, the pro-slavery and free-state factions continued to war against each other for possession of the Territory and control of the law-making machinery. Conflicting constitutions were adopted, rival legislatures elected, and civil government overthrown. Public meetings were held in all parts of the North to lend encouragement to the movement for making Kansas a free State. Similar sympathy and help came to the pro-slavery party from the States of the South. Horace Greeley and Abraham Lincoln visited the Territory, and made speeches in opposition to the further extension of slavery on American soil. Governor Shannon was removed from office, and the several governors appointed to succeed him found the duties of the position so onerous that they resigned in rapid succession.

After numerous battles, elections and vicissitudes, a constitutional convention was called to meet at Wyandotte 5 July 1859. It was composed of 35 Free-state and 17 pro-slavery delegates, who were now known as Republicans and Democrats, respectively. Under the constitution adopted by this convention slavery was prohibited and Kansas admitted as a State 29 Jan. 1861. The seat of government was located at Topeka. At the election held in December 1859, under the Wyandotte constitution, Charles Robinson was chosen to be the first governor of the State, and Martin F. Conway the first representative in Congress. When the first State legislature assembled at Topeka in March 1861 James H. Lane and Samuel C. Pomeroy were elected the first two United States senators from the new State.

In the civil war which followed the inauguration of President Lincoln in 1861, Kansas showed its loyalty to the Union by furnishing 20,000 trained soldiers out of a total population of but little more than 100,000 — a number greatly in excess of her quota, none of them drafted, and in proportion exceeding the enlistments from any other State. A large part of this force was employed in defending the borders of the State from invasion by southern troops, Indians and guerrillas. During one of these border raids a force of 400 men under command of Quantrell invaded Lawrence, burning and pillaging the town and killing 150 defenseless citizens. The war and the troubles with the Indians, together with a visitation of drought in 1860, greatly retarded the growth of Kansas, but when these obstacles were passed an era of progress and development set in which has never since abated. The splendid soil and auspicious climate and the general adaptability of the State to farming and stock-raising purposes have attracted thousands of settlers to the State, and the advancement in all lines has been rapid, substantial and permanent.

Governors—(*Territorial*) Andrew H. Reeder (1854 to 1855), Wilson Shannon (1855 to 1856), John W. Geary (1856 to 1857), Robert J. Walker (1857), James W. Denver (1858), Samuel Medary (1858 to 1860). (*State*) Charles Robinson (1861–3), Thomas Carney (1863–5), Samuel J. Crawford (1865–8), Nehemiah Green (1868), to fill the unexpired term of Samuel J. Crawford,resigned; James M. Harvey (1869–73), Thomas A. Osborn (1873–7), George T. Anthony (1877–9), John P. St. John (1879–83), George W. Glick (1883–5), John A. Martin (1885–9), Lyman U. Humphrey (1889–93), Lorenzo D. Lewelling (1893–5), Edmund N. Morrill (1895–7), John W. Leedy (1897–9), William E. Stanley (1899–1903), Willis J. Bailey (1903—). During the official interruptions incident to the territorial period the following persons served terms as acting governor: Daniel Woodson, Frederick P. Stanton, James W. Denver, Hugh S. Walsh, George M. Beebe.

United States Senators.— James H. Lane (1861–6), Samuel C. Pomeroy (1861–73), Edmund G. Ross (1866–71), Alexander Caldwell (1871–3), Robert Crozier (1873–4), James M. Harvey (1874–7), John J. Ingalls (1873–91), Preston B. Plumb (1877–91), William A. Peffer (1891–7), Bishop W. Perkins (1892–3), John Martin (1893–5), Lucien Baker (1895–01), William A. Harris (1897–03), Joseph R. Burton (1901), term expires 1907; Chester I. Long (1903), term expires 1909.

Government.— The State legislature consists of 40 senators and 125 representatives. Sessions are held biennially, in odd-numbered years. The legislature of 1903 was divided politically as follows: Senate, 34 Republicans, 6 Democrats and Populists; house, 95 Republicans, 30 Democrats and Populists; Republican majority on joint ballot, 129. The elective State officers include governor, lieutenant-governor, secretary of state, auditor, treasurer, attorney-general, State superintendent of public instruction, commissioner of insurance, 7 justices of the supreme court, and 3 members of the State board of railroad commissioners. Kansas has 8 representatives in the lower house of Congress, of which 7 are chosen by districts and 1 at large. Women have the right of suffrage at municipal. bond and school elections. They have been elected to municipal and school offices, and in some cases to county offices.

Population.— The local census of 1855 gave Kansas a population of 8,501; this increased in 1860 to 107,206; in 1870 to 364,399; in 1880 to 396,096; in 1890 to 1,427,096; in 1900 to 1,470,495. The present population of the State, according to the local census of 1903, is 1,487,847. Population by counties follows:

County	Pop.	County	Pop.
Allen	26,468	Linn	15,534
Anderson	13,630	Logan	2,127
Atchison	30,369	Lyon	25,944
Barber	6,698	Marion	21,455
Barton	13,518	Marshall	23,851
Bourbon	26,324	McPherson	20,772
Brown	20,921	Meade	1,592
Butler	22,269	Miami	20,254
Chase	7,434	Mitchell	13,034
Chautauqua	11,779	Montgomery	33,473
Cherokee	36,381	Morris	11,704
Cheyenne	2,709	Morton	246
Clark	1,734	Nemaha	20,258
Clay	15,317	Neosho	22,253
Cloud	17,453	Ness	4,976
Coffey	15,582	Norton	10,564
Comanche	1,671	Osage	22,371
Cowley	31,779	Osborne	11,283
Crawford	42,198	Ottawa	10,479
Decatur	8,521	Pawnee	5,706
Dickinson	22,235	Phillips	13,196
Doniphan	15,007	Pottawatomie	17,279
Douglas	25,400	Pratt	7,766
Edwards	4,797	Rawlins	5,040
Elk	10,504	Reno	29,142
Ellis	10,452	Republic	16,457
Ellsworth	9,059	Rice	13,746
Finney	3,273	Riley	13,738
Ford	6,531	Rooks	8,274
Franklin	21,593	Rush	6,470
Geary	10,843	Russell	8,377
Gove	2,870	Saline	18,249
Graham	6,119	Scott	1,320
Grant	394	Sedgwick	51,175
Gray	1,543	Seward	824
Greeley	575	Shawnee	57,060
Greenwood	16,037	Sheridan	4,083
Hamilton	1,517	Sherman	3,416
Harper	11,290	Smith	15,077
Harvey	17,594	Stafford	10,033
Haskell	504	Stanton	349
Hodgeman	2,518	Stevens	670
Jackson	15,598	Sumner	25,636
Jefferson	20,164	Thomas	3,916
Jewell	16,233	Trego	3,091
Johnson	16,840	Wabaunsee	12,391
Kearny	1,158	Wallace	1,073
Kingman	11,211	Washington	20,594
Kiowa	3,039	Wichita	1,229
Labette	29,183	Wilson	16,286
Lane	1,946	Woodson	10,072
Leavenworth	41,044	Wyandotte	74,267
Lincoln	9,849		

There are 118 cities and towns having a population of 1,000 or more. The 10 largest cities and their population are: Kansas City, 59,919; Topeka, 38,959; Wichita, 31,549; Leavenworth, 22,991; Atchison, 16,617; Fort Scott, 13,707; Pittsburg 13,116; Lawrence, 11,726; Hutchinson, 10,668; Parsons, 10,066.

Topography.— Although a part of the great plains which form the eastern slope of the Rocky Mountains, the physical character of the Kansas country is best described as rolling prairie. There are no mountains, and no marshes. The altitude varies from 750 feet in the eastern to 4,000 feet in the western part of the State. The bulk of the land is tillable, but crops are uncertain in the western third of the State on account of deficient rainfall. In this deficient area the vast stretches of prairie are largely used for grazing purposes. The rivers are the Kansas, Arkansas, Republican, Smoky

CAPITOL AT TOPEKA.

Hill, Solomon, Saline, Neosho and Verdigris — none of them navigable. There are numerous smaller streams, giving abundant water and drainage in the eastern two-thirds of the State. The land area comprises 82,080 square miles (52,531,200 acres), extending 408 miles from east to west, and 208 miles from north to south.

Climate.— The climate is mild, the great proportion of the days being fair and sunny. In summer the temperature ranges from 80° to 100°, with cool nights, and dry, pure air. In winter it rarely falls below zero. The violent winds of winter and spring, known to the early settlers, have been greatly mitigated by the cultivation of the soil and the planting of trees.

Agriculture and Stock-raising.— Fully 40 per cent (20,000,000 acres) of the farm land of Kansas is in a high state of cultivation. The cultivated farms have an aggregate value of $600,000,000. The acreage in field crops in 1902 was exceeded only by Iowa. The following table shows the acreage, quantities and values of farm products for the year 1902:

Crops	Acres	Quantities	Values
Winter wheat .... bu.	6,254,747	54,323,839	$28,983,943.60
Spring wheat .... bu.	46,293	325,397	155,546.57
Corn .... bu.	6,990,764	201,367,102	78,321,653.26
Oats .... bu.	1,023,171	32,966,114	9,564,254.35
Rye .... bu.	338,358	3,728,296	1,584,321.31
Barley .... bu.	154,665	2,188,973	801,381.69
Buckwheat .... bu.	387	2,770	2,216.00
Irish potatoes .... bu.	60,618	8,193,632	3,136,856.71
Sweet potatoes .... bu.	4,517	539,879	334,487.41
Castor-beans .... bu.	557	4,400	5,500.00
Cotton .... lbs.	486	136,005	9,520.35
Flax .... bu.	263,962	1,427,975	1,713,570.00
Hemp .... lbs.	51	10,200	610.00
Tobacco .... lbs.	98	15,150	1,515.00
Broom-corn .... lbs.	43,893	16,584,205	495,640.15
Millet and hungarian .... tons	174,933	400,160	1,445,415.00
Sorghum: For syrup or sugar .... gals.	20,411	1,792,200	663,114.00
For forage or grain	540,855	....	3,159,584.00
Milo maize .... tons	5,839	16,514	56,166.00
Kafir-corn .... tons	748,176	2,824,624	9,495,572.00
Jerusalem corn .... tons	3,021	7,989	27,372.00
Timothy .... tons	319,836	803,934	4,823,604.00
Clover .... tons	109,172		
Blue-grass .... tons	268,873		
Alfalfa .... tons	458,493		
Orchard-grass .... tons	2,832		
Other tame grasses .... tons	91,038		
Prairie-grass under fence .... tons	7,953,809	820,637	3,282,548.00
Totals	25,879,855	....	$148,064,391.40
Animals slaughtered or sold for slaughter		....	$51,346,589.00
Pountry and eggs sold		....	5,706,352.00
Wool clip .... lbs.		647,427	97,114.05
Cheese .... lbs.		3,025,655	302,565.50
Butter .... lbs.		44,350,829	7,517,331.65
Milk sold		....	725,380.00
Garden products marketed		....	653,975.00
Horticultural products marketed		....	1,187,473.00
Wood marketed		....	186,150.00
Wine manufactured .... gals.		205,470	154,102.50
Honey and beeswax .... lbs.		450,389	60,631.20
Total		....	$67,937,663.90
Total value all farm products		....	$216,002,055.30

The numbers and values of live stock for the same year were: Horses, 811,594 — $51,130,422; mules and asses, 95,671 — $6,696,970; milch cows, 791,844 — $23,755,320; other cattle, 2,555,800 — $61,339,200; sheep, 136,753 — $410,259; swine, 1,427,302 — $11,775,241; total value, $155,107,412.

Kansas ranks well in the production of fruit and is surpassed by but few States in the growth of nursery stock. The number of apple trees in bearing in 1902 was 7,295,415; peach trees, 4,062,463; cherry trees, 852,268; plum trees, 641,977; pear trees, 247,515; number of acres in nurseries, small fruits and vineyards, 13,226.

Manufactures.— The natural material for manufacturing is limited. There are no timber lands of consequence, and no deposits of iron. Manufacturing, therefore, is confined to the conversion of farm products into marketable commodities, such as flour and meat, and these industries are important and extensive. Including the large plants at Kansas City, Kan., the slaughtering and meat packing business of the State for the year 1900 amounted in value to $77,411,883. The flouring and grist mill products for the same year aggregated a value of $21,926,768. Other manufacturing interests for the same year amounted to the following sums: Car construction and railroad shop work, $6,816,816; zinc smelting and refining, $5,790,144; foundry and machine shop products, $3,652,530. The total value of the products enumerated was $118,402,409, covering the work of 860 establishments and 18,288 employees.

Mineral Resources.— These consist principally of coal, zinc, lead, natural gas, petroleum, cement and gypsum. With the exception of the three last-named commodities the mining industry is chiefly located in the southeast corner of the State, embracing the counties of Cherokee, Crawford, Labette, Bourbon, Montgomery, Chautauqua, Neosho and Allen. Cherokee leads in coal, lead and zinc; Crawford is second in coal, Allen is first in natural gas, and Neosho first in petroleum. Extensive mines of coal are also found in Osage and Leavenworth counties. Reno and Kingman counties have the principal salt mines. Building stone of excellent quality is found in various parts of the State. Underlying the surface of Kansas are the three common formations known as the Carboniferous, Triassic and Cretaceous systems, running from north to south, and dividing the State into three belts of nearly equal extent. In the year 1900 the value of the mineral products of Kansas were: Coal, $5,516,534; zinc, $3,000,000; salt, $1,675,000; clay, $975,500; stone, $714,750; natural gas, $695,000; cement, $669,685; oil, $355,118; lead, $324,859; gypsum, $267,500; total, $14,193,946.

Railroads.— The total mileage of railway tracks operated in Kansas is 10,483. The prominent lines and systems are: Atchison, Topeka & Santa Fe; Chicago, Rock Island & Pacific; Union Pacific; Missouri Pacific; Missouri, Kansas & Texas; Saint Louis & San Francisco. The gross earnings of all Kansas railroads for the year 1902 were $28,000,000.

Banking.— There are 502 State and private banks in Kansas, with a total paid capital of $8,156,500, and deposits of $47,690,056.14. The 146 national banks have a paid capital of $9,936,400, and deposits of $50,973,729; making a total capital of $18,092,900, and total deposits of $98,663,785.14, these figures being for the year 1903. Of the total deposits it is estimated that 68 per cent is owned by farmers and stockmen.

Education.— Kansas spends more than $5,000,000 annually in the support of public schools. The school population is 500,000, the enrolment 390,000, and the average attendance 265,000. Number of teachers employed, 11,698. The percentage of illiteracy in the State is very low, being less than 3 per cent. The colleges in the State are: Baker University, Baldwin; Bethany, Lindsborg; Campbell University, Holton; Highland University, Highland; Kansas Wesleyan University, Salina; McPherson, McPherson; Midland, Atchison; Ottawa University, Ottawa; Southwest Kansas, Winfield; Saint Benedict's, Atchison; Saint John's, Salina; Saint Mary's, Saint Marys; State Agricultural, Manhattan; State Normal, Emporia; State University, Lawrence; Sisters of Bethany, Topeka; Washburn, Topeka.

Religion.— All of the religious denominations are represented, the Methodist being the largest numerically, followed in order by the Roman Catholic, Baptist, Disciples, Presbyterian, United Brethren, Congregational, Lutheran, Friends, African M. E., and Evangelical Association. The moral standard of the population is very high, Kansas being one of the few States that has adopted an amendment to its constitution prohibiting the manufacture and sale of liquor.

Newspapers and Libraries.— Kansas has 837 newspapers, including 51 dailies, 634 weeklies, 4 semi-weeklies, 116 monthlies, 14 semi-monthlies, 2 bi-monthlies, 11 quarterlies, and 5 occasionals. Of public, college and high school libraries there are 112, with a total of 525,519 volumes.

Charitable and Penal Institutions.— The institutions of this class, and the numbers of inmates of each, are: Insane asylum, Osawatomie (990); Insane asylum, Topeka (780); Insane asylum, Parsons (430); Blind asylum, Kansas City (93); Imbecile school, Winfield (210); Deaf and Dumb school, Olathe (263); Soldiers' Orphans' home, Atchison (150); Soldiers' home, Dodge City (146); State penitentiary, Lansing (1,020); Industrial reformatory, Hutchinson (260); Industrial school, girls, Beloit (125); Reform school, boys, Topeka (209). The Federal government maintains a military prison and a branch of the national soldiers' home at Leavenworth.

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James L. King,
Kansas State Librarian.

Kansas, a river in the State of Kansas, formed in Geary County by the junction of the Smoky Hill and Republican rivers. The direction of its course is mainly east; but it makes one gradual curve toward the north between Junction City, at the source, and Topeka. After a course of about 250 miles through a rich agricultural region, the river flows into the Missouri at Kansas City. The largest tributary is the Little Blue River from the north. Several small tributaries enter the Kansas from the south.

Kansas, University of, a State educational institution, situated at Lawrence, Kan. The establishment of a State university was provided for in the State constitution, and an act of the legislature incorporated the university in 1863. In 1865 a preparatory department was opened, and in 1866 one building was erected and the collegiate department established; in 1891 the preparatory department was discontinued. The present organization includes the school of arts, with classical and literary courses leading to the degree of A.B.; the school of engineering conferring the degree of B.S.; the graduate school giving advanced courses in arts and engineering; the school of law; the school of fine arts, offering courses in music, painting and elocution; the school of pharmacy; the school of medicine, offering the first two years of a regular four year medical course; and the summer session of six weeks. The university is the head of the State's public school system, and is in direct connection with the high schools, admitting those who have completed the high school course, or a similar course, without examination; no tuition is charged to residents of Kansas, and the university is open to both men and women; non-residents pay a small fee. The library in 1903 contained 40,840 volumes and a large number of pamphlets; $7,000 are annually appropriated for the purchase of books; the natural history museum contains over 250,000 specimens. In 1903 the State appropriated $50,000 for a building for the law school. Number of students (1903) 1,294; number of professors and instructors, 81.

Kansas City, Kan., city, county-seat of Wyandotte County; on the Kansas and Missouri rivers, and on the Union P., the Missouri P., the Chicago R. I. & P., the Chicago G. W., and the Atchison, T. & S. F. R.R.'s. Branches of other railroads enter the city and the nearby towns are connected by electric-trolley lines. Kansas City, Mo., opposite and east is one with Kansas City, Kan., in commercial development, but each has an independent municipal organization. A large number of bridges connect the two cities. In one part of the city, east of the Kansas River and south of the Missouri, the dividing line between the two cities is a street.

Kansas City is the largest city (1904) in the State. It was formerly known as Wyandotte, later as Kansas City, Kan., then, in 1886 the municipalities of Armourdale, Armstrong, Wyandotte, and Kansas City, united under the name of Kansas City. The area is 10½ square miles. A portion of the city is built on the river bottoms, and many fine public and private buildings are on the high bluffs and extend back on the level land. The city is on both sides of the Kansas River, so the boundary line between the States of Missouri and Kansas is in part the boundary line between the twin cities. It is noted for its live-stock and meat-packing industries; but the second largest live-stock-interest establishments in the country are on the boundary dividing the two cities. Some of its other chief industrial establishments are railroad car shops, machine shops, grain elevators, smelters, iron and steel works, flour mills, soap and candle factories, box and barrel factories, foundries, wholesale grocery houses, slaughter yards, lumber and brick yards. The slaughtering and meat packing industries have a capital of $15,000,000. In the State, in 1902, the value of the meat packing industries was $77,411,883, nearly all of which was the output of the Kansas City establishments. The manufacturing products of the city represented, in 1902, about $85,000,000. The city is the seat of Kansas City University, established in 1896 by the Methodist-Protestants; the State Institution for the Blind; College of Medicine and Surgery; Saint Margaret's and Bethany hospitals; and Carnegie Library. It has fine public parks, a magnificent high school and excellent public and parish schools. In August 1902 the city was visited by a severe storm and over 200 houses were destroyed, and a large number of public and private buildings were injured. Pop. (1890) 38,316; (1900) 51,418.

Kansas City, Mo., the second city in the State of Missouri and the 22d in population in the United States, it is located in the northwestern part of Jackson County in the angle formed by the Kansas River at its junction with the Missouri. At the intersection of 14th and Washington streets, the latitude is 39° north and the longitude is 94° 36′ 16.18″ west. The name is derived from an Indian tribe that formerly occupied and owned much of this section of the country and their title to which was extinguished in 1808, excepting a narrow strip of land 24 miles wide lying eastward of the State line from Fort Clarke, later known as Fort Osage, and extending southward to the Arkansas River. The Indians relinquished their title to this strip of land in 1825, and in it lies nearly all of Jackson County.

History.—Trading posts had been established at different points along the Missouri River from 1765 to 1799 as far upward as what is now St. Joseph, by the adventurous French trappers and traders who first explored much of this western country. The settlers who had been checked at the eastern limit of the Kansas Indian Reservation made a general rush into the newly acquired purchase. In 1826 a census was taken with the view of forming a county organization which was effected 15 December in the same year. Prior to this date, however, Daniel Morgan Boone, third son of Col. Daniel Boone, the noted pioneer, came from Kentucky in 1787 to St. Louis, where he made his home for 12 years, residing there during the summers, but in winters hunting and trapping beaver chiefly on the Big and Little Blue, in Jackson County, which he declared to be the best beaver country known. However, it was reserved for Lewis and Clarke to give the first distinct account of the country at the mouth of the Kansas River and this record made by them, is dated 26 June 1804. In 1800 Louis Barthelot, known in the early history as Grand Louis, moved from St. Charles, Mo., and settled at the mouth of the Kansas River; his wife being the first white woman to have a home on the present site of Kansas City. In 1821, Francis Chouteau established a camp opposite Randolph Bluffs. A flood in 1826 destroyed his trading post where he had made the first permanent white settlement within the corporate limits of Kansas City. These settlers were trappers, traders, laborers, and voyagers with their families. What is now the busiest part of Kansas City was called at first Westport Landing. The town of Westport was platted in 1833, and lies about four miles south of the landing on the Missouri River. Kansas City proper, that is, 250 acres of land, was laid out in town blocks and lots in 1838, but owing to a disagreement among the stockholders the project was abandoned till 1846, when a new company was formed who advertised and sold 150 lots. The town began to grow and soon had 600 inhabitants. At this time the chief agency in building up the new town was the trade with the Indians and with New Mexico. Within the short space of five years the town enjoyed almost exclusively the entire trade of New Mexico that came east to the Missouri River. This traffic was along what was known as the ‹Santa Fe Trail› (q.v.), a highway, extending at first from Franklin, Mo., on the Missouri River, to Sante Fe, New Mexico. Outside of these French settlers who had established themselves in the vicinity of what is now Kansas City, was James H. McGee, who came here in 1828, and whose family was prominently identified with the early history and development of this part of Missouri. There was not a sufficient infusion of the American spirit, however, for a number of years materially to affect the character of the early French traders who gave their attention to the extensive fur trade with the Indians as far west as the Rocky Mountains. Prior to 1828, the only means of crossing the Missouri River at this point was by canoes, but this year a ferry was established, so that the few settlers could cross the river to take their corn to a horse-mill on the north side of the river.

Topography.— The original site of Kansas City presented a rugged, precipitous and uninviting aspect,— high bluffs composed chiefly of limestone, facing the Kansas River as it sweeps in from the southwest, thence veering west of north till it empties into the Missouri River,— thence continuing along the south bank of the Missouri River four miles to the valley of the Big Blue. Through these high bluffs cut by deep ravines, in some places 200 feet deep, ran streams into the river. These gorges were the channels through which the water that fell on the upland, flowed into the Missouri. Towering upward from the two rivers, stood the precipitous bluffs with but a few hundred feet in width of bottom land on which to begin a city. Just below where the Kansas River empties into the Missouri, the bluffs for a mile or more were composed chiefly of a rich loam which has been shaved down to a moderate grade and the dirt made into brick. Owing to the changeable nature of the Missouri River in cutting through the bottom land on either side of it, the town had to be built between the river and the bluffs, along the deep ravines, and on the hills. Persons who see the city as it is now, can scarcely realize the obstructions that had to be removed in grading down streets to a level and in filling cuts. The city is topographically divided into three parts, known locally as the Hills, including all that part of the town on the highlands, extending east and south into level upland which is of great beauty; West Kansas City, including the lowlands lying between the State line on the west and the east bluff of the Kansas River, and the East Bottom which takes in all the lowland lying east of the foot of Grand Avenue where it runs to the Missouri River, were originally covered with dense forests, as indeed was the entire town site, and it was not till after the Civil War that the timber was cut off the West Bottom; since then it has become the busiest part of Kansas City in which are located the stock yards, elevators, the most of the passenger and local freight depots, and a large part of the wholesale business houses of the city. From its earliest history as Westport Landing, Kansas City was noted for its steamboat traffic. It had one of the most permanent landings on the river, — a rocky bank with a deep current in front of it. Here were landed the goods for the Mexican and Indian trade West and Southwest, and in exchange were received the wool, furs, buffalo robes, and other articles for the eastern markets. The location of the city at the most southern bend eastward in the Missouri River, even before the age of continental railroads, was the natural route through which the Sante Fe and the Indian trade of the West and Southwest must pass to be exchanged for the products these people desired.

Commerce.— The men who have contributed so much toward making Kansas City the metropolis of the Missouri Valley turned their attention to the grain and produce market of this vast region thirty years ago. From an insignificant local trade in 1871 of a few hundred thousand bushels of grain handled that year, the business has grown now to 50,000,000 bushels annually. In 1902 there were received 24,018,400 bushels of wheat, 16,092,800 bushels of corn, 8,358,000 bushels of oats, 376,800 bushels of rye, 33,000 bushels of barley, 99,200 bushels of flaxseed, 15,060 tons of bran, and 146,320 tons of hay, while the export of grain was 36,206,400 bushels. In the elevators and mills the storage capacity is 6,320,000 bushels, and the handling capacity,— 1,518,000 bushels, while the total mill products aggregate 1,692,854 barrels. The numerous grain elevators enable the railroads to handle and transport grain to other points with facility and despatch. Its title as the «greatest winter wheat market», is known in foreign countries to which millions of bushels of Kansas, Nebraska, Missouri, and Oklahoma grain are annually shipped by Kansas City exporters. It is not alone as a centre for the accumulation of wheat, corn, and oats that it is famous, but also as a distributing point for cereals to be consumed in the south, east, and in foreign markets. The flour and meal manufactured by the half dozen local mills also go abroad in large quantities, as well as to many parts of the United States. The milling business is one of the rapidly growing industries. Enormous capital is involved in the transaction of the grain business. In elevators alone the investments run into millions of dollars. The growth of this market since its inception in 1871 has been marked by a uniform and rapid progress until it is one of the most important grain markets in the United States. Kansas City's bank clearings are more than $1,000,000,000 annually, and the deposits exceed $70,000,000 in 19 different banks, having a paid up capital of $6,000,000. At present Kansas City occupies the second position in the world as the leading live stock market. The stock yards are the most convenient for the quick and safe handling of stock in the United States. The aggregate value of live stock handled last year was $126,250,000. The packing-houses are eight in number, having a combined capacity for daily slaughter of 12,300 cattle, 34,500 hogs, and 14,200 sheep. These products are marketed in every civilized country. The stock yards cover 200 acres, containing 1,200 cattle pens, 625 hog pens, and 300 sheep pens. The receipts of cattle at the stock yards for 1902 were 2,279,166; hogs 2,279,337; sheep 1,154,084; horses and mules 76,844; shipped in 117,730 cars. The cost of the packing plants is estimated at $12,000,000, and the number of hands employed approximates 12,000; while the annual value of the output is over $150,000,000. In 1902 the wholesale trade of Kansas City exceeded $100,000,000, and the retail trade $45,000,000. Seventy firms did a business of $16,000,000 in agricultural implements. The geographical location of Kansas City with respect to other centres of trade is represented as follows: — distance to St. Louis 273 miles, Chicago 428 miles, Cincinnati 614 miles, Omaha 205 miles, St. Joseph 63 miles, St. Paul 515 miles, Minneapolis 518 miles, Albany 1,267 miles, Buffalo 981 miles, Boston

1,459 miles, New York 1,303 miles, Philadelphia 1,213 miles, Washington 1,267 miles, Pittsburg 896 miles, Atlanta 902 miles, Galveston 962 miles, New Orleans 942 miles, Denver 633 miles, Los Angeles 1,805 miles, San Francisco 2,093 miles, Portland, Ore., 2,050 miles.

Railroads.— Twenty different railroad systems enter the city, operating 33 different lines, representing more than 50,000 miles in length. The magnitude of this business may be inferred from the fact that 200 passenger trains arrive and depart daily from the depots, while 350 freight trains come into and go out of the freight yards, thus rendering Kansas City one of the greatest and most important transfer and distributing points on the continent, as well as one of the greatest express centres. Two railroad bridges span the Missouri River and a third is in process of construction. In telegraphic communication Kansas City is only surpassed by New York and Chicago in the number of wires entering the city and in the volume of business transacted.

Manufactures.— It has only been of recent years that manufacturing industries have sprung up along various lines in Kansas City. The energies of the business men were directed for two decades after the close of the Civil War to the live stock and agricultural trade, and in supplying the farmers with agricultural implements. Owing to the great deposits of bituminous coal in this vicinity and the abundance of raw material out of which so many products can be economically and rapidly manufactured, new industries are springing up each year. There are more than 600 factories in operation, employing 30,000 hands, who make $200,000,000 worth of merchandise annually. The minor manufactures represent an invested capital of $26,437,307, and output of $36,527,392, employing more than 16,000 persons.

Government.— At the head of the city government is the mayor, whose term of service is two years, upper house of aldermen, consisting of 14 members, whose term of service is four years, elected at large; lower house councilmen, 14 members, term of service two years; city treasurer, auditor, police judge, and city attorney, elected biennially. The other officers are nominated by the mayor and confirmed by the upper house. The board of park commissioners, the chief of the fire department, engineer, city physician, superintendent of buildings, superintendent of streets, plumbing inspector, superintendent of workhouse, etc., are appointed by the mayor and confirmed by the upper house. The board of police commissioners is composed of three members, the mayor, and two citizens appointed by the governor.

Public Service.— The assessed valuation of property is $93,260,070, an increase of more than $30,000,000 since 1893, and this valuation represents about one fourth of the cash value. The municipal indebtedness of the city is $5,331,900.00, the greater part of which is for the waterworks plant. The city is also the owner of much valuable property, including the city hall, hospital, the workhouse grounds, and parks. The comptroller's last report shows the expenditures for operating expenses of the several departments: Officers and employees, $99,000.00; police department, $280,000.00; fire and fire patrol, $249,000.00; hospital and board of health, $35,000.00; workhouse, $17,000.00; printing and stationery, $18,000.00; board of public works, $200,000.00; gas and street lighting, $100,000.00; parks, $48,000.00; garbage, $20,000.00; expense, $56,000.00; water department, $453,409.00. The city purchased the waterworks in 1895. The water used is obtained from the Missouri River at Quindaro, a pumping station eight miles up the river. During 1902 there were 19 miles, 1,667 feet of water mains laid, and 283 fire hydrants placed. The street railway service, which permeates all parts of the city, connects with suburban trolley lines, reaching Independence, Leavenworth and intermediate stations, and affords a means of rapid transit for a quarter of a million of people at a nominal expense. The revenue to support the municipal government is derived from taxes levied annually on personal and real property, and the annual tax levy is about 12½ miles on the dollar's valuation. The city has an area of 26.3 square miles, with 452 miles of streets, of which 117.55 miles are paved with asphalt, 39.65 miles with vitrified brick, 2.24 miles with stone blocks, and 39.17 miles with macadam.

Population.— The following figures show the steady progress with which year by year Kansas City has advanced to her proud position as the largest and most important city in the Missouri Valley. The population in 1838 was 300; (1846), 700; (1857), 2,000; (1860), 4,418; (1870), 32,260; (1880), 55,785; (1890), 132,716; (1900), 163,750. The death rate is exceedingly low, being 12.84 of every 1,000 inhabitants.

Religion.—In 1825 the Jesuit fathers organized a mission near the mouth of the Kansas River, and built a small log house near the foot of what is now Troost Avenue, just below the bluff, where they worshipped for several years. Father Roux came in 1830 and took charge of the congregation, and five years later he purchased from a Canadian Frenchman a tract of 40 acres upon the hill adjoining the present site of the Roman Catholic cathedral and the bishop's residence. A part of this tract was cleared of the heavy timber, and a log church was erected, and here the congregation, composed chiefly of French-Canadians and half-breeds, scattered over more than 400 square miles, worshipped for 20 years. As soon as the Indian land was purchased settlers poured into it from the settlements east of it. Other religious denominations came till at the present time the number of churches in Kansas City is 180. The following will show the number of religious organizations: Baptist (32), Christians (15), Christian Scientist (3), Congregational (10), Episcopal (8), Evangelical (4), Hebrew (4), Lutheran (4), Methodist Episcopal (25), Methodist Episcopal South (8), Presbyterians (16), Reformed (1), Roman Catholic (20), Universalists (3), Unitarians (1), miscellaneous (23).

Public Schools.— The present public school system was organized 1 Aug. 1867, and in October of that year the schools were formally opened in rented rooms which had been hastily and scantily furnished. Bonds were issued, sites were purchased, and school houses erected. Sixteen teachers were employed during the first year, and about 1,200 pupils were enrolled. From this small beginning the school district has been enlarged till there are 52 different public school buildings, including sites valued at $3,347,390, with an enrolment of 29,591 pupils, of whom 3,700 are in the four high schools, being the largest per cent of high school pupils in any city in the United States having a population of more than 100,000 inhabitants. There are 718 teachers employed in the public schools. The public library, in which there are 43 persons employed, is also under the control of the board of education. In addition to the public school system, there are 60 other schools of various kinds, including private and parochial schools, medical and dental colleges, commercial schools, a school of oratory, fine arts, and an excellent school of law. Politics has been kept out of the city schools, and this is due largely to the plan suggested in 1876, when Superintendent Greenwood proposed that a non-partisan board composed of three Republicans and three Democrats be elected, and the board has been thus kept ever since. There are 850 persons employed in various capacities in the public schools and the public library, and the cost of operating the schools and public library is $663,979.52. It is a noteworthy fact that since the organization of the board of education 36 years ago with six men serving all the time, only 29 different men have composed its membership. Two members are elected every two years, and the term of service is six years. Kansas City was the first city in the United States to make its school board non-partisan.

Parks and Cemeteries.— The city has spent nearly $6,000,000 for its parks, which contain 2,089.9 acres, divided into six park districts: The North Park District, 219.39 acres; South Park District, 148.40 acres; West Park District, 165.07 acres; East Park District, 66.24 acres; Westport District 136.80 acres; Swope Park District, 1,354.00 acres. The system is divided into 19 different parks, nearly all of which are connected by an extensive system of 15 boulevards in connection with parkways, speedways, and pleasure resorts. Located in different parts of the city and easy of access are eight cemeteries, the largest of which are Union, Elmwood, St. Mary's and Forest Hill.

Public Buildings.— Among the public buildings are Convention Hall, which will seat 25,000 persons; city hall, county court-house, post-office, public library, Board of Trade building, New York Life building, Central high school, and the Manual Training high school, four large theatres, and also libraries and reading rooms. The public library, art gallery and museum, located at Ninth and Locust Streets, cost $250,000, and is under the management of the board of education. There are 90,000 volumes in the library, paintings in the art gallery of the value of $200,000, and a rare collection of natural history specimens in the museum, especially rich in Indian curios. There are 30 hospitals, asylums and homes. A large per cent of the citizens own their own homes, which adds to the civic pride and the material prosperity of the city.

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J. M. Greenwood,
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Kansas-Nebraska Bill, a bill passed by Congress in 1854; the last of three compromises between the aggressive slavery expansionists of the South and their antislavery opponents in the North. It is famous because, by its repeal of the first, the Missouri Compromise (q.v.), it precipitated the organization and rapid growth of the Republican party, and especially incited the radical abolition sentiment of the North to aggressive action, thus causing or hastening the secession of the Southern States and the resulting Civil War. Its passage was mainly due to the leadership of Stephen A. Douglas (q.v.), of Illinois. The second compromise occurred when New Mexico and Utah came to be organized as Territories in 1850. The compromise consisted of the provision, which was also one of the two principal features of the Kansas-Nebraska Bill, that when these Territories came to be admitted as States they should come in with or without slavery as their constitutions, which would be framed by the people, might prescribe. The strengthening of the fugitive-slave law was the other feature of this compromise. This settlement of 1850 was the first step toward the final compromise, the Kansas-Nebraska Bill.

As early as 1844 Stephen A. Douglas introduced in the House of Representatives a bill «to establish the Territory of Nebraska,» and Douglas afterward asserted that he took this method of serving notice on the secretary of war to discontinue using that Territory as the dumping-ground for Indians. In 1848 Douglas, now chairman of the Committee on Territories in the Senate, introduced in that body a bill for the same purpose. In December 1851 Willard P. Hall of Missouri gave notice in the House of a bill for the organization of Nebraska; but none of these bills got beyond the committee stage. On 2 Feb. 1853 William A. Richardson of Illinois, the leading lieutenant of Douglas in the House, introduced still another bill «to organize the Territory of Nebraska.» This bill, which, like all of its predecessors in question, made no reference to slavery, passed the House, 10 Feb. 1853; but in spite of the strenuous endeavors of Douglas in its behalf, it failed of consideration in the Senate. The long debate over this bill in the House disclosed clearly that the primary object of members from the Northwest, who were its champions, was to protect and encourage travel over the great upper line to the Pacific coast, and make way for the ultimate construction of the already much talked of Pacific railroad; while members from the South, and especially from the Southwest, were bent on keeping this northern region open for the colonization of their undesirable Indian tribes, with the purpose of securing travel and the railroad to the Pacific coast through their own country.

Early in the session of the next Congress — 14 Dec. 1853 — Senator Dodge of Iowa, a coadjutor of Douglas in this enterprise, introduced «a bill to organize the Territory of Nebraska.» This bill also originally contained no reference to slavery; but by amendment it became the famous Kansas-Nebraska Bill, which finally became a law 30 May 1854. On 4 Jan. 1854 the Senate Committee on Territories, through Douglas, reported a substitute for the Dodge bill which contained the compromise provision of the Utah and New Mexico acts; namely, that «the Territory of Nebraska, or any portion of the same, when admitted as a State or States, shall be received into the Union with or without slavery, as their constitutions may prescribe at the time of their admission.» In his famous report, accompanying this bill, Douglas points out that «eminent statesmen hold that Congress is invested with no rightful authority to legislate upon the subject of slavery in the Territories, and that therefore the 8th section of the Missouri Compromise is null and void; while the prevailing sentiment in large sections of the Union sustains the doctrine that the Constitution of the United States secures to every citizen the inalienable right to move into any of the Territories with his property of whatever kind or description, and to hold and enjoy the same under the sanction of law.» The report pointed out also that under this section it was a disputed point whether slavery was prohibited in the new country by valid enactment, and advised against the undertaking by Congress to decide these disputed questions. The bill was further amended so as to provide that all questions pertaining to slavery in the Territories and the new States to be formed therefrom be left to the decision of the people residing therein; that cases involving title to slaves be left to the courts; and that the provision of the Constitution in respect to fugitive slaves should be carried out in the Territories the same as in the States. On 16 January Senator Dixon of Kentucky offered an amendment, which was accepted by Douglas, expressly repealing the slavery restriction clause of the Missouri Compromise; and the bill passed with these amendments.

The repeal of the Missouri Compromise restriction was hotly denounced by the anti-slavery element, and was seized with alacrity and used with great effect as a political weapon by antislavery agitators and politicians; and Douglas was also savagely denounced for selfish subserviency to the South for the sake of winning the Presidency. But Douglas and his friends ably and plausibly defended the repeal of the Missouri restriction on the ground that it was consistent with and the natural sequence of the popular sovereignty compromise of 1850; that there was danger that it would be held unconstitutional by the courts; that there was ground for fear that Dixon's amendment, as he proposed it, would legislate slavery into the Territories, and that on the whole Douglas, as leader of the dominant party, and having regard to the preservation of the Union as well as to the vexatious slavery question, made the safest and best terms practicable in securing the right of the people to decide the question of slavery for themselves. In the course of the debate on the bill Douglas, as well as Thomas H. Benton, who was opposed to the repeal of the Missouri restriction, insisted that, left to the people, slavery could never be successfully introduced into Kansas or Nebraska.

Impartial consideration of all the facts bearing upon this phase of the question leaves no ground for the charge preferred by leading historians and others that the proposed Nebraska Territory was at last divided into Kansas and Nebraska at the instance of Southern members to gain opportunity to make Kansas a slave State. The «provisional» delegate in Congress at that time from Nebraska, well known by still living contemporary citizens of the Territory as a reliable man, in his published account of his part in the transaction asserts that, before he went to Washington to attend the session of December 1853, it was agreed among the enterprising citizens of western Iowa — there were then no citizens of Nebraska — who were pushing the project for Territorial organization, that division was desirable so that one of the Territories might be directly opposite their State, and that he urged this change upon Douglas, who assented to it. In the debate on this feature of the bill Senator Dodge of antislavery Iowa and Representative Henn of the Iowa district bordering on Nebraska urged the division for the frankly expressed reasons that it would be to their advantage to have the capital of an important commonwealth opposite them, and would aid in securing the route of the Pacific railroad through their part of the country; while the representatives of slaveholding Missouri were indifferent to the question of division. Douglas himself specified the wish of the Iowa members as the basis of his reason for the division of the Territory. It is significant, moreover, that Douglas had always stood for a northern Territory, as shown by his original bills of 1844 and 1848. It is a very significant fact that the northern boundary of the Territory in each of these bills was the 43d parallel, which is identical with the northern boundary of the present State; and that the southern boundary described in the bill of 1848 was also identical with the same boundary of the State, while the southern boundary described in the bill of 1844 was only two degrees farther south. These and other incidents of a like kind show a remarkable prescience and a persistent consistency in interpreting the wishes and interests of those most directly interested in the Territory opposite the State of Iowa and on the line of the great natural highway connecting Chicago, the commercial mart of the Northwest, and the home of Douglas, with the Pacific coast. Mr. Henn in resenting «the unjust charge made on this floor by several that it (the proposed division) was the scheme of Southern men whereby one of the States to be formed out of these Territories was to be a slave State,» put the case concisely: «The bill is of more practical importance to the State of Iowa and the people I represent than to any other State or constituency in the Union.»

The Kansas-Nebraska Bill was also distinguished by more completely safeguarding the rights of Indian occupants than any previous Territorial organic acts had done; and likewise in being the first Territorial bill of that class which provided for the choice of the members of both houses of the legislature by popular election, to drop the provision requiring the submission of all acts of the legislative assembly to Congress for approval. The Territory organized by this bill comprised all of the unorganized part of the Louisiana Purchase north of the 37th parallel, which comprised all of the Purchase north of that line except the States of Iowa and Missouri, and that part of the Territory of Minnesota between the Mississippi River on the east and the Missouri and White Earth rivers on the south and west. ALBERT WATKINS,

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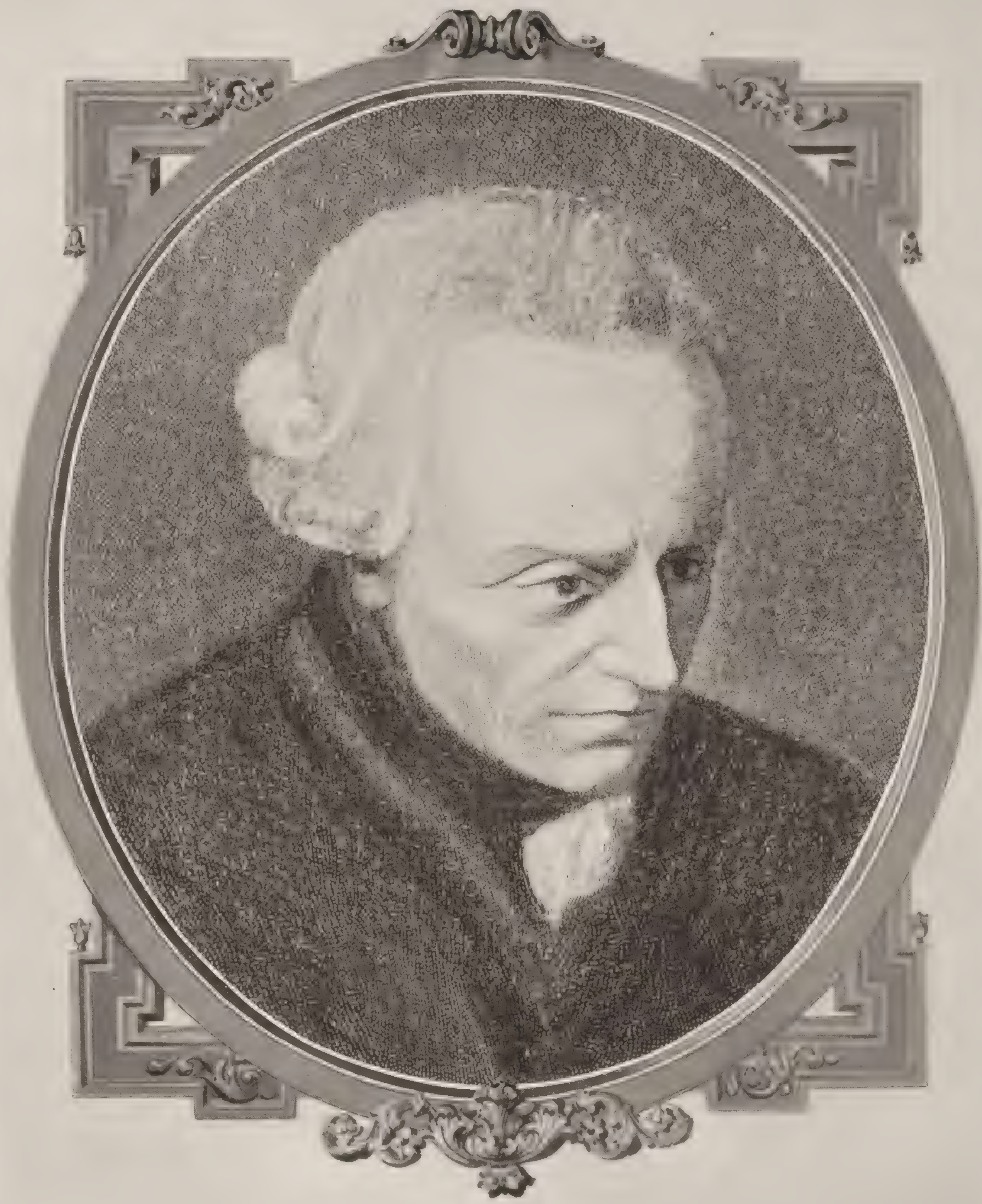
Kansas State Agricultural College, a coeducational institution, located at Manhattan, Kan.; established in 1863 by the presentation to the State of Bluemont College. The college has excellent opportunities for experimental works as it cultivates 544 acres of land; 323 acres of which is owned by the college, and 221 acres leased. It is not a classical school; the departments, the courses of which lead to the degree of bachelor of science, are agriculture, English, mechanical and electrical engineering, general and domestic science. It has also a preparatory department, a music school, and a trade school. It has several short courses, as: dairying, 12 weeks in winter; agriculture and mechanics, 12 weeks in winter, for two years; horticulture and mechanics, 12 weeks in winter, for two years; and domestic science, 12 weeks in fall, for two years. The faculty numbered in 1902, 59, and the number of pupils in attendance was 1,400. The school has no income from tuitions; but receives from the State $22,700; from the «Land Grant Fund» of 1862, $32,300; and by the United States Appropriation Act of 30 Aug. 1890, $25,000, making a total annual revenue of $80,000. It received also for the experiment station (United States Act of 2 March 1887) the sum of $15,000. A weekly periodical, devoted to the interests of the subjects taught in the school, and called the ‹Industrialist,› is published by the faculty. The library has about 25,000 volumes, and the value of the college property is about $600,000.

Kansas Wesleyan University, a coeducational institution, founded in 1886 under the auspices of the Methodist Episcopal Church, at Salina, Kan. In 1905 there were connected with the school 35 professors and instructors, and pupils in attendance 1,015. There were in the library 6,000 volumes.

Kant, Immanuel, one of the greatest of modern philosophers: b. Konigsberg, Eastern Prussia, 1724; d. there 1804. His father, who spelled his name Cant, was a poor saddler, and was said to be of Scottish origin, though this is denied by some authorities. Kant was educated in his native city at the Collegium Fredericianum and the University. After the completion of his studies at the University in 1746, he was a tutor in private families until 1755, when he became a teacher in the University. He did not receive a professorship, however, until 1770, when he was appointed to the chair of logic and metaphysics. In 1797 he retired from teaching. In the University he lectured at first on mathematics and physics in addition to the various philosophical subjects, and later added courses on physical geography and anthropology, lecturing also occasionally on pedagogy. He was small and weak physically; but by imposing upon himself a strict regimen he was able to accomplish a vast amount of work, and to live to be eighty years of age.

Kant's Critical Philosophy is contained in his three Critiques,— ‹Kritik der reinen Vernunft› (1781) (Critique of Pure Reason, most important of all); ‹Kritik der practischen Vernunft› (1788) (Critique of Practical Reason), and ‹Kritik der Urtheilskraft› (1790) (Critique of Judgment). In these works Kant passed beyond the Rationalism (q.v.) of Wolff, in which he had been educated, and the Empiricism (q.v.) of Hume (q.v.), to which he had for a time been inclined, and originated the transcendental method of philosophy. For him there is no knowledge without experience; but experience is a compound, and implies not only a matter given in sensation, but also forms and principles of arrangement and synthesis which come from the mind. Experience gets its character from the knowing mind, and to understand the objects of ordinary experience it is necessary to know what forms and principles the mind employs in constructing them. Kant's transcendental inquiry, then, asks what the nature of the mind must be, our experience being as it is. He finds that experience can be understood only on the assumption that the mind has certain *a priori* forms and principles which belong to its very nature. These Kant calls transcendental elements of experience, and the procedure by means of which he attempts to discover these and demonstrate their application in experience he names a transcendental method of inquiry. It is necessary carefully to distinguish Kant's use of «transcendental» from what he calls «transcendent.» As we have seen, transcendental elements do not themselves depend upon experience, but belong to the mind as the forms and principles which all experience presupposes, and through which alone it is possible. The transcendent, on the other hand, is that which lies beyond the sphere of all possible experience, and consequently that which can never be known. Kant's purpose in the ‹Critique of Pure Reason› is at once to discover the transcendental forms of experience, and thus justify its validity, and to criticize and overthrow the false pretense of knowledge which professes to deal with transcendent objects. With respect to the first of these purposes Kant's undertaking was epoch-making, for he introduced a change in the point of view which he himself likens to that which Copernicus effected in astronomy. Whereas it had previously been held that the object had a fixed form and constitution which the mind in knowing had to passively copy, Kant teaches that objects to be known at all must conform to the concepts and principles of the knowing intelligence. In order to understand the nature of experience, then, it is necessary to ask what are the mind's ways of knowing, and what are the *a priori* forms and concepts under which it brings objects? In answering this question Kant makes a sharp division between perceptive knowledge and knowledge gained through concepts. It is true that he goes on to break down the grounds for this distinction by showing that neither perception nor thought can give knowledge apart from the other,—that «concepts without perceptions are empty, and perceptions without concepts are blind.» Nevertheless, he himself always maintains this dualism in the constitution of experience. The transcendental basis of each form of knowledge is therefore investigated under a separate division of Kant's work, that of Perception in the ‹Transcendental Aesthetic,› and that of conceptual experience in the ‹Transcendental Analytic.› In Perception, the transcendental forms are found to be space and time. Space and time are not objective entities existing apart from the mind; nor are they concepts or general ideas. Kant shows that perceptive experience such as ours is only possible if we regard space and time as belonging to the mind as forms of perceptive arrangement. Space and time do not belong to objects in themselves, therefore, apart from their being known, but are the universal forms under which all perceptive experience is known. But, for experience, ob-



IMMANUEL KANT.

jects must be *thought* as well as perceived. That is to say, what we call experience is not a mere series of perceptively arranged objects, but a unity whose parts have been systematized by thought in accordance with certain principles or points of view which it supplies. These transcendental principles, or points of view, Kant calls the Categories of the Understanding. Since to think is to judge, in order to discover the complete list of Categories he falls back upon Aristotle's classification of judgments under the headings of Quantity, Quality, Relation, and Modality. To each of these general divisions again three categories belong, so that Kant presents his list of twelve categories with a great show of system and completeness, which however has no real warrant. Apart from the fact that there are several obvious repetitions and some omissions in the list, Kant does not find any organic relation between the different categories, such as might be shown to exist, for example, by exhibiting them as successive stages in the evolution of thought. It is true that Kant tells us that all of the categories are subordinated to the central unity of consciousness, the «transcendental Ego» or «transcendental unity of Apperception,» but he never explains concretely the relation of the various categories to each other and to this unity. The «transcendental Ego,» the supreme category, is not a thing or an unchanging soul-substance, but an immanent and ever active principle of organization. It is impossible to make an object of it, or to describe it as something existing by itself; for it exists only in relation to experience. It is at once the persupposition and the necessary correlate of a coherent and unitary experience of objects, a universal principle, not a particular substance.

The world of objects which is thus constituted through the forms of perception and the categories is only phenomenal; that is, only the world as it appears to us, not the world of things-in-themselves. These things-in-themselves always remain for Kant a real background with which he contrasts the world of phenomena. We can *know* only phenomena, but we are obliged to *think* things-in-themselves as existing, though we cannot give them any positive determination. Kant seems to regard them as the causes of the sensations which arise in the mind. But, since casuality is a category supplied by the mind, it can only apply to objects as known, and hence cannot consistently be taken to apply to things-in-themselves. It is very difficult to make Kant consistent on this point. It is certain that he continues to contrast the world as known with a more ultimate form of reality which remains beyond the sphere of knowledge but whose certainty is guaranteed by faith or practical reason; and it is equally certain that the spirit of his philosophy tends to break down the very opposition which he has set up so carefully.

The Understanding (*der Verstand*). as Kant says, is the faculty of rules. It is its function to reflect on the objects presented to it by sense-perception in order to find the rule or category according to which one part can be united to another. But its objects must always be given to it in sense-perception, and it can do nothing but unite one object as given in space and time with another according to some general rule. From the very nature of the case, then, it can never complete its task and rise to deal with and determine the nature of a real totality. Its concern is always with phenomena, with objects in space and time and their synthesis; and, as these extend indefinitely, the understanding, therefore, never can find rest in the establishment of a completed totality. Now for Kant the limits of the Understanding are the limits of valid knowledge. We cannot know anything but phenomena and the laws of their connection. But there is another theoretical faculty which he opposes to Understanding under the name of Reason (*die Vernunft*). This is the great source of illusion. Reason transcends the sphere of the Understanding and attempts to find for objects an unconditioned basis in the ideal or Idea of an absolute and non-phenomenal unity. In this it has a certain justification as affording an ideal of unity towards which the Understanding must always strive in its investigations; but it leads to illusion when this Idea of a unity is taken as a real object of knowledge and positive determinations are ascribed to it. Kant proceeds to apply this criticism in detail to the so-called sciences of the Rationalism (q. v.) of his day,—psychology, cosmology, and theology,—pointing out that all these are illusory, since they are based on concepts of objects (the soul, the world, God) that lie beyond the sphere of possible experience. The conclusions drawn by rational psychology regarding the simplicity and immortality of the soul Kant rejects as «paralogisms.» For, as he shows, we have no valid concept of the soul as a thing or substance, upon which to base our conclusions. The ‘transcendental ego’ is not something which can be determined as a soul-substance or an object of a particular kind. It is always subject and never object,—the universal presupposition of experience, not an experienced thing; for an object can only be known when a sensation corresponding to it is given or may be given in experience. All the wisdom of rational psychology, which is based on the pure concept of the soul, Kant therefore rejects. In the same way he shows that over against the various theses demonstrated by rational cosmology regarding the nature of the world as a whole (that it is limited in time and space; is composed of simple parts; that in addition to natural causality it admits of free causality; that it has a necessary ground), the antithesis or direct contradictory of each proposition can be demonstrated with equal cogency. The inevitable contradictions which thus result in the field of cosmology when we attempt to go beyond possible experience and make assertions regarding the world as a whole, Kant names the «Antinomies of Pure Reason.» Those regarding the extension and divisibility of the world disappear as soon as we remember that space and time do not belong to things-in-themselves, but are only forms of perceptive experience. With regard to the possibility of freedom Kant points out that although the principle of natural causation must hold without exception of phenomena, the question still remains open whether freedom may not find place in the intelligible world of things-in-themselves. This question cannot be answered on theoretical grounds but remains a mere possibility which can only be settled by appealing to practical considerations. Kant's criticism of theology is still more famous. He finds that all the proofs for the existence of God may be classified as the Ontological, the Cosmological, and the Teleological. He shows that none of these proofs is valid from a logical point of view, and that the existence of God is therefore incapable of theoretical demonstration.

These negative conclusions are not, however, the goal of Kant's inquiry. As he himself said, he sought only to remove the false pretense of knowledge in order to prepare the way for rational faith. Knowledge, as we have seen, deals only with phenomena; regarding the nature of ultimate realty cognitive experience is silent. In the ‹Critique of Practical Reason› Kant shows that our experience as practical and moral beings, which recognizes an absolute obligation to obey the moral law, has implicit in it certain presuppositions regarding our own nature and the nature of ultimate reality. In the first place, our recognition of the absolute authority of the moral law and our obligation to obey it, presupposes that we have the power to do so. Moral obligation would have no meaning for a being whose will was not free. In the same way, Kant shows that moral experience implies a belief in God as the moral governor of the universe, and in immortality as affording an opportunity for the demands of the moral law to be progressively realized. Thus these problems which cannot be demonstrated on theoretical grounds find their solution from the point of view of practical experience. God, Freedom, and Immorality are never matters of knowledge or science, but moral certainties or matters of faith. One constantly finds in Kant's writings a tendency to make sharp divisions, to separate experience into different spheres. He contrasts and opposes to each other a «phenomenal» and an «intelligible» world, and again, «knowledge» and «faith» without any effort to bring these divisions again into relation. It is true that in the ‹Critique of Judgment,› (where he discusses the nature of æsthetic experience, and the question whether we can apply the conception of purpose to the interpretation of the organic world). Kant does at least suggest a synthesis of the two opposing points of view. The spirit of his philosophy really transcends the opposition between phenomena that can only be *known* through mechanical categories, and an unknowable ultimate realty where we may *believe* that freedom and the realization of ideals are possible. But, even in the third ‹Critique› his formal treatment is unsatisfactory, and at least the letter of his treatment appears to maintain the opposition to the end.

In addition to the three Critiques, Kant's most important works are the ‹General History of Nature and Theory of the Heavens› (1755), in which Laplace's mechanical account of the evolution of the planetary systems is anticipated; (translation by W. Hastie with an introduction under the title of ‹Kant's Cosmogony› (1900); the ‹Dissertation› of 1770, which inaugurates the critical movement; and the ‹Prolegomena,› published in 1783, as a popular exposition and defence of the first ‹Critique.›

There is an immense bibliography, largely German, of works on Kant, which is given in Ueberweg-Heinze's ‹History of Philosophy.› The general reader may consult, in English, the standard histories of philosophy and the following works: F. Paulson, ‹Kant's Life and Doctrine› (1902); E. Caird, ‹The Critical Philosophy of Kant› (2 vols., 1889); W. Wallace, ‹Kant› (in Blackwood's ‹Philosophical Classics›); J. Watson, ‹Kant and His English Critics› (1881). JAMES E. CREIGHTON,

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Kantemir, Antiokh Dmitrievich, Russian diplomat and author; b. Constantinople, 1708; d. Paris, France, 1744. He was the son of the Hospodar of Moldavia, who emigrated to Russia in 1711 after the Peace of Pruth. He was fully educated and while still young, through the favor of Peter the Great, became an officer in the Preobrazhenski Regiment. In 1733 he became minister-resident in London, and in 1738 ambassador to France at Paris, where he became associated with the leading thinkers and writers of the day. It was probably this association which led Kantemir to use the French style in his writings, as was also done by the majority of the Russian writers of the 18th century. He was one of the first writers of the pseudo-classical period of Russian literature and brought to it, particularly in his verses, a syllabic metre which contains stress-accents only and had no short or long vowels. As a youth he had become known as a brilliant satirist, and later reputation largely rests on nine satires, all of which were both fresh and vigorous. The most widely known of these satires is ‹To My Intellect.› He was also well known as a translator of the odes of Horace, Juvenal, Anacreon, and others. His works were published by Yefremoff, with biography (2 vols., Saint Petersburg 1867), and also translated into German by Spilcker (Berlin 1752), and into French (1749).

Kaolin, a hydrated silicate of alumina or clay, which burns to a pure white and is suitable for the manufacture of white earthenware and porcelain. It is formed as a residual deposit of the decomposition of feldspar. The chief deposits are in Cornwall, England. See CLAY, CHINA, PORCELAIN, POTTERY, ETC.

Kapnist, Vasilii Yakovlevitch, Russian poet, author, and satirist: b. Obukhovka, government of Poltava, 1756 or 1757; d. there 28 Oct. 1824. He was a member of the Russian Academy and was the author of several odes, epigrams and satirical poems. His chief and most successful work was the play ‹Yabeda› («Chicanery»), a satire on the prevalent corruption and abuse of justice. The play achieved an immediate success, but was suppressed by Czar Paul and nearly caused the author's exile to Siberia. It was subsequently translated into French (Ghent, 1886) but was not sold to any great extent. Of his other plays, only two, the tragedy, ‹Antigone› and his rendering of Molière's ‹Sqanarelle,› were of particular merit, but neither achieved a marked degree of success. There were three editions of Kapnist's works printed, two during his lifetime and the third in 1849.

Kapok', a kind of silk-cotton. See SILK-COTTON TREE.

Kapp, Friedrich, frēd'rĭh käp, German biographer and historian: b. in Hamm, Westphalia, 13 April 1824; d. Berlin 27 Oct. 1884. He left Germany at the outbreak of the revolution of 1848, and settling in New York in 1850, took active part in American politics. In 1860 he was a presidential elector and in 1867 commissary of education. Returning to Germany in 1870, he entered the Reichstag in 1872. His works, which mainly refer to the United States, include ‘American Soldier Traffic by German Princes’ (1864); ‘German Emigration to America’ (1868); ‘History of the German Migration into America’ (1867); ‘Frederick the Great and the United States’ (1871); etc.

Kara (kä′rä) **Sea,** an arm of the Arctic Ocean indenting the north coast of Siberia, between Nova Zembla and Yalmal Peninsula. The Yenisei and Ob rivers flow into this sea. Since 1875 when Nordenskjöld made his voyage in the Vega, several navigators have sailed on this sea and found that it is not, as once supposed, ice-locked all the year; but is open in July and August. Consult: Hovgaard, an article in the ‘Scottish Geographical Magazine’ (January 1890) on a route to the North Pole.

Karadzic, kä-rä′jēch, **Vuk Stefánovic,** Servian author: b. Trschitsch, Servia, 7 Nov. 1787; d. Vienna 7 Feb. 1864. The two great works of his life were the reformation of the Servian literary language (which, up to his time has been a very debased medium, being either rude Slavonian or a hybrid jumble of Serb and Slavonian), and the publication of the ‘Popular Serb Songs’ (4 vols. 1814–33; 3d ed. 1841–46). His epoch-making Serbian-German-Latin ‘Dictionary’ appeared in 1818. The songs attracted widespread attention, and were translated into every European tongue. He was the founder of modern Servian literature.

Karageorgevitch, kä-rä-gā-org′a-vēch, Prince **Peter,** king of Servia: b. Belgrade 1846. He was educated at Belgrade, but when his father, Alexander Karageorgevitch, was driven from the throne in 1858, he became a soldier of fortune and pretender. After training in France at the St. Cyr school and the Military staff college, he fought in the foreign legion during the Franco-Prussian war. Later he took part in Herzegovina's struggle for liberty. Upon the assassination of Alexander I. Obrenovitch in 1903, Prince Peter was proclaimed king of Servia by the army. See Servia, *History.*

Ka′raites. See Jewish Sects; Judaism — The Karaites.

Karankawan, ka-răn′ka-wăn, an American Indian tribe, now extinct. They formerly lived along the Texas coast in the vicinity of Matagorda Bay, and originally came from Central America. They were first mentioned in 1687, by the French explorer Joutel, and were regarded as cannibals. They were uncompromisingly hostile to the whites. In 1843, fifty survivors of the race removed to Mexico, where in 1858 the last of them were exterminated by Mexican ranchers.

Karaveloff, kä-rä-vā′lŏf, **Petko** (Peter), Bulgarian statesman: b. Kalofer 1840; d. Sofia 7 Feb. 1903. He studied in Moscow, in 1878, became vice-governor of Vidin, in 1879 was a founder of the Liberal party, in 1880 was appointed minister of finance, and later in that year assumed the premiership. After the *coup d'état* of Prince Alexander, he retired to Eastern Rumelia, but on the restoration of the constitution in 1883 returned, and in 1884–6 was again premier. In 1886 he was appointed to the regency on the abdication of Alexander (7 Sept.), but after the election of Ferdinand (7 July 1887) his power waned; in 1892 he was sentenced to a five-years' imprisonment for conspiracy. Pardoned, however, he was elected to the Sobranye, or national assembly, and from 4 March 1901 to January 1902 he was premier, his resignation being compelled by opposition to his conclusion of a French loan.

Karawala. See Carawala.

Karli, kär′lē, a Buddhist cave-temple of India, rich in sculpture, and divided like a church into nave and aisles, with an apse. The temple probably belongs to the 1st century.

Karlowitz, kär′lō vĭts, or **Carlovitz,** a town of the Austrian empire, on the frontier of Slavonia. The great vine mountain in the vicinity yields the best and strongest qualities of Hungarian wines. A peace was concluded here in 1699, between Austria, Poland, Russia, Venice, and Turkey. In 1848–9, Karlowitz was the focus of the Servian rebellion against Hungary, and the theatre of collision between the Servians and the Magyars, and at a later period between the Hungarians and the Austrians. The town contains a Greek cathedral and is the seat of the Greek archbishop of the Servian nationality. Pop. (1900) 5,643.

Karlsbad. See Carlsbad.

Karlshamn. See Carlshamn.

Karlskrona. See Carlscrona.

Karlsruhe. See Carlsruhe.

Karlstad. See Carlstad.

Karlstadt. See Carlstadt.

Kar′ma, (1) in Buddhism, the judgment at death which determines the future state of the deceased. It is also the fiat of the Buddhists on actions, pronouncing them to be meritorious, or otherwise. (2) In theosophy, Karma means the unbroken sequence of cause and effect, each effect being in its turn the cause of a subsequent effect. It is a Sanskrit word meaning «action» or «sequence.» See Buddhism; Ego; Theosophy.

Karma′thians, a former Mohammedan sect, founded in Irak by Karmath during the 9th century. Missionaries were trained to spread his creed, and one of them, Abu Saïd, gained a strong hold on the people of the Persian Gulf. The caliph, afraid of the influence of the new sect, sent an army for its suppression, but he was defeated, and Abu Saïd took possession of the whole country.

Kar′nak. See Thebes.

Karr, Jean Baptiste Alphonse, zhŏṅ bäp-tēst āl-fôṅs kär, French novelist and satirist: b. Paris 24 Nov. 1808; d. Nice, France, 30 Sept. 1890. He was educated at the Collège Bourbon, where he subsequently taught, and began in 1832 to write for the ‘Figaro,’ becoming its editor-in-chief in 1839. In that year he established ‘Les Guêps’ (the Wasps), a monthly journal of satire which aroused many enmities. His earliest books were novels, among them: ‘Sous les Tilleuls’ (1832); ‘Vendredi Soir’ (1835); ‘Geneviève’ (1838); ‘Clotilde’ (1839); among later works may be named: ‘Voyage autour de mon Jardin’ (1845): ‘Gaîtiés romaines› (1870); ‹Dieu et Diable: le Credo du Jardinier› (1875). The latter portion of his life was passed at Nice where he was a devoted gardener, several flowers having been named in honor of him.

Karroos, kä-rooz′, the Hottentot name, now adopted by physical geographers, for the table-land or extensive plains between the mountain ranges of Cape Colony. They are fertile during the short rainy season, but during the dry season they assume the appearance of parched arid deserts, though even then flocks and herds find a certain amount of food on them. In recent times artificial methods of procuring water for these tracts have been adopted. In some places great reservoirs have been made to impound the water of permanent streams, or streams that exist only in time of rain; many wells have also been sunk, from which water may be pumped by means of windmills if it does not rise of itself. In this way large areas of the Karroos are now occupied as farms on which more or less grain is grown. Kloof, a sort of companion name to karroo, is applied to the longitudinal valleys extending between the ranges of the adjacent hills.

Kars, (1) a province of Russia, in the southwestern part of Transcaucasia; area, 7,188 square miles. It is mountainous, but the chief occupations are agriculture and stock-raising. Pop. estimated, 300,000. (2) Kars, the capital of the province of Kars, is about in the centre of the province, on a high plateau, barren in part but productive in the vicinity of the city. It was formerly a Turkish fortified city, and since it became a Russian possession (1878) the fortifications have been strengthened. The city has some manufactories, carpet-mills, cotton and woolen factories. Pop. about 22,000.

Karun, kä-roon′, the only navigable river of Persia, and important as a route to the interior. About 117 miles from the mouth navigation is impeded by the rapids of Ahwaz. Formerly the Karun flowed direct to the sea, but now it traverses an artificial channel leading it into the Shat-el-Arab, which it joins at Mohammerah. It has recently been opened to foreign trade as far as Ahwaz.

Karyokinesis, kar″ĭ-ō-kĭ-nē′sĭs, the process of development of the ovum under the influence of fertilization. See Cell; Embryology.

Kasan. See Kazan.

Kasbin, käs-bēn′, or **Kazvin** (also spelled Casveen, Casbin, and Kazbin), Persia, a town in the province of Irak-Ajemi, about 90 miles west-northwest of Teheran. It is built of kiln-burned bricks, and had once a great number of elegant mosques and well-constructed bazaars, but a large proportion of the buildings are now ruinous and deserted, partly as the result of repeated earthquakes. The manufactures include tanning, weaving, etc., and there is a considerable transit trade. There are many vineyards and gardens in the neighborhood. Pop. estimated at 40,000.

Kashgar, käsh-gär′. See Cashgar.

Kashmir. See Cashmere.

Kaskas′kia, an American Indian tribe of the Algonquian family, formerly occupying a part of southern Illinois. In 1832, the survivors of the race, with the Peorias, removed to Kansas, and affiliated with the Weas and Piankishaws. The four tribes removed to Indian Territory in 1867, and in 1903 scarcely 100 members of the four tribes remained. See Indians.

Kaskaskia, Ill., a township in Randolph County, on both sides of the Kaskaskia or Okaw River, at its junction with the Mississippi opposite Ste. Genevieve, Mo. A part of it now obliterated was the oldest town in the West, the first permanent white settlement in the Mississippi Valley. Marquette in 1675 had established a mission among the Kaskaskia Indians near the present Utica, Ill., on the Illinois River; the Jesuits Marest and St. Cosme, guided by Tonty (q.v.), removed the mission in 1700 to the Mississippi bottoms three miles from the river, near the Kaskaskia. It throve greatly, and was not only a large Indian market, but sent produce and furs to New Orleans. Fort Chartres was built there in 1720; eminent French officers and adventurers came thither — as Vaudreuil and the commandant Chevalier de Bertel — and with its gay French life it was named «the Paris of the West.» A noted Jesuit college and convent were maintained there. It formed one of the chain of posts by which France was to hem in English colonization; but in 1763 it fell into the hands of the English, who made it their capital in that region. On 4 July 1778 George Rogers Clark (q.v.), with a company of 200 Virginia militia, captured it for the United States by a night attack; this enabled us to claim and obtain possession of the Northwest Territory by the peace of 1783, and changed the destiny of this whole region. It remained a leading western town, and was the capital of Illinois as a Territory (1809) and a State (1818); but on removal of the seat of government to Vandalia in 1819, it began to decline. The river steadily encroached on the meadow; and in 1892 united its course with the Okaw, converting a large part of the old site, with most of the ancient buildings, into an island, which in 1899 crumbled into the river after several great floods. North of the junction still remains about a third of the town site, with the foundations of a church and of the capitol building. In 1891 the Illinois legislature appropriated $50,000 to remove the old cemetery to a point on the bluffs, and a large monument has been erected there. Consult: ‹Kaskaskia: A Vanished Capital› (in ‹Chautauquan,› Vol. XXX., 1900); ‹Kaskaskia and its Parish Records› (in ‹Magazine of American History,› Vol. VI., 1880).

Kaskaskia River, rises in Champaign County, Ill., and flows southwest through Moultrie, Shelby, Clinton, Fayette, and St. Clair counties, finally joining the Mississippi in Randolph County. It formerly entered at Chester, but in 1891 (see below) the great river cut away the neck of land at Kaskaskia and joined it there. It is nearly 300 miles long, and navigable to Vandalia, 150 miles. It flows through a fertile rolling country which is part of the Illinois coal field.

Kassai, kä-sī′, a tributary of the Kongo, which it enters from the south a short distance above Stanley Pool, pouring into the Kongo a vast volume. It is navigable for hundreds of miles.

Kassala, kä-sä′lä, North Africa, a town at the southeastern extremity of the Egyptian Sudan, near the border of Abyssinia, formerly belonging to Egypt, and once a commercial centre. Before the Mahdi's uprising it had a population of perhaps 20,000. Italians captured it from the Mahdists in 1894, and in 1897 it was restored to Egypt. Its population is now supposed to be about 10,000.

Kas'son, John Adam, American lawyer and diplomatist: b. Charlotte, Vt., 11 Jan. 1822. He was graduated from the University of Vermont in 1842, studied law at Worcester, Mass.; was admitted to the bar, and in 1857 moved to Iowa and continued the practice of his profession. He became active in the Republican party, was a delegate to the national convention in 1860 and chairman of the State committee in the campaign; was assistant postmaster-general in 1861–2; and commissioner to the International Postal Congress at Paris in 1863. He was elected to Congress in 1863 and served until 1867; in the next year was elected to the Iowa State legislature, and from 1873 to 1877 was again a member of Congress. He was then appointed minister to Austria, which position he held till 1881. In 1881–4 he served again in Congress, and from 1884–5 was minister to Germany; in 1885 he was commissioner to the Kongo International Conference at Berlin, and special envoy to the Samoan International Conference in 1893. In 1897 he was appointed special commissioner plenipotentiary to negotiate reciprocity treaties as provided for by the Dingley Tariff Law, and in 1898 was a member of the American Canadian Joint High Commission. He has written ‘History of the Monroe Doctrine’ (in the ‘North American Review’ 1881); ‘History of the Formation of the United States Constitution’ (1889).

Kästner, kĕst'nĕr, **Abraham Gotthelf,** German mathematician and poet: b. Leipsic 27 Sept. 1719; d. Göttingen 20 June 1800. He received an appointment at Göttingen, where, in accordance with the reformatory spirit which animated that university in the latter part of the 18th century, he exerted a powerful influence in delivering mathematical and natural sciences from the bondage of antiquated text-books. His ‘Anfangsgründe der Mathematik’ (6th ed. 1800), and his various other writings, inaugurated a more enlightened era of scientific study in Germany. He took a conspicuous part in the formation of the celebrated union of Göttingen poets, and by his assistance the elder Boye succeeded in introducing, through the instrumentality of the ‘Musenalmanach,’ an entirely new generation of poets to the public. His general popularity was chiefly due to his ‘Sinngedichte.’ A portion of his epigrammatic poems were included in his ‘Miscellaneous Writings’ (1783).

Kastner, Johann Georg, yō'hän gā'ōrg käst'nėr, German composer and writer on music: b. Strasburg 9 March 1810; d. Paris 19 Dec. 1867. He studied with Maurer and Romer; in 1832–5 composed four operas, of which ‘Die Königin der Sarmaten’ (1835) is chief; and then removed to Paris, where he wrote other operas, among them his best work, ‘Le dernier Roi de Juda,’ presented at the Conservatoire in 1844. From 1837 he also published a series of elementary treatises on music, a once authoritative work on instrumentation being perhaps the best. He was made an associate of the Académie Française.

Katab'olism, otherwise known as destructive metabolism; the chemical changes occurring within an organism and resulting in the formation of simpler products through the decomposition of more complex ones.

Katahdin, ką-tä'dĭn, or **Ktaadn,** the highest mountain in Maine, situated in Piscataquis County and in the central part of the State. The region is difficult of access, the Penobscot River being the only thoroughfare, and its course being interrupted by frequent shoals and falls. The mountain, which has an altitude of 5,385 feet, is entirely of granite, and stands in abrupt walls with acres of surface exposed in naked floors. Its sides which are marked by bare spots caused by sliding rock, present a striking appearance. On its summit are found only lichens and a few dwarfish plants; half-way down, the birch and other forest trees are stunted. Over the granite rocks, even to the summit, are found boulders of trap and of other rocks not belonging to the mountain, and among them pieces of sandstone containing fossil shells. The view of the country from the summit embraces scattered mountains rising in conical granitic peaks, among which are interspersed hundreds of lakes, many of them large, and innumerable streams.

Katatypy, a new method in photography. Over the finished negative is poured a solution of hydro superoxide. This leaves, after evaporation, a uniform layer of peroxide of hydrogen. Soon the silver of the plate works upon this peroxide and produces a catalytic dissolution wherever there is silver, while in the places free from silver the peroxide remains. By this means an invisible picture of hydro superoxide is produced upon the plate. This picture can be printed from the plate directly upon common paper, to which the image is transferred.

Ka'ter, Henry, English physicist: b. Bristol 16 April 1777; d. London 26 April 1835. In 1799 he went to India where he was engaged on the great trigonometrical survey, a work to which he rendered important service. In 1814 he retired on half-pay, and henceforth occupied himself exclusively with scientific studies. He was employed by the emperor of Russia to construct standards for the weights and measures of that country; determined the length of the seconds pendulum (see KATER'S PENDULUM), investigated the diminution of terrestrial gravity from the pole to the equator; and invented the «floating collimator,» an instrument of great use to trigonometers. With Dr. Lardner he wrote the ‘Treatise on Mechanics’ in the ‘Cabinet Cyclopedia.’

Kater's Pendulum, a contrivance for measuring the force of gravity, named from its inventor Henry Kater (q.v.). The principle governing its action is the fact that in the case of a physical (compound) pendulum the centres of oscillation and of suspension are interchangeable. It is a bar pendulum with two sets of knife edges, symmetrical in form, but not in the distribution of masses with reference to the geometrical centre; and, somewhat modified and improved, is now the standard for geodetic work.

Kat'ipo, the New Zealand name for alleged poisonous spiders of the genus *Latrodectus* (q.v.).

Katipunan (kä-tē-poo'nän) **Society,** a secret society in the Philippines, organized originally to oppose Spanish supremacy. At the adjournment of the Filipino Congress it was decreed that the supreme council of the Katipunan Society should assume control of native affairs. The society organization was purely military, with a chief or colonel assigned to each 100 members. Each member signs an oath written in his own blood, swearing under most revolting penalties to serve and obey the society. The membership in the organization has gradually decreased since the American occupation.

Katsura, käts-wē'ä, Count, Japanese soldier and statesman: b. Chosiu 1847. He received a military training in Prussia, entered the Japanese army in 1867, fought in the war of the Mikado's restoration, was vice-minister of the army in 1886–91, and in the Chino-Japanese war (1894–5) commanded the 3d division, with which 4 March 1895 he captured New-chwang. In 1896 he was governor-general of Formosa, in 1898–1900 minister of war, in 1901 became prime minister, but on 6 Jan. 1906 resigned.

Katte, Walter, American civil engineer: b. London, England, 14 Nov. 1830. Coming to the United States in 1850 he was resident engineer of the Pennsylvania State canals 1857–8, and subsequently held various engineering posts of responsibility. From 1865 to 1875 he was in the employ of the Keystone Bridge Company of Pittsburg, superintending at this time the building of the steel arch bridge at St. Louis. He was chief engineer of the New York elevated railroad 1877–80, and from 1880 to 1898 held similar posts on other important railroads, including the New York Central.

Ka'tydids, large neuropterous insects of the grasshopper family *Locustidæ*, remarkable for their loud and shrill call. The katydids belong to several allied genera which have the head obtuse in front, the wings and wing-covers large and leaf-like, and the color bright green. Highly developed striduling organs are found in the males in the form of transparent drum-like structures at the base of the wing-covers, by the friction of which, one against the other, as the wings are raised and lowered, the well-known call is produced. This is heard only at night (though some species have quite different day calls as well) and is so loud and shrill as to be distinctly audible at a distance of a quarter of a mile. The call of the males is answered by chirps from the females. The characteristic eggs are gummed to twigs in two contiguous over-lapping rows. Katydids are peculiarly American. The common species is *Cystophyllus concavus,* known by its very broad coarse-veined wing-covers and long ovipositor. In *Phylloptera oblongifolia* the wing-covers are narrower and the veins finer. Other related genera are *Phaneroptera* and *Microcentrum.*

Katzbach (käts'bäʜ) **River,** a small stream in Silesia, Prussia, falling into the Oder at Parchwitz. On its bank 26 Aug. 1813 a battle was fought between the French and the Prussians in which the latter under Blücher won a signal victory. The French lost 12,000, and 18,000 were taken prisoners.

Katz'er, Frederic Xavier, American Roman Catholic archbishop: b. Ebensee, Austria, 7 Feb. 1844; d. Fond du Lac, Wis., 20 July 1903. He came to this country in 1864, and was ordained to the priesthood in 1866. Until 1875 he was a professor in the Seminary of St. Francis in Milwaukee, when he became pastor of the cathedral at Green Bay and secretary of Bishop Krautbauer. After four years of labor in this capacity, he was appointed vicar-general of the diocese of Green Bay, and on the death of Bishop Krautbauer, in December 1885, became administrator, and in May 1886, bishop of Green Bay. In December 1900 he was chosen archbishop of Milwaukee.

Kauai, kow-ī', one of the Hawaiian Islands, the most northern of the group, in lat. 22° N. and long. 159° 30' W.; area, 590 square miles. It is of volcanic origin, its highest elevation reaching nearly 6,000 feet; but although mountainous in character the island has a soil of great fertility, a considerable portion of which, mainly in the northern part, is under cultivation. Sugar is the chief product, and tropical fruits are also largely grown. There is great extent of forest land, and the island is well supplied with streams, the largest of which is Hanalei. The principal harbors are Hanalei, Koloa, Nawiliwili, and Waimea. Pop. (1900) 20,734.

Kauffman, kowf'män, **Marie Angélique Catherine,** commonly known as Angelica Kauffman, Swiss painter: b. Coire, Switzerland, 20 Oct. 1841; d. Rome 5 Nov. 1807. She was the pupil of her father, John Joseph Kauffman, a painter of little note. Her first work of importance was a portrait of the Duke of Modena and his duchess. She then collaborated with her father in the decoration of the parish church and castle of Schwarzenburg, his birthplace, painting many portraits in the meantime. Going to Florence, she was hindered in her artistic career by her passionate devotion to music and singing, but in 1763 finally abandoned all other pursuits for that of painting. She fell under the influence of Winckelmann at Rome, and produced the ‹Mother of the Gracchi.› She also did some work in co-operation with the Venetian landscape painter Zucchi, whom she subsequently married. It was at this point in her life that she developed the particular sentimental style of her paintings as seen in ‹Anna and Abra›; and ‹Samma at the Grave of Bennoni,› which created a furore. In London (1765) she became the darling of court and aristocracy, and was loaded with wealth and honor; she was made member of the Royal Academy and was thought to have inspired Sir Joshua Reynolds with tender feelings. She was, however, unfortunate in marrying a Swede who called himself Count Hom, from whom she was later divorced. She eventually married Zucchi, and settled in Rome (1781). While her tenderness borders on mawkishness, and her designs are monotonous, her imaginative figures have an elevated charm which was not without its influence in circles where George Morland was typical of English art. Her personality cast a reflection which enhanced the impression which her pictures made on her contemporaries, and the ‹Miss Angel› of Mrs. Thackeray Ritchie exhibits with tact and fidelity this interpretation of her somewhat remarkable career.

Kaufman, David S., American politician: b. Cumberland County, Pa., 1813; d. Washington, D. C., 13 Jan. 1851. A graduate of Princeton

University, he removed to Natchez, Miss., where he studied law. In 1837 he settled in Nacogdoches, Texas, and the next year was elected to the Texas Congress. He was twice re-elected and twice chosen speaker of the House. In 1843 he entered the Texan Senate, taking an active part in favor of annexation, and being elected one of the first members of the House of Representatives from Texas (1846–51).

Kaukauna, kâ-kâ′nạ, Wis., city, in Outagamie County; on the Fox River, and on two divisions of the Chicago and Northwestern railroad; about 21 miles southwest of the city of Green Bay and seven miles northeast of Appleton. At this point the Fox River has a fall of 50 feet within one mile, which gives the city excellent water power. A government ship canal has been built to overcome the obstruction to navigation caused by the rapids. The place was first settled in 1790 by Dominick Ducharme, and was incorporated as a town in 1850. It was chartered as a city 5 April 1885. The city has two banks with a combined capital of $160,000; and the bookings show a total of business of $800,000. The chief industrial wealth of the city is derived from railroad shops, employing 450 men; Union Bag and Paper Company works, 300 employees; Pulp and Paper Company works, 225; Outagamie Paper Company works, 175; Kaukauna Fibre Company, 80; Lindane Pulp Company, 80. The city has 10 churches, one high school, two graded public schools, and two graded parish schools. About one half the population are Germans. Pop. (1900) 5,115.

James I. Tower,
Editor of ‹Sun.›

Kaulbach, Wilhelm von, vĭl′hĕlm fōn kowl′bäH, German painter: b. Arolsen 15 Oct. 1805; d. Munich 7 April 1874. He learned the rudiments of his art from his father who was a goldsmith and engraver on copper. He was a good draftsman when he went to Düsseldorf in 1821 and entered the Art Academy where his chief teacher was Cornelius, already acknowledged as the head of the Düsseldorf school of historic painting. When Cornelius in 1825 removed to Munich, at the invitation of King Ludwig of Bavaria, he followed him and soon became his disciple in the art of ceiling decoration, examples of which are ‹Apollo and the Muses› in the great hall of the Odeon, and the allegorical figures of the ‹Four Chief Rivers of Bavaria,› and of ‹Bavaria› in the portico of the royal palace. His pure and classic power of design is well exhibited in the 16 wall paintings, illustrating the story of ‹Cupid and Psyche,› in the palace of Duke Maximilian at Munich. He was at this time attracted to the study of Hogarth's works, the fruit of which appeared in his illustration of books, including the works of Shakespeare, Goethe, and Schiller, and the Reineke Fuchs. He painted many great incidents in the history of Germany, including twelve scenes from Klopstock's ‹Hermann's Fight,› and the ‹Death of Hermann,› wall paintings in the queen's palace at Kingsbau. But his most ambitious and comprehensive works are those in which he endeavored to represent the progress of the human race by a series of typical historic tableaux. These comprise the ‹Tower of Babel›; ‹Age of Homer›; ‹Destruction of Jerusalem›; ‹Battle of the Huns and Romans›; ‹The Crusaders›; ‹The Reformation› (1847–63). The range of his intellectual ideas, his wonderful power of generalization, his mastery of every style of painting from caricature to the sublimity of the Italian cinquecentists, as represented by Michelangelo, have no parallel among modern painters. His coloring may be a little cold, sometimes a little crude, but his sense of form, his loftiness of conception and his genius for harmonious composition have won for him the first place among German artists of the transition period between the idealism of Cornelius and the realism of the modern historic school.

Kauri, kow′rĭ, the native name of a tree, and of the valuable gum derived from it. It is the most conspicuous species (*A. australis*) of the East Indian and Australian genus *Agathis* (formerly *Dammara*) of coniferous trees,— a native of New Zealand, where it grows only at the northern extremity of the North Island. It reaches the height of 150–200 feet, and its timber is much valued for building purposes, for making furniture, etc., and still more for masts and ship-building, but it is becoming very rare. The resin of this tree, the kauri gum, forms a valuable export, and is used in making fine varnish, etc. Most of it is obtained in a semi-fossil state, by digging in places where the tree no longer grows. See Dammar.

Kautz, kowtz, **Albert,** American naval officer: b. Georgetown, Ohio, 29 Jan. 1839; d. Florence, Italy, 1907. He was graduated at the United States Naval Academy in 1859, became a lieutenant in 1861 and rose through gradual promotion to the rank of rear-admiral in 1898. He was flag-lieutenant to Farragut in 1862, and when New Orleans was surrendered he entered the city and raised the national flag over the custom-house. He took command of the Pacific station and in the following March was prominent in the settlement of the Samoan troubles. He was retired in January 1901.

Kautz, August Valentine, American general: b. Ispringen, Germany, 5 Jan. 1828; d. Seattle, Washington, 4 Sept. 1895. He was a brother of Albert Kautz (q.v.), and his parents settling in Ohio in 1832, he was graduated from West Point in 1852. He served through the Civil War in the Federal army, distinguishing himself in several engagements, was promoted colonel in 1874, and brigadier-general in 1891. He published: ‹The Company Clerk› (1863); ‹Customs of Service for Non-Commissioned Officers and Soldiers› (1864); and ‹Customs of Service for Officers› (1866).

Kautzsch, kowch, **Emil Friedrich,** German Protestant theologian: b. Plauen, Saxony, 4 Sept. 1841. He was educated at the University of Leipsic where he became tutor in Old Testament exegesis in 1869, and professor extraordinary in 1871. From 1872 to 1880 he was professor at Basel, at Tübingen 1880–8, and at Halle from the last named date. With Socin and Zimmerman he founded the Palestine Exploration Society of Germany in 1877, and among important works which he has edited are: the 22d to the 26th editions of Gesenius' ‹Hebrew Grammar› (1878–96); and the 10th and 11th editions of Hagenbach's ‹Encyklopädia und Methodologie der theologischen Wissenschaften› (1880–4).

Kava-Kava. See Ava.

Kavanagh, kav'a-na, **Julia,** Irish novelist: b. Thurles, Ireland, 7 Jan. 1824; d. Nice, France, 28 Oct. 1877. She wrote a large number of novels, the scenes of which were almost invariably laid in France, where her life was mainly spent until she began a literary career in London in 1844. Among her works are: 'Nathalie' (1851); 'Daisy Burns' (1853); 'Two Lilies' (1877); 'Woman in France During the 18th Century' (1850); 'A Summer and Winter in the Two Sicilies' (1858); 'French Women of Letters' (1861); 'English Women of Letters' (1862). Her novels and other works were popular both in this country and in England.

Kaveri, or **Kavery.** See CAUVERY.

Kaw (more correctly KANZA), a branch of the Osage division of the Siouan Indian stock, formerly living on the lower Kansas River, and early in the 19th century estimated at 1,300. In 1846 the government removed them to a reservation in the present Oklahoma, west of the Osage River; where they dwindled so rapidly that in 1900 there were only 217, over half of them of mixed blood.

Kay, John, English inventor: b. Walmersley, Lancashire, England, 16 July 1704; d. France, after 1764. In 1733 he invented the fly-shuttle, for which a patent was granted him, and in 1745 a power loom for the weaving of narrow goods, a patent for which was also granted. These inventions, however, so greatly aroused the anger of the working classes, who feared that the machines would entirely supersede hand labor, that they stole Kay's machines, wrecked his home, and obliged him to flee to France, where he died in poverty.

Kaye, SIR **John William,** English military historian: b. Acton, Middlesex, 1814; d. London 24 July 1876. He was for a number of years an officer in the Bengal artillery, but resigned in 1841. In 1856 he entered the East India Company, and upon the transfer of the government of India to the crown, succeeded John Stuart Mill in the political department of the India office. His works consist of histories and biographies relating to the East, among them being 'A History of Afghanistan' (1851–3); 'History of the Administration of the East India Company' (1853); 'A History of the Sepoy War in India'. (1857–8; London 1864–75), a comprehensive narrative of the celebrated Mutiny down to the fall of Delhi; 'Lives of Indian Officers' (1867); 'Essays of an Optimist' (1870).

Kazaks'. See KIRGHIZ.

Kazan, kä-zän', Russia, a fortified city, capital of the government of the same name, on the Kazanka, about four miles above its junction with the Volga, 460 miles east of Moscow. It properly forms three towns — the kremlin or citadel, the middle town, and the lower town. Many Mohammedan Tartars still reside here, engaged in business. It is a bishop's see, and the seat of a small university, founded in 1803. It has also several other schools. Here are large soap-works and tanneries, also manufactures of woolen, cotton, lace, and earthenware. It carries on an extensive trade. The caravans to Bokhara and China pass through Kazan. At a little distance from Kazan is an admiralty establishment, with a navigation school, magazines, and a dock-yard, where vessels are constructed, and sent down the Volga to the Caspian Sea. Pop. about 135,000.

Ke'a, a large olive-green parrot of New Zealand (*Nestor notabilis*) with the hawk-like beak of its race, which in its former wild condition fed chiefly upon insects, but since the introduction of sheep into the South Island (to which it is confined) has become a meat eater. These birds haunt the vicinity of slaughtering pens, and feed with avidity upon offal, sheepheads and the like. This led them to attack wounded sheep, or those with sores; and finally taught some of these parrots to alight upon the back of a sheep, pull out the wool and even tear away the living flesh. These injuries were usually upon the loins, and the fat about the kidneys seems to be the special attraction. So many keas have been killed by herdsmen that the species is now rare. Compare KAKA; and consult Buller, 'Birds of New Zealand' (1888).

Kean, kēn, **Charles John,** English actor: b. Waterford, Ireland, 18 Jan. 1811; d. Queensborough Terrace, Chelsea, London, 22 Jan. 1868. He was second son of Edmund Kean (q.v.), He made his first stage appearance 1 Oct. 1827 as Young Norval in 'Douglas.' In 1830 he visited the United States, where he was favorably received before he had made a London reputation. In 1850–9 he managed the Princess Theatre, where he introduced more elaborate machinery and setting than had yet been seen on the English stage, revived Byron's 'Sardanapalus,' and appeared (13 Jan. 1855) in his greatest role, Louis XI., in Boucicault's adaptation of de la Vigne's play of the name. His Hamlet was his chief tragic part, but he was best in melodrama. He withdrew from the stage 28 May 1867. Consult: Cole, 'Life and Theatrical Times of Charles Kean' (1859); Cook, 'Hours with the Players,' Vol. II. (1881).

Kean, Edmund, English tragedian: b. London 4 Nov. 1787; d. Richmond Surrey 15 May 1833. His supposed parents were connected in a low capacity with the theatrical profession. He was early on the stage, and for several years wandered about the provinces, now as reciter and singer, now as tumbler in a circus, and later as a member of itinerant companies. He married Miss Chambers, an actress in his company, in 1808. In 1814 he appeared at Drury Lane as Shylock. His triumph was decided and he at once commanded large salaries. Hazlitt and Lamb eulogized him. Coleridge said: «To see Kean act is like reading Shakespeare by flashes of lightning.» At Kemble's retirement in 1817 Kean took the foremost place on the English stage. He appeared in several other tragic roles, among them Richard III., Hamlet, Lear, Sir Giles Overreach, and Othello. In these characters he has perhaps never been equaled. He first came to the United States in 1820, when he was seen with enthusiasm in New York, Boston, and Philadelphia. A second, but much less successful tour in 1825 was extended to Canada, where he was chosen a chief of the Huron Indians. His hold on the public remained uninterrupted until 1825, when he appeared in the character of co-respondent in an action of divorce. He never regained public favor; his dissolute habits also began to tell on him, and he made his last appearance in Othello, in company with his son Charles, in 1833, but broke down during the performance, and his death took place some three months later. The biographies by Barry Cornwall (1835) and F. W. Hawkins (1869), although the best existing, contain much apocryphal material.

Keane, John Joseph, American Roman Catholic prelate: b. Ballyshannon, Ireland, 12 Sept. 1839. When seven years old he came to America with his parents, who settled in Baltimore, Md., pursued his classical studies at Saint Charles College, Baltimore, and later took a complete philosophical and theological course at Saint Mary's Seminary, where, on 2 July 1866, he was ordained priest. He was then appointed assistant pastor at Saint Patrick's Church, Washington, D. C., and about 12 years afterward, 25 Aug. 1878, was consecrated bishop of Richmond, Va. In this new field he labored indefatigably, much of his attention being bestowed upon the negroes, and when, in 1884, the American hierarchy decreed the foundation of the Catholic University, Bishop Keane was selected to devise plans for its organization. On 12 Aug. 1888 the University was formally opened, he being chosen its first rector, and under his efficient administration it attained most gratifying success. Its generous endowments and splendid equipment were the result of his tireless efforts, and when, in January 1897, his rectorship ceased, he left the institution established upon a solid basis. The next two years he spent in Rome, where his skill in oratory won due recognition and numerous favors were lavished on him by Leo XIII. In 1899 Bishop Keane returned to America at the earnest solicitation of the board of trustees of the University, and for two years labored to augment its endowments. In 1890 he delivered the Dudleian lecture at Harvard. On 24 July 1900 he was appointed to the archiepiscopal see of Dubuque, the pallium being conferred upon him by Cardinal Gibbons, 17 April 1901. He is likewise an ardent advocate of Catholic education. His diocese now (1905) boasts a Catholic population of 100,000; 218 priests; 202 churches; 82 parochial schools; 1 orphan asylum, and 6 hospitals, besides academies and charitable institutions.

Kearney, kär'nĭ, **Denis,** American labor agitator: b. Oakmont, County Cork, Ireland, 1847. He went to sea from 1858 to 1872; and in the latter year settled in San Francisco, becoming foreman of a gang of stevedores and later going into the draying business independently. In 1877 he began an agitation among the workingmen, his attacks being directed mostly against the rights of capital and the importation of Chinese labor. Large mass-meetings were held in the so-called «Sand Lots» near the city, and the movement grew rapidly in power and importance, but dominated entirely by Kearney. Finally he was able to pack a convention which adopted a new State constitution in the interests of his movement, and very detrimental to capital and property interests. In 1878 he visited the Eastern States, speaking in the large cities, but failed to gain an important following; on his return to California he gradually lost his influence and his party sank into obscurity.

Kearney, Neb., city, county-seat of Buffalo County; on the Burlington & M. R., the Union Pa., and the Kearney & B. H. R.R.'s; about 125 miles west of Lincoln and 175 miles, in direct line, southwest of Omaha. Kearney is midway between the eastern and western coasts of the United States. The first settlement was made in 1871; it was incorporated in 1872, and received its city charter in 1889. It is in the midst of a rich agricultural region noted for wheat and live-stock. The chief industrial establishments are a furniture factory, three cigar factories, and large brick yards. The city is the seat of a State Industrial School for Boys, a State Normal School (1903), a Military Academy under the auspices of the Episcopal Church, a high school, and a public library. It has three banks, the combined capital of which is $200,000. The government is vested in a mayor who holds office two years, and in a council of eight members, elected annually. Pop. (1900) 5,634; (1904) 7,000.

F. L. Whedon,
Editor ‹The Kearney Democrat.›

Kearns, Thomas, American politician: b. near Woodstock, Ont., 11 April 1862. He attended the public schools until his father's removal to Holt County, Nebraska, in 1872, then worked on the home farm till he was 14. After several years spent as a freighter in Nebraska he removed to Utah in 1883, where he worked at first as a miner, becoming subsequently one of the owners of the Mayflower and Silver King mines. He was a member of the common council of Park City, Utah, in 1895, and was a delegate to the National Republican convention the next year. He was also a delegate to the Philadelphia convention in 1900, and was elected a member of the United States Senate in 1901. He is largely identified with the mining interests of Utah and is one of the owners and projectors of the Salt Lake, San Pedro and Los Angeles railroad which runs from Salt Lake City, Utah, to Los Angeles, Cal.

Kearny, Lawrence, American naval officer: b. Perth Amboy, N. J., 30 Nov. 1789; d. there 29 Nov. 1868. Having entered the navy in 1807, he was active in the defense of the coast of South Carolina and States adjacent during the War of 1812, and in 1826 in command of the Warren effectually put an end to the depredations of the Greek pirates in the Levant. Promoted captain (1832), he was assigned (1841) to the command of the East India squadron, and began the negotiations for a commercial treaty between China and the United States, later concluded by the special envoy, Cushing. On his return voyage to the United States, Kearny stopped at the Hawaiian Islands to protest against the contemplated transfer of the islands to Great Britain. In 1867 he was made commodore on the retired list.

Kearny, Philip, American soldier: b. New York 2 June 1815; d. near Chantilly, Va., 1 Sept. 1862. He was graduated from Columbia in 1833, studied law, but in 1837 entered the United States army as lieutenant of the 1st dragoons, and in 1830–40 was in Europe for the study of the cavalry service of the French army, with which he fought in the Algerine war. In 1841 he was on the staff of Gen. Scott, in 1846 resigned from the army, but soon afterward enlisted for the Mexican War, fought at Contreras and Churubusco, and at the close of the latter engagement charged and pursued into Mexico

City the retreating enemy. He again resigned from the army in 1851, in 1859 entered the French service, and participated in the war in Italy, where he fought at Solferino. On 17 May 1861, he was appointed brigadier-general in the Union service, and given command of the 1st New Jersey brigade in the Army of the Potomac. Later he was assigned to the command of the cavalry of that army, and served conspicuously in the Peninsula. He was commissioned major-general of volunteers 7 July 1862, took part in the second Bull Run, and subsequently at Chantilly was shot while reconnoitering. Kearny was a brilliant cavalry leader, termed by Scott «the most perfect soldier» he ever knew. Consult: De Peyster, ‘Personal and Military History of Philip Kearny’ (1869).

Kearny, Stephen Watts, American general: b. Newark, N. J., 30 Aug. 1794; d. St. Louis, Mo., 31 Oct. 1848. He entered the United States army in 1812 as lieutenant, and distinguished himself in the action at Queenstown Heights in the same year. He served throughout the war, and became, in June 1846, a brigadier-general. At the commencement of the Mexican War he commanded the «Army of the West,» which marched from Bent's Fort on the Arkansas westward, and conquered New Mexico. Having established a provisional civil government in Santa Fé, he proceeded to California, and participated with his command in the battle of San Pascual, in December 1846. For his services in this campaign he was appointed brevet major-general, his commission being dated from the battle of San Pascual. He was governor of California from March to June 1847, but subsequently joined the army in Mexico, where he continued until the close of the war. He wrote: ‘Manual for the Exercise and Maneuvering of United States Dragoons’ (1837); ‘Organic Law’; ‘Laws for the Government of New Mexico’ (1846).

Kearny, N. J., town in Hudson County; on Newark Bay, between the Passaic and Hackensack rivers, and on the Pennsylvania, the Lehigh V., the Erie, and the Delaware, L. & W. R.R.'s; opposite the city of Newark. The first permanent settlement was made in 1765, by Germans, and the place was called New Barbadoes. Later it became a part of Harrison, but in 1871 it was incorporated and named in honor of Gen. Philip Kearny (q.v.) who once lived in the place, and whose residence still stands within the limits of the town. It has several manufacturing establishments, the chief of which are the Nairn Linoleum works with 1,200 employees; the Arlington Company Celluloid works, 1,000 employees; and the Marshall Thread Company, 2,000 employees. Other manufactures are golf balls, metal bedsteads, roofing material, and brass novelties. The town has a State Soldiers' Home, the Sacred Heart Industrial School for Boys, public and parish schools, and nine churches. In Arlington, or the third and fourth wards, there are many fine residences with large and well kept grounds. The government is vested in an alderman-at-large, practically a mayor without veto power, and a council of eight members, elected every two years. Pop. (1900) 10,896.

W. J. Keegan,
Editor of West Hudson ‘Press.’

Kearsarge, kēr'särj, the name of two mountain peaks of the White Mountains. (1) Mount Kearsarge in Carroll County, N. H., is 3,260 feet in height. The Federal vessel which sank the Confederate cruiser Alabama was named after this mountain. (2) Kearsarge Mount, in Merrimac County, N. H., is 2,943 feet in height. This mountain was once called Kyar-Sarga.

Kearsarge, The, a ship of the United States navy which played a conspicuous part in the only sea-fight of the Civil War. See Alabama, The.

Keary, kē'rĭ, **Annie,** English novelist: b. Bitton near Wetherby, Yorkshire, 3 March 1825; d. Eastbourne, Sussex, 3 March 1879. Beginning a literary career with books for children, she made her reputation with stories of Irish life and became very popular, ‘Castle Daly’ (1875) being her best work. Among other fictions by her are: ‘Clemency Franklyn’ (1866); and ‘A Doubting Heart,’ left unfinished at her death and completed by Mrs. Katharine Macquiod. She also published such historical works as ‘Early Egyptian History’; and ‘The Nations Around.’

Keary, Charles F., English novelist and antiquarian writer. He was educated at Cambridge University and beside the novels ‘A Wanderer’ (1888); ‘A Mariage de Convenance’ (1889); ‘The Two Lancrofts’ (1893); ‘Herbert Vanlennert’ (1895); ‘The Journalist’ (1898); ‘High Policy’ (1902); etc., has published ‘The Dawn of History’ (1879); ‘Outlines of Primitive Belief’ (1882); ‘The Mythology of the Eddas’ (1882); ‘The Vikings in Western Christendom’ (1890); ‘Norway and the Norwegians’ (1892); ‘The Brothers,’ a masque in verse (1902); ‘Riegel: an Autumn Mystery’ (1903).

Keasbey, kēz'bĭ, **Lindley Miller,** American political economist: b. Newark, N. J., 24 Feb. 1867. He was graduated from Harvard in 1888 and went abroad to study at Strassburg. He was appointed professor of political science at the University of Colorado in 1892, where he remained for two years, and in 1894 became professor in the same department at Bryn Mawr. He has written a number of monographs and magazine articles, also ‘The Nicaragua Canal and the Monroe Doctrine’ (1896); and has translated ‘The Economic Foundations of Society,’ from Loria.

Keats, kēts, **Gwendoline,** «Zack,» English novelist: b. Devonshire. She first attracted notice by a series of dialect tales appearing in ‘Blackwood's Magazine,’ and in 1898 acquired sudden fame by her volume, ‘Life is Life,’ consisting of 12 stories delineating with skill and vigor the more painful and hopeless side of existence. Later books by her include: ‘On Trial’ (1899); ‘Tales of Dunstable Weir’ (1900); ‘The White Cottage’ (1901); ‘The Roman Road’ (1903).

Keats, John, English poet: b. London 29 or 31 Oct. 1795; d. Rome 23 Feb. 1821. He was the eldest child of Thomas Keats, employee and son-in-law of a livery-stable keeper named Jennings, and was born at the stable in Finsbury Pavement. There were four other children, three of whom reached maturity, George, Thomas, and Frances (Mrs. Llanos). In 1804, Thomas Keats, who like his wife, Frances, seems to have been a strong character, died from a fall from his horse. His widow soon remarried, but was speedily forced to leave her new husband and to reside with her mother at Edmonton, where she died, after a rapid decline, in 1810.

Meanwhile the boys had been placed at Mr. John Clarke's school at Enfield, where John distinguished himself by his manly pugnaciousness and, later, by his zeal for literary studies, particularly mythology. He formed a friendship with the master's son, Charles Cowden Clarke (q. v.), an under teacher, who encouraged his literary tastes; but unfortunately Keats's guardian, in 1810, took him from school before he had begun Greek, and apprenticed him for five years to a surgeon at Edmonton.

He was still near enough to young Clarke to profit from the latter's influence, and Elizabethan poetry, especially 'The Faerie Queene' awoke his poetic genius. His earliest known poem, 'Imitation of Spenser,' dates probably from 1813. The study of medicine became distasteful to him and a break with Hammond, the surgeon, followed in 1814. Keats went to London, studied fitfully in the hospitals, and more and more gave himself up to reading and writing verse. The best of his early poems, the 'On First Looking into Chapman's Homer,' seems to date from the summer of 1815, and was composed after a night of reading with Clarke. Besides this friend certain fellow students and his brothers formed Keats's chief society. In the winter of 1816 Clarke introduced him to Leigh Hunt (q. v.) whose influence upon him was at first very strong. Through Hunt Keats was led to widen his reading, especially in the direction of Italian poetry, and to develope an appreciation of the arts; but the elder poet also encouraged his new protege's luxuriant sentimentality and, through his own unpopularity, prepared the way for the critical hostility which Keats encountered as a member of the so-called «Cockney School.»

The first of his poems to be printed was the sonnet 'O Solitude,' which appeared in Hunt's 'Examiner' for 5 May 1816. A little later Keats, who had previously been appointed a dresser at Guy's Hospital, passed his examination as licentiate at Apothecaries' Hall; but we hear more of literary plans and of acquaintances, such as Shelley and John Hamilton Reynolds, than of preparations for practice. He was much at Hunt's cottage at Hampstead, he visited the sea shore, he wrote epistles in verse and prose to friends and relatives. By the winter of 1816–17 he had become intimate with the painter, Haydon (q. v.), had published several sonnets in 'The Examiner,' and had made up his mind definitely to abandon medicine for poetry. His first volume 'Poems by John Keats,' with a dedication to Hunt, was published early in March 1817.

The book, naturally, fell flat. Keats was still immature in thought and feeling, he had reacted too far from the pseudo-classical taste of the majority of readers toward the unrestrained luxuriance of style of the later Elizabethans, and he had submitted too unreservedly to the mawkish and shallow æstheticism of Hunt. The young poet took his disappointment well and resolved to improve himself by study. In April 1817 he went alone to the Isle of Wight, then with his brother Tom he visited other places, and by midsummer he was domiciled with both his brothers at Hampstead, where he saw much of literary and artistic friends, including Charles Wentworth Dilke, Charles Armitage Brown, and the painter, Joseph Severn. More important for his poetical development, however, was the growing influence of Shakespeare and of the loftier, more spiritual portion of Wordsworth's verse, which may be seen in 'Endymion.' This ambitious poem was begun on the Isle of Wight, steadily labored upon during the summer and fall despite distractions such as a visit to Oxford, and finished at the end of November 1817, at Burford Bridge, near Dorking. Keats spent the winter of 1817–18 in London, seeing 'Endymion' through the press, frequenting theatres, and having a rather gay time with his friends. Before 'Endymion' was published in April 1817, he had begun with Reynolds the experiment of making metrical versions of tales from Boccaccio, and in 'Isabella, or the Pot of Basil' he had given evidence, not only of maturing thought and of increasing control of his emotions, but of a manly faculty of self-criticism that enabled him to perceive without flinching the faults that jostled the beauties of 'Endymion.'

The last-named poem received a few favorable reviews, but made little impression on the public. Still fascinated with Greek mythology, Keats chose another subject from it, that of the fall of the Titans; but, before beginning 'Hyperion' he wisely resolved to study a more restrained model than his beloved exuberant Elizabethans — to wit, Milton. Meanwhile his brother George married and removed to Kentucky, and Keats with Armitage Brown took a tour, partly on foot, through the Lake Region and a portion of Scotland. Exposure and strain undermined Keats's health so much that a physician at Inverness had to order him home. He reached London in August 1818, where the sad task awaited him of nursing without hope his consumptive brother Tom through more than three months of decline. Just at this time an ironical fate decreed that the 'Quarterly' and 'Blackwood's' should publish their now notorious diatribes upon 'Endymion,' (by John Wilson Croker (q. v.) and, probably, J. G. Lockhart (q. v.) respectively). Keats on the whole bore the attacks well; but unfortunately Byron and Shelley have made the world think otherwise.

During the fall of 1818 Keats began 'Hyperion,' and wrote long letters to George and his wife in America. He also made the acquaintance of a handsome girl of 17, Miss Fanny Brawne, and speedily falling in love, became engaged to her. Rarely at his best in his relations with women, owing partly perhaps to his antecedents, partly to his sensuousness, partly to the struggles of his spirit to escape from its actual environment to the ideal world of beauty and romance, Keats gave himself up to this passion with an abandonment that might be described as disgusting, did not one make allowances for his slowly failing health.

After the death of Tom Keats 1 Dec. 1818, the poet resided for a time with Armitage Brown at Wentworth Place. Here he not only worked at 'Hyperion,' but wrote many of the poems that mark the zenith of his genius, such as ‹The Eve of Saint Agnes,› the odes ‹On a Grecian Urn,› ‹To a Nightingale,› and ‹To Psyche,› and the ballad ‹La Belle Dame sans Merci.› It was an extraordinary six months' work (Dec. 1818–May 1819) for an ailing poet in his 24th year. And he was not merely sick in body but poor in purse, most of his patrimony having been tangled up by his guardian, or spent, or loaned to impecunious friends. Other friends, like Brown, stood by him, however, though this fact can scarcely have made the marriage he dreamed of seem much more possible. He took summer excursions, wrote on a tragedy, ‹Otho the Great,› with Brown, and completed his own ‹Lamia,› in some respects the most individual and promising of his narrative poems. He abandoned ‹Hyperion,› rightly judging that it was too Miltonic, yet he did not cease to form literary plans and to face the present and the future bravely. But on his return to London, he came once more under the influence of Miss Brawne, and he lost ground in health, courage, and literary power. His work in the drama and in satire proved on the whole unavailing; he recast ‹Hyperion› for the worse (‹The Fall of Hyperion›); and he lost his cheerfulness, becoming moody, suspicious, and somewhat dissipated.

Early in February 1820 he had his first hemorrhage from the lungs and was confined for several weeks, Brown being his indefatigable nurse. With Fanny Brawne, who was living next door, he kept up a correspondence which many of his admirers could spare. When he was stronger, Brown having left for Scotland, Keats occupied himself by seeing through the press his third volume — one of the most memorable in the history of our literature, for it can scarcely be disputed that in color and form latter-day English poetry owes more to Keats than to any other writer among the moderns. It was entitled ‹Lamia, Isabella, The Eve of Saint Agnes and Other Poems,› and was welcomed, not only by friends like Hunt, but by such a critic as Jeffrey, in the ‹Edinburgh.› It appeared early in July 1820, just after two hemorrhages had shown that its author must be soon cut short in what promised to be nothing less than a marvellous career.

During his new illness, Keats was kindly nursed by the Hunts; then ungrounded suspicions of their friendship caused him to leave them, and he was welcomed by Mrs. Brawne and her daughter. Becoming more tranquil, he determined to see what the climate of Italy could do for him, and with Severn he sailed for Naples in September. On the voyage he wrote his last poem, the fine sonnet ‹Bright star, would I were steadfast as thou art.› After reaching Rome about the middle of December, he suffered many violent attacks of fever and pain; then he lingered in a calmer state of mind and body until death took him from the arms of the faithful Severn, in the early morning of 23 Feb. 1821. He was buried three days later in the old Protestant cemetery at Rome, and on his tomb was placed at his desire the nonprophetic epitaph, «Here lies one whose name was writ in water.» In 1881 Severn was laid by his side; long before (December 1822) the ashes of the author of ‹Adonais› had been buried nearby.

In person Keats was small, but evidently in his early years, strong and well made. His features were clear cut and his eyes large, dark, and full of meditative depth. In character he seems to have been essentially open, kindly, and manly. That his social status and his exceptionally sensuous nature were without deleterious effects upon his life, as well as upon his poetry, it would be idle to assert; yet it would be equally beside the mark to think of him chiefly as a hyperæsthetic anomaly among the men of his day. He was far more than a lower middle-class Briton of the Regency; but he was also more than the neo-Greek, or the neo-Elizabethan, or the idolatrous priest of beauty that some have fancied him. He was a wonderfully endowed poet of strong human interests, keen intelligence, ever deepening moral sense, extraordinary sensitiveness to physical impressions — not only upon eye and ear, but upon taste and touch — growing appreciation of artistic form, and steadily developing power of self-control. He filled all the rôles his admirers have claimed for him; but he filled them, or was learning to fill them, in combination — a fact which makes him greater than even some warm admirers have fancied.

His rank among English poets is not easy to determine. In a sense Matthew Arnold was right when he declared that Keats «is with Shakespeare.» It might be added that he is with Milton also; but he is with these supreme poets only in respect to certain qualities of genius. He is obviously not with them in sustained power, in unexcelled majestic achievements, in breadth and duration of popular appeal. Even when he is compared with his contemporaries he is found to lack, in a measure, Byron's passion and cosmopolitan influence, Wordsworth's power to calm and ennoble the spirit and quicken the vision, Coleridge's ineffable secret of casting glamour, and Shelley's gift of interpenetrating poetry and life with the radiance of a pure idealism. In quantity of approximately perfect work he falls short; of course, through no fault of his own. The juvenile volume of 1817 and ‹Endymion,› though in a sense the latter confirms the truth of its first line that «a thing of beauty is a joy forever,» are on the whole immature, and the posthumous poems and letters, though abounding in merits, are uneven in value and below the highest excellence. It is mainly on the magnificent volume of 1820 — on the impressive artistic mastery shown in ‹Lamia,› on the romantic charm of ‹The Eve of Saint Agnes,› on the tender pathos of ‹Isabella,› on the matchless harmonies, the deep, subtle appeal to mind and heart, and the indescribable richness of the great odes, on what it is hardly rash to call the dewy felicity of some of the less elaborate lyrics that the claim of Keats to rank among the greater English poets rests, and rests securely. To lovers of poetry he has long been almost an idol; the public has scarcely yet realized the full significance of his noble, and in some respects unique genius.

Bibliography.— Keats's poems were first collected, with those of Coleridge and Shelley, in 1829. In 1848 R. M. Milnes (Lord Houghton) published the ‹Life, Letters and Literary Remains› (revised 1867); biographical material then began to accumulate through such books as

Leigh Hunt's 'Autobiography. In 1876 Mr. H. B. Forman edited the letters to Fanny Brawne, and in 1885 the works in prose and verse in four volumes (reissued and augmented in 1889). In 1883 J. G. Speed, of the American branch of the family issued a volume of 'Letters and Poems.' In 1887 brief lives of the poet appeared in 'Great Writers' and the 'English Men of Letters' by W. M. Rossetti and Sidney Colvin respectively. In 1891 Mr. Colvin edited 'Letters of John Keats to His Family and Friends.' In 1895 Mr. Forman issued the complete correspondence (1 vol.) and in 1901 what is the best edition of the entire works (5 vols.). The [American] Cambridge edition of the poems and letters is also good. There are numerous editions of the poems, including several by Lord Houghton (especially the Aldine, 5th edition, 1890), one by W. T. Arnold (1883), the 'Golden Treasury' by F. T. Palgrave (1884), and the latest and best by E. de Sélincourt (1905). Books dealing with Byron, Shelley, and Hunt usually touch on Keats, and the mass of criticism upon him is large. Among his chief critics are Matthew Arnold, Robert Bridges, DeQuincey, Dowden, Leigh Hunt (see 'Imagination and Fancy'), Lowell, Masson, J. M. Robertson, Swinburne, and Woodberry. Consult also Sharp's 'Life and Letters of Joseph Severn' (1892) and Marie Gotheim's 'John Keats, Leben und Werke' (1897). William P. Trent,

Professor of Literature, Columbia University.

Keble, kē'bl, **John,** English Anglican clergyman and poet: b. Fairfield, Gloucestershire, 25 April 1792; d. Bournemouth, Hampshire, 29 March 1866. He was educated at Corpus Christi College, Oxford, and took his degree in 1811 with high honors. Going to Oriel as a fellow, he became college tutor and public examiner, and in 1831–41 was professor of poetry. He took priest's orders in 1816 and was his father's curate for some time. He was appointed vicar of Hursley, near Winchester, in 1836, a position which he held until his death. To the world at large he is best known as the author of the famous volume of religious verse, 'The Christian Year' (q.v.). He also wrote the 'Lyra Innocentium,' and, with Newman and others, the 'Lyrica Apostolica.' He was a zealous High Churchman, and wrote several of the celebrated 'Tracts for the Times' (1833). Keble College, Oxford, was founded as a memorial of him. Consult: 'Lives' by J. T. Coleridge (1869), and Lock (1892); Yonge, 'Musings over the Christian Year' and 'Lyra Innocentium'; Shairp, 'Studies in Poetry and Philosophy' (1868); Newman, 'Apologia pro Vita sua' (1864); Yonge, 'John Keble's Two Parishes' (1898).

Keble College, one of the colleges of Oxford University, built by subscription as a memorial of the Rev. John Keble, and incorporated in 1870 by royal charter.

Ked'die, Henrietta, «Sarah Tytler,» Scottish novelist: b. Cupar, Fifeshire, 4 March 1827. From 1848 to 1870 she was joint owner of a girls' school in her native place, and from 1870 to 1884 was engaged in literary work in London. She has since resided in Oxford. Her best work is 'Citoyenne Jacqueline' (1865), a well-told story of the French Revolution. Among other works of hers are: 'Papers for Thoughtful Girls' (1862); 'St. Mungo's City' (1885); 'Six Royal Ladies of the House of Hanover' (1898); 'Women Must Weep' (1901); 'Three Men of Mark' (1901).

Ked'ney, John Steinfort, American Episcopal clergyman: b. Essex County, N. J., 12 Feb. 1819. He was graduated from Union College in 1838 and from the General Theological Seminary, New York, in 1841. After taking orders in the Episcopal Church he was rector of several churches until 1871, when he became professor of divinity in Seabury Divinity School, Faribault, Minn. He has published: 'Catawba River and Other Poems' (1846); 'The Beautiful and the Sublime' (1884); 'Hegel's Æsthetics' (1886); 'Christian Doctrine Harmonized' (1888); 'Mens Christi' (1890); 'Problems in Ethics' (1899).

Keefer, kē'fėr, **Samuel,** Canadian engineer: b. Thorold, Ontario, 22 Jan. 1811. He is a brother of T. C. Keefer (q.v.). In 1841–53 he was chief engineer of the government board of public works, in 1853 was appointed resident engineer of the Grand Trunk railway, and in 1857–64 was government inspector of railways and deputy commissioner of public works. He completed in 1869 the Niagara Falls suspension bridge, then the longest existing single-span structure. His design and description of the bridge received a gold medal at the Paris exposition of 1878.

Keefer, Thomas Coltrain, Canadian engineer: b. Thorold, Ontario, 4 Nov. 1821. He is a brother of Samuel Keefer (q.v.). He was educated at Upper Canada College (Toronto), began practice as a civil engineer in 1838, and in 1850 was appointed by the government to survey the rapids of the St. Lawrence and explore the region between the headwaters of the St. John and the St. Lawrence. In 1851 he became engineer-in-chief of the Toronto and Kingston section of the Grand Trunk railway, and made surveys at Montreal for the present Victoria bridge across the St. Lawrence. He was chief commissioner for Canada at the Paris exposition of 1878. He wrote: 'The Philosophy of Railways' (1849); and an essay on 'The Influence of the Canals of Canada on her Agriculture' (1850), which won a prize offered by the Earl of Elgin.

Keeler, kē'lėr, **James Edward,** American astronomer: b. La Salle, Ill., 10 Sept. 1857; d. San Francisco, Cal., 12 Aug. 1900. He was graduated from the Johns Hopkins University in 1881, was appointed assistant to Prof. S. P. Langley (q.v.) in the Mount Whitney (Cal.) expedition (1881), was in 1881–3 at the Allegheny Observatory, and after study in Germany (1883–4), was appointed assistant at Lick Observatory (1886), and later astronomer there (1888). In 1891–8 he was active at the Allegheny Observatory as its director and professor of astrophysics in the Western University of Pennsylvania, and from 1898 until his death was director of the Lick Observatory. His spectroscopic work included valuable studies of the nebula in Orion and of Saturn's rings.

Keeley, kē'lĭ, **Leslie E.,** American physician: b. in 1842; d. Los Angeles, Cal., 21 Feb. 1900. He was graduated at Rush Medical College (Chicago) in 1863, was a surgeon in the Federal army during the Civil War, practised medicine at Dwight, Ill., there opened (1880) a sanitarium for the cure of inebriety and the use of narcotics, and later established branches. His system was based on a secret compound said by him to contain bichloride of gold, and hence called the «gold» cure. He published ‹The Morphine Eater› (1881).

Keely, John Ernest Worrell, American adventurer: b. Philadelphia, Pa., 3 Sept. 1837; d. there 18 Nov. 1898. In early life he was a carpenter. Prior to 1872 he became interested in music, and afterward claimed that the tuning-fork had suggested to him a new motive power. In 1874 a stock company was formed for the purpose of supplying funds for the perfection and promotion of the alleged discovery. Keely built and destroyed many models, gave exhibitions at which numerous remarkable and unexplained effects were produced, but never attained any important result. Upon his death it was found that the so-called Keely motor was operated by an invisible compressed-air apparatus, and that the entire scheme was fraudulent.

Keely Motor. See KEELY, J. E. W.

Keen, kēn, **William Williams,** American surgeon: b. Philadelphia 19 Jan. 1837. He was graduated at Brown University in 1859, and from Jefferson Medical College in 1862; and during the Civil War period was an assistant surgeon in the Federal army. He then studied in Europe 1864–6, was at the head of the Philadelphia School of Anatomy 1866–75; and at the same time lecturer on pathological anatomy at Jefferson Medical College. From 1875 to 1890 he was professor of artistic anatomy at the Pennsylvania Academy of Fine Arts and also of surgery at the Women's Medical College 1884–9, and of surgery at Jefferson Medical College till 4 Jan. 1907 when he became professor emeritus. In 1890 he published experiments with the injection of filtered air for determination of rupture of the bladder and in 1891 proposed relieving spasmodic wryneck by the exsection of the nerves supplying the posterior rotator muscles of the head. He has published: ‹Keen's Clinical Charts› (1870); ‹Early History of Practical Anatomy› (1870); etc., and became honorary fellow of the Royal College of Surgeons of England in 1900.

Keenan, kē'nan, **Henry Francis,** American novelist: b. Rochester, N. Y., 4 May 1850. He served in the Federal army during a portion of the Civil War, and was engaged in journalistic work 1868–82. He has published: ‹The Money Makers: a Social Problem›; ‹Trajan›; ‹The Aliens›; ‹The Iron Game›; ‹The Players.›

Keene, kēn, **James Robert,** American stock speculator: b. London, England, 1838. He went to California in 1852, was a miner in that State and Nevada, later was a speculator in mining stock at San Francisco, during the so-called «bonanza» period acquired $6,000,000, and for a time was president of the San Francisco stock exchange. In 1877 he established himself in New York as a Wall Street operator, soon became known for his energetic manipulations on 'Change, and since then has lost and made several fortunes.

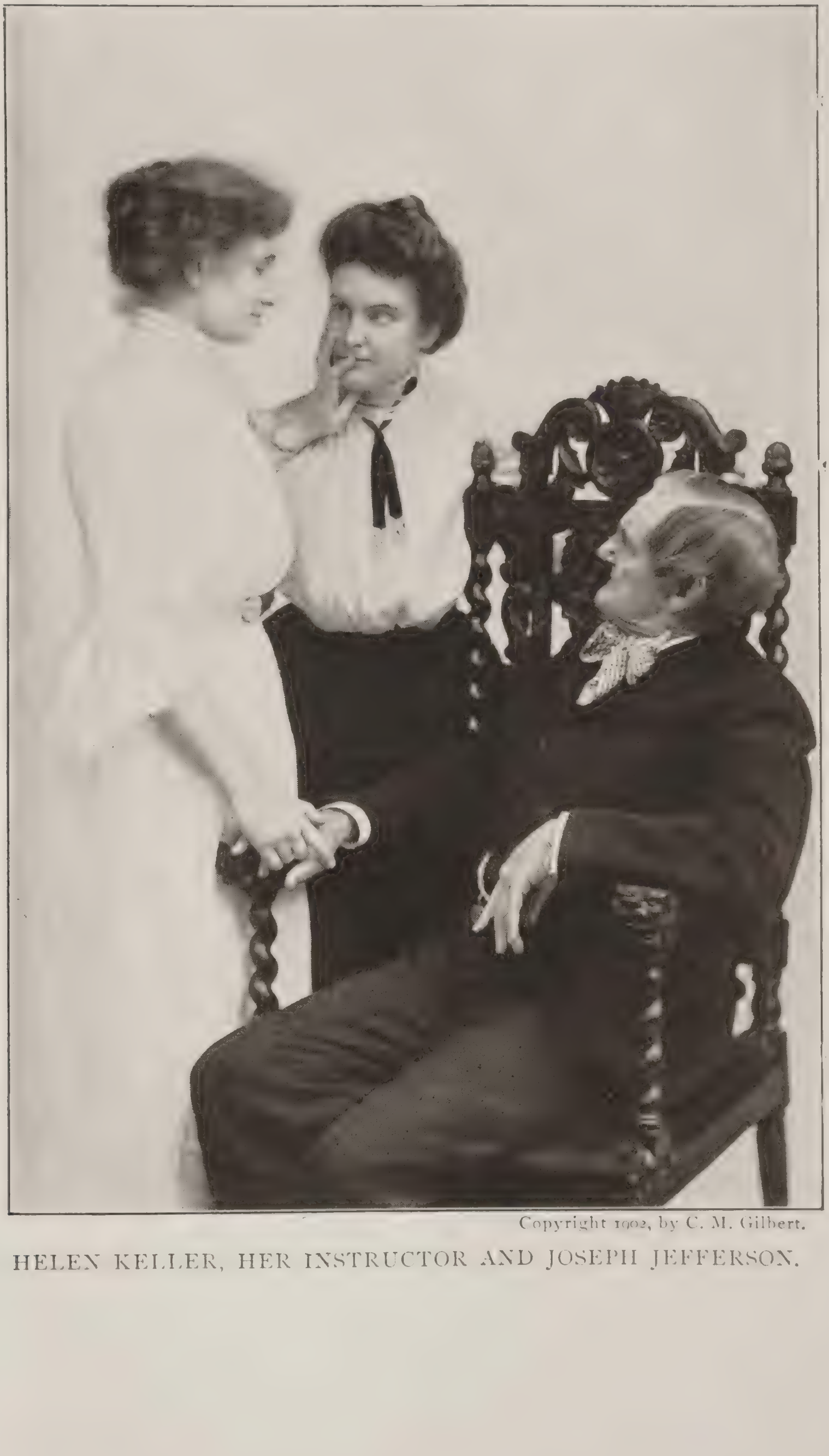
Keene, Laura, American actress and manager: b. England 1820; d. Montclair, N. J., 4 Nov. 1873. Her real name was Mary Moss, and as «LAURA KEENE» she had become famous in England in the role of Pauline in ‹The Lady of Lyons› before coming to the United States in 1852, where she made her home the remainder of her life. She was for a time manager of the Varieties Theatre in New York, and 1855–63 was lessee of the Olympic, at first called «Laura Keene's Theatre.» She was married to H. W. Taylor in 1847, and to J. Lutz ten years afterward. The most noted play produced by her was ‹Our American Cousin,› brought out in 1858 with Jefferson and Sothern in the cast. While he was witnessing this play at Ford's Theatre in Washington, President Lincoln was assassinated.

Keene, N. H., city, county-seat of Cheshire County; on the Ashuelot River, and on the Boston & M. and the Fitchburg R.R.'s; about 45 miles southwest of Concord and 43 miles west of Manchester. Mount Monadnock is 10 miles from the city. The city, known as Upper Ashuelot, was settled in 1734 and incorporated in 1753 when it took the name of Keene. It received its city charter in 1874. The chief industrial establishments are the repair-shops of the Boston & Maine railroad, sash, door, and blind factories, furniture, pail and tub, and chair factories, glue works, pottery, woolen-mill and shoe factory. Nearly 2,000 persons are employed in the factories. The annual output of manufactured goods is about $2,000,000. The products of the fertile farms of the vicinity add to the wealth of the city. Pop. (1890) 7,446; (1900) 9,165.

Keener, kē'nėr, **John Christian,** American Methodist bishop: b. Baltimore 7 Feb. 1819. After entering the Methodist ministry in 1841 he preached in Alabama till 1848 and was pastor and presiding elder in New Orleans 1848–61. He edited the ‹New Orleans Christian Advocate› (1865–70), and in the year last named was appointed a bishop of the Methodist Church, South. He has published: ‹Studies of Bible Truths› (1899); ‹The Garden of Eden and the Flood› (1900).

Keesoo, or **Teesoo,** the flowers of certain species of *Butea* (q.v.).

Keewatin, kē-wä'tĭn, a district of Canada lying west and south of Hudson Bay, and extending from Ontario and Manitoba north to the Arctic Ocean. Its area is 756,000 square miles. The greater part of the surface is hilly and somewhat mountainous, but there are no high peaks or ranges. The northern part of Lake Winnipeg and its outlet, Nelson River, are in Keewatin. There are a large number of small lakes, all of which belong in the basin of Hudson Bay. The Severn, Churchill, and Ferguson rivers cross the district and enter Hudson Bay. There is considerable fertile land, but the climate is too cold for luxuriant vegetation. In the south there are large forests of pine, spruce, and other trees. Some valuable minerals have been found, gold and copper, but the mines have not been developed. Hunting, lumbering, and fishing are the chief occupations. The inhabitants of the north are chiefly Eskimos. York Factory, at the mouth of the Nelson River, Fort Churchill, at the mouth of the



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HELEN KELLER, HER INSTRUCTOR AND JOSEPH JEFFERSON.

Churchill River, Norway House, on Lake Winnipeg, and a number of other places in Keewatin are trading stations of the Hudson Bay Company and its successors in the fur business of Canada. All are small settlements. The fisheries at Lake Winnipeg attract a colony a part of the year.

The name of the district comes from the Indian word kewatin, which means «northwest wind.» The lieutenant-governor of Manitoba is the chief executive of this territory, and has had control since the erection of the district, 12 April 1876.

Keifer, kī'fėr, **Joseph Warren,** American politician: b. Clark County, Ohio, 30 Jan. 1836. He was graduated from Antioch College; and in 1856 went to Springfield, Ohio, where he studied law, being admitted to the bar in 1858. At the outbreak of the Civil War he entered the volunteer service as major and rose to the rank of major-general; he was four times wounded; in 1866 he declined an appointment as lieutenant-colonel in the United States army. He was a member of the Ohio State senate in 1868–9; was delegate to the Republican national convention in 1876, and was elected to Congress in that year, serving till 1885; while from 1881 to 1883 he was speaker of the House. Since 1873 he has been president of the Lagonda National Bank in Springfield; he has also been prominent in the Grand Army, being department commander in Ohio (1868–70) and vice-commander-in-chief of the national organization in 1871–2. In 1898 he served as major-general of volunteers in the Spanish War, his command being located near Havana. He has written ‘Slavery and Four Years of War’ (1900).

Keith, kēth, **George,** Scottish Quaker: b. probably in Aberdeenshire about 1639; d. Edburton, Sussex, England, 27 March 1716. He was educated at Marischal College, Aberdeen; became a Quaker in 1662, and in 1677 he accompanied George Fox and William Penn to Holland on a missionary journey; came to Philadelphia in 1689; and was there accused of heresy and interdicted from preaching in 1692. He then held separate meetings of his followers, known first as Keithites and later as «Christian Quakers.» Disowned by the yearly meeting of 1694, he established a congregation in which the Quaker externals were observed but the Lord's Supper and baptism were administered. In 1700 he conformed to the Anglican Church, in 1702–4 was a missionary in America for the Society for the Propagation of the Gospel, and from 1705 until his death was rector of Edburton, Sussex. Among his writings were: ‘The Deism of William Penn and his Brethren’ (1699); ‘The Standard of the Quakers Examined’ (1702); and ‘A Journal of Travels’ (1706).

Keller, kĕl'ler, **Gerard,** Dutch writer: b. Gouda, 13 Feb. 1829. His best works are his books of travel, including: ‘A Summer in the North’ (1861); ‘A Summer in the South’ (1864); ‘Paris Besieged’ (1871); ‘Murdered Paris’ (1872); ‘Europe Sketched in All her Glory’ (1877–80); ‘America in Image and in Writing’ (1887). Among his numerous novels may be named: ‘Within and Without’ (1860); ‘From Home’ (1867); ‘Over-Perfect’ (1871); ‘The Privy Councillor’; ‘In Our Days’ (1880); ‘Our Minister’ (1883); ‘Flickering Flames’ (1884); ‘Nemesis’ (1885). He is the author also of books for the young, and several dramas.

Keller, Gottfried, German poet and novelist: b. Zürich 19 July 1819; d. there 16 July 1890. Original in execution, he was a keen observer, genuinely artistic, and with a strong sense of humor, sometimes extravagantly indulged. In his best vein he goes straight to the heart. To romanticism in *motifs,* processes, and characters, he joined realism in execution. Among his works may be cited: ‘Der grüne Heinrich’ (1854, 16th ed. 1897), his first novel; ‘Seldwyla Folk,’ a collection of short stories (1856); ‘Romeo und Julie auf dem Dorfe’ (1876); ‘Martin Salander’ (1886). His collected poems appeared in 1883. By critics Keller is ranked among the best of German novelists. Consult: Brahm, ‘Gottfried Keller’ (1883); Köster, ‘Gottfried Keller’ (1900).

Keller, Helen Adams, American blind, deaf and dumb girl who has been successfully educated: b. Tuscumbia, Ala., 27 June 1880. When about two years old, she was deprived of sight and hearing by a severe illness. Her education was not begun till she was seven, when Miss Anna Sullivan of the Perkins Institute of the Blind, went to her home to take charge of her. She learned the deaf and dumb language by touch, learned to read by the braille system, and to write, using a special typewriter; in 1890, she also learned to speak. When 12 years old, she went to Boston, where she has since lived; in 1896 she entered the Cambridge School for Young Ladies to prepare for college. Miss Sullivan went with her to all classes, and repeated the lectures and discussions by touch. In 1900 she entered Radcliffe College, and was graduated with honors in 1904. The work of her college course was done with aid of Miss Sullivan, as in the preparatory school; the text-books were printed in braille; she wrote her examinations with her own typewriter; and had special conferences with her instructors instead of taking part in recitations. In addition to doing the full college work, she took part in the social life, and was very popular with her classmates. She has written her autobiography under the title of ‘Story of My Life’ (1903).

Kellermann, François Christophe, fräṅ swä krēs-tōf kĕl'lėr-män (originally Georg Michael Kellermann), Duke of Valmy, French marshal: b. Wolfsbuchweiler-an-der Tauber, Bavaria, 28 May 1735; d. 12 Sept. 1820. He entered the Conflans Legion as a hussar in 1752, and engaged in the first campaigns of the Seven Years' War. In 1792 he received the command of the army of the Moselle, formed a junction in September with the main army under Dumouriez, and sustained 20 Sept. 1792 the celebrated attack of the Duke of Brunswick. In the following wars of France Kellermann received various general commands. He became marshal of France in 1804 and Duke of Valmy in 1809. After the Bourbon restoration he was appointed a member of the chamber of peers, where he espoused the Liberal side.

Kelley, kĕl'ĭ, **Benjamin Franklin,** American soldier: b. New Hampshire, N. H., 10 April

1807; d. Oakland, Md., 17 July 1891. In 1861 he recruited and became colonel of the first Virginia regiment enlisted in the Federal service, on 17 May became brigadier-general, captured Romney 26 October and was for a time, until January 1862, commander of the department of Harper's Ferry and Cumberland. In July 1863, he was appointed to command the department of West Virginia, in November 1863 destroyed the Confederate camp near Morefield, Va., and in August 1864 defeated the enemy at Cumberland, Md., and New Creek and Morefield, Va. He was brevetted major-general of volunteers in 1865, and subsequent to the war was from 1876 superintendent of the Hot Springs (Ark.) reservation, and from 1883 an examiner of pensions.

Kelley, Edgar Stillman, American composer: b. Sparta, Wis., 14 April 1857. He was graduated from the Stuttgart Conservatory of Music in 1880, and returning to this country settled in San Francisco, composing there incidental music to ‹Macbeth.› He removed later to New York, where he became special instructor in composition in the New York College of Music, and where his opera, ‹Puritana,› was produced in 1892. He has also composed an orchestral suite ‹Aladdin› symphony; music to ‹Prometheus Bound›; music for dramatic production of ‹Ben Hur› (1899); etc.

Kelley, James Douglas Jerrold, American naval commander: b. New York 25 Dec. 1847. He was graduated from the United States Naval Academy in 1868; became lieutenant-commander in 1893 and commander in 1899. He has published: ‹The Question of Ships›; ‹Our Navy›; ‹American Men-o'-War›; ‹History of the Naval Experimental Battery›; ‹The Navy of the United States›; and is the naval editor of the New York *Herald.*

Kelley, William Darragh, American legislator: b. Philadelphia, Pa., 12 April 1814; d. Washington, D. C., 9 Jan. 1890. He was apprenticed first to a jeweler and later to a printer, studied law at Philadelphia and in 1841 was admitted to the bar there, in 1845–6 was attorney-general of Pennsylvania, and in 1846–56 judge of the court of common pleas at Philadelphia. Previously a Democrat, he became a Republican in 1854, and in that year gave at Philadelphia a once well-known address on ‹Slavery in the Territories.› In 1860 he was a delegate to the national Republican convention, and from that year until his death was a member of the House of Representatives, where he was chairman of the Committee on the Centennial Exposition and was known as «Pig-iron Kelley.» For some years he was senior of the House. Among his publications are: ‹Letters on Industrial and Financial Questions› (1872); ‹Letters from Europe› (1880); ‹The New South› (1887).

Kellogg, kĕl'ŏg, **Amas Monkham,** American educator: b. Utica, N. Y., 5 June 1832. He was graduated from the Albany (N. Y.) State Normal School in 1851 and was instructor there 1852–6. Since then he has held other educational posts and has edited the ‹School Journal› from 1874. He has published: ‹School Management›; ‹Life of Pestalozzi› (1891); ‹How to be a Successful Teacher› (1901), etc.

Kellogg, Clara Louise, American opera singer: b. Sumterville, S. C., 12 July 1842. She obtained her musical education chiefly in New York, where her first appearance in opera was in 1861 at the Academy of Music, in the role of Gilda in ‹Rigoletto.› Henceforward she was one of the most popular of American singers, and was also most cordially received in England, where she sang in opera 1867–8 and again in 1872 with Christine Nilsson. Her voice was a pure and flexible soprano and her execution brilliant. She had an extensive repertoire, including 45 operas. In 1874 she organized an English opera company and with it visited nearly every part of the United States. In 1876 she organized an Italian opera company and later appeared on the concert stage. In 1887 she married her manager, Carl Strakosch, and soon after retired from professional life.

Kellogg, Edgar Romeyn, American soldier: b. New York 25 March 1842. He served through the Civil War in the Federal army, and was distinguished for bravery at Murfreesboro, during the Atlanta campaign, and at Jonesboro. He commanded the 10th United States Infantry at the battle of San Juan Hill, Cuba, 1 July 1898, and was appointed brigadier-general, United States army in the following October.

Kellogg, Elijah, American Congregational minister and writer for the young: b. Portland Maine, 20 May 1813; d. Harpswell, Maine, 17 March 1901. He was graduated from Bowdoin College in 1840, from the Andover Theological Seminary in 1843, was pastor of the Congregational Church at Harpswell, Maine, in 1844–55, in 1855–65 was chaplain of the Boston (Mass.) Seamen's Friend Society, was later for a time in charge of a congregation at Rockport, Mass., but soon returned to Harpswell, and there devoted himself to literary work. He published over a score of juveniles, including ‹The Elm Island Series› (1868–70); ‹Pleasant Cove Series› (1870–4), and ‹Good Old Times Series› (1877–82). But he is best known for his familiar blank verse addresses, ‹Spartacus to the Gladiators,› ‹Regulus to the Carthaginians,› and ‹Pericles to the People.› Consult Mitchell, ‹Elijah Kellogg: the Man and His Work› (1903).

Kellogg, George, American inventor: b. New Hartford, Conn., 19 June 1812; d. there 6 May 1901. Albert Kellogg, the botanist (q.v.), was his brother. He was graduated from Wesleyan University in 1837, in 1841 became a manufacturer in Birmingham, Conn., removed in 1855 to New York, was a United States revenue officer in 1863–6, and later was active in manufacturing and experimentation at Cold Spring, N. Y. Among his inventions were a machine for the manufacture of jack-chain, with a capacity of a yard per minute; a type-distributer; an adding apparatus; and a dovetailing machine.

Kellogg, Martin, American Latinist and educator: b. Vernon, Conn., 15 March 1828; d. San Francisco 26 Aug. 1903. He was graduated from Yale in 1850, from the Union Theological Seminary in 1854; having removed to California about 1855 there held a pastorate at Grass Valley, Nevada County; was professor of Latin and mathematics in the College of California (1860–9); and when the college was merged into the university held the chair of Latin and Greek in the latter institution in 1869–76. In 1876–94 he was professor of Latin language and literature, in 1890–3 acting president, and in 1893–9 president of the university. He resumed his professional duties in 1900. He published: ‘Ars Oratoria,’ an edition of selections from Cicero and Quintilian (1872), and ‘The Brutus of Cicero’ (1889).

Kellogg, Samuel Henry, American Presbyterian missionary and scholar: b. Quogue, Long Island, N. Y., 6 Sept. 1839; d. Landour, India, 2 May 1899. He was graduated at Princeton College in 1861 and at the Theological Seminary in 1864, and after being ordained to the Presbyterian ministry, went as a missionary to India, where he remained till 1877. He was professor of systematic theology in Western Theological Seminary 1877–86, and pastor of St. James' Square Presbyterian Church, Toronto, 1886–92. He returned to India in 1892 and remained there till his death. His publications include ‘A Grammar of the Hindi Language’ (1876); ‘The Jews: or, Prediction and Fulfilment’ (1883); ‘The Light of Asia and the Light of the World’ (1885); ‘The Genesis and Growth of Religion’ (1892); ‘From Death to Resurrection’ (1885); etc.

Kellogg, William Pitt, American lawyer and politician: b. Orwell, Vt., 8 Dec. 1831. He was educated at the Norwich Military Institute and removed to Illinois, where he studied law. Being admitted to the bar in 1852 he began his practice at Canton. He became active in the Republican party, was a delegate to the national convention in 1860, and one of the presidential electors in the same year, voting for Lincoln. In 1861 the President appointed him chief justice of the Territory of Nebraska, but later granted him leave of absence that he might raise a regiment of cavalry in Illinois, of which he became colonel. He remained in the army two years, serving in the Missouri campaign with Pope, but was compelled to resign on account of ill health. He was collector of the port at New Orleans (1865–8); was elected senator from Louisiana in 1868; was then elected governor of the State in 1873, serving till 1876, when he was again elected senator. At the expiration of his term as senator he was elected to the House of Representatives, where he remained till 1885. He has been a delegate to every Republican national convention from 1860 to 1896.

Kel'ly, Edmond, American municipal reformer: b. Toulouse, France, 28 May 1852. He was educated in early years in England and after graduation at Columbia Law School in 1877, was called to the bar. In 1884 he was admitted to the French bar and practised in Paris till 1890, and was counsel for the American legation at Paris. He has been conspicuous in recent efforts to improve the municipal administration of New York. He is the author of ‘Evolution and Effort, and their Relation to Religion and Politics’ (1898); and ‘Government; or, Human Evolution’ (1901).

Kelly, James Edward, American sculptor: b. 30 July 1855. He studied at the National Academy of Design, and up to 1881 was known as an illustrator of books and magazines. Since that time he has successfully devoted himself to sculpture, and chosen subjects from American history for treatment by his patriotic chisel; so great has been his success that he has won the title of «Sculptor of American History.» His well known works include ‘Sheridan's Ride’ (1878); ‘Paul Revere,’ a statuette (1882); ‘Monmouth Battle Monument,’ with five illustrative panels (1883–5); groups for the ‘Saratoga Monument’ (1887); ‘Grant at Fort Donelson’ (1886); ‘General Devens’ and the ‘Sixth New York Cavalry Monument’ at Gettysburg (1890); ‘Call to Arms’; colossal figure for the Troy ‘Soldiers' Monument’ (1891); ‘Buford Monument’ at Gettysburg (1895); ‘Battle of Harlem Heights’ (executed for the Sons of the Revolution at Columbia University, 1897); and a colossal monument to commemorate the defense of New Haven. A remarkable series of military portraits has also been produced by him. Forty generals of the Civil War, including Grant, Sherman and Sheridan, gave sittings for the sculptor. A series illustrating the leading generals and admirals of the Spanish-American War has followed, witnessing to his skill and industry as a portrait sculptor. Wheeler, Dewey, and Sampson are included in this latter gallery of busts.

Kelly, John, American politician: b. New York 21 April 1821; d. there 1 June 1886. After a public school education, he was apprenticed to the mason's trade, in 1845 established a successful business of his own, was elected alderman in 1854, in 1855–9 was a Democratic representative from New York in the 34th and 35th Congresses, and in 1859–62 and 1865–7 was sheriff of New York County. In 1868 he was the candidate of the Democratic Union for mayor, but was defeated by Oakey Hall; and in 1871 assisted Charles O'Conor, Samuel J. Tilden and others in the reorganization of Tammany Hall which followed the Tweed «ring» troubles. He became comptroller of New York in 1876, but was removed in 1879 by Mayor Cooper. In 1878 he caused the city delegates to bolt the Democratic State convention of that year, and was himself nominated for governor by the bolters on an independent ticket in opposition to Robinson, the regular candidate. He received 77,566 votes, and thus caused the election of Alonzo B. Cornell, Republican. In 1885 and 1886 he was chairman of the Tammany Hall general committee. See TAMMANY HALL.

Kelly, William, American inventor: b. Pittsburg, Pa., 22 Aug. 1811; d. Louisville, Ky., 11 Feb. 1888. He early turned his attention to invention, engaged in the forwarding and commission business at Pittsburg, Pa., and from 1846 in the iron business in Kentucky. In 1851 he finally perfected his process in decarbonizing iron by means of a current of air, and thus by a converter directly transforming pig-iron into steel. This method, «Kelly's air-boiling process,» was the same as that patented by Sir Henry Bessemer in England in 1856 (or 1857), and Kelly asserted that Bessemer had gained knowledge of it through American workmen. Bessemer's application in the United States was refused, and the patent awarded to Kelly. Kelly's interests were safeguarded by a syndicate, and steel was first manufactured under his patents in the foundry at Wyandotte, Mich. He is said to have introduced Chinese labor into the United States.

Kelly's Ford, Engagements at. This point on the Rappahannock River six miles above its junction with the Rapidan and about five miles below Rappahannock Station, was the scene of several engagements between the Federals and Confederates during the Civil War. In August 1862, the Union cavalry of the Army of Virginia had a spirited encounter with the Confederate cavalry, and 17 March 1863 Gen. Averell with 2,100 Union cavalry and a battery of six guns, crossed at the ford, after a sharp engagement, and moved on Culpeper Court House, under orders to rout and destroy Fitzhugh Lee's cavalry brigade, reported at that place. Lee was found in his immediate front with five regiments and a battery, and when about noon Averell advanced, a hard fight ensued, during which Lee was gradually forced back over a mile; then Averell was checked, finally driven back, and recrossed the river at dark. It was the first purely cavalry battle of the War, and was closely contested on both sides. The Union loss was 65 killed and wounded and 22 missing; the Confederate loss, 99 killed and wounded and 34 missing. Among the Confederate killed was Captain John Pelham, a young artillerist of much promise. A portion of Pleasanton's cavalry division crossed the ford and took part in the battle of Fleetwood (q.v.) 9 June 1863. When Gen. Meade began his Mine Run campaign (see MINE RUN) two corps of the Army of the Potomac under Gen. Sedgwick forced the passage of the Rappahannock at the railroad crossing, 7 Nov. 1863, while Gen. French, with two corps, forced the passage at Kelly's Ford, five miles below. The advance of the Third corps crossed with a loss of 36 killed and wounded, the Confederate loss being 64 killed and wounded and 295 captured, and the Army of the Potomac was united at Brandy Station. Preceding and following these engagements the ford was the scene of many stirring events.

E. A. CARMAN

Kelp, any of several large broad-leaved fucoid seaweeds (q.v.), which are burned for making ash and used for other purposes. The ash is known as «kelp» (or in France as *varec*), and was formerly produced in large quantities by slowly charring several tons of the weed in a shallow pit. The yield in ash was about 5 per cent of the weight of the mass burned. This crude ash contains several salts, especially carbonates and sulphates of sodium and potassium, with other substances in smaller proportions. It used to be the principal source of soda and iodine, but these substances are now otherwise obtained, and the making of kelp-ash has ceased to be profitable.

Kelp-crab, a large squarish edible crab (*Epialtus productus*), numerous in rocky weed-covered places along the Pacific coast from Monterey to Puget Sound.

Kelp-fish, a large blenny (*Heterostichus rostratus*) of the Californian coast, which is sold for food in the local markets. It is reddish brown, much streaked and mottled, so that it is practically invisible among the sea-weeds (kelp) where it usually lurks. Many other more or less similar fishes are called kelp-fishes in other parts of the world.

Kel'tie, John Scott, Scottish geographer: b. Dundee, Scotland, 29 March 1840. He has been editor of the 'Statesman's Year Book' from 1880, is editor of the 'Geographical Journal,' and has writen extensively on geographical and scientific topics in newspapers and periodicals. He has published 'History of Scottish Highlands and Clans' (1874); 'Report on Geographical Education' (1886); 'Applied Geography' (1890); 'The Partition of Africa' (1894). He is a member of geographical societies all over the world.

Kel'ton, John Cunningham, American soldier: b. Delaware County, Pa., 1828. He was graduated at West Point in 1851, received the commission of lieutenant in the infantry and served for six years in the frontier garrisons of Minnesota, Kansas and Dakota. At the conclusion of that period he was ordered to West Point as instructor in the use of small arms. During the Civil War he returned to active service and in 1861 became purchasing agent for the Western Department. The same year he was put in command of the 9th Missouri volunteers, with the commission of colonel. In 1862 he was appointed to the staff of Major-General Halleck. as assistant adjutant-general, and in 1865 brevetted brigadier-general in the regular army. He was appointed after the war a staff colonel and assistant adjutant-general at Washington; and invented improvements in military firearms which met with the acceptance of the Ordnance Department. Among his works on military subjects may be mentioned a 'Manual of the Bayonet' (1861).

Kelts. See CELTS.

Kel'vin, Lord. See THOMSON, SIR WILLIAM.

Kem'ble, Adelaide. See SARTORIS, ADELAIDE KEMBLE.

Kemble, Charles, English actor, 11th child of Roger Kemble (q.v.), and younger brother of John Philip Kemble (q.v.): b. Brecon, South Wales, 25 Nov. 1775; d. London 12 Nov. 1854. He was educated at the English Roman Catholic College at Douay, France, and in 1794 made his first appearance at Drury Lane as Malcolm to his brother's Macbeth. In 1800 he produced at the Haymarket Theatre his adaptation of Mercier's 'Deserteur,' under the title of 'The Point of Honor,' which achieved considerable success. In 1807 his play of 'The Wanderer,' adapted from Kotzebue, and in 1808 his farce of 'Plot and Counterplot,' were both successfully brought on the stage. As an actor he gained special celebrity by the performance of such characters as Falconbridge, Edgar, Romeo, Charles Surface, Cassio, Don Felix, and Benedick. His impersonations were greatly heightened by the physical advantages which he possessed of a fine voice, handsome features, and a tall athletic figure. About 1840 he was appointed to the office of examiner of plays, and shortly afterward made his last appearance on the stage. He subsequently gave occasionally public readings from Shakespeare. He was the father of John Mitchell Kemble (q.v.), the philologist, and of Fanny and Adelaide Kemble (q.v.). Consult Fitzgerald, 'The Kembles' (1871).

Kemble, Elizabeth. See WHITLOCK, ELIZABETH KEMBLE.

Kemble, Frances Anne, English actress and author, daughter of Charles Kemble (q.v.): b. London 27 Nov. 1809; d. there 16 Jan. 1893. She manifested no special predilection for the stage, but made her début at Covent Garden, then under the management of her father, in October 1829. On this occasion she played Juliet, her father taking the part of Romeo, and her mother that of the nurse, with complete success. For the three succeeding years she performed leading parts in tragedy and comedy with great applause, distinguishing herself particularly in Juliet, Portia, Bianca in Milman's 'Fazio,' Julia in the 'Hunchback' (the latter being originally personated by her), Belvidera, Isabella, Lady Teazle, and Louise de Savoy, in her own play of 'Francis the First,' written when she was 17, and received with approbation. In 1832 she accompanied her father to the United States, and met with an enthusiastic reception in the chief cities. In 1834 she was married to Pierce Butler, a Georgia planter, and retired from the stage. The union proving unhappy, a separation took place at the end of a few years, and Mrs. Butler fixed her residence in Lenox, Mass. In 1849 she secured a divorce and resumed the name of Kemble. Her first work in prose, 'A Journal of a Residence in America' (1835) was chiefly devoted to a description of her tour through the United States. It was followed in 1837 by a drama, 'The Star of Seville,' acted with success; and in 1844 appeared a collection of her poems. Later works were 'A Year of Consolation' (1847); 'Residence on a Georgia Plantation' (1863); 'Record of a Girlhood' (1878–9); 'Records of Later Life' (1882); 'Notes upon Some of Shakespeare's Plays' (1882); 'Poems' (1883); 'Far Away and Long Ago,' a story (1889); 'Further Records' (1891). In the winter of 1848–9 she commenced in Boston a series of Shakespearian readings which drew crowded audiences, and during the next two years repeated the course in some of the principal American cities. In 1851 she returned to England, reappeared for a brief period on the stage, and gave readings in London and other parts of the United Kingdom. In 1856 she returned to the United States, and continued for several years at intervals to give readings in Boston and elsewhere. Her grandson, Owen Wister (q.v.) is a well known American writer.

Kemble, George Stephen, English actor: b. Kington, Herefordshire, 3 May 1758; d. 5 June 1822. He was a son of Roger Kemble (q.v.) and in 1783 made his début in London at Covent Garden Theatre as Othello. In the latter part of his career his increasing bulk enabled him to play the part of Falstaff without resort to padding. He was at various times theatrical manager in London, Edinburgh, and Glasgow.

Kemble, John Mitchell, English Anglo-Saxon scholar: b. London 2 April 1807; d. Dublin 26 March 1857. He was educated at Trinity College, Cambridge, and having early directed his attention to Anglo-Saxon language and history, employed himself in the ancient MSS. in the libraries of the university. The first fruits of his researches appeared in 1833, in the publication of the Anglo-Saxon poem 'Beowulf,' in 1834, and issued a pamphlet on the 'History of the English Language, First or Anglo-Saxon Period.' He edited in seven octavo volumes, for the English Historical Society, a collection of all the known charters of the Anglo-Saxon period, under the title of 'Codex Diplomaticus Ævi Saxonici,' and in 1849 appeared his most valuable and best known work, 'The Saxons in England.' Kemble was for many years editor of the 'British and Foreign Review,' and in 1840 succeeded his father, Charles Kemble (q.v.), as censor of plays, which office he occupied till his death.

Kemble, John Philip, English tragedian, eldest son of Roger Kemble (q.v.): b. Prescott, Lancashire, 1 Feb. 1757; d. Lausanne, Switzerland, 26 Feb. 1823. He was educated at the Roman Catholic seminary of Sedgley Park, Staffordshire, and the College of Douay, France, where he early distinguished himself by his proficiency in elocution. On his return to England he entered immediately upon the profession of an actor, and appeared for the first time in London at Drury Lane, 30 Sept. 1783, in the part of Hamlet, and was received with great applause. It was not, however, till 1788 that he took a decided lead in tragedy. He afterward obtained the management of Drury Lane Theatre, where his sister, Mrs. Siddons (q.v.), was the leading actress. In 1794 he brought out a musical entertainment of his own, entitled 'Lodoiska,' which had a great run. In 1802 he became manager of the Covent Garden Theatre, where he continued his career with great success till the destruction of the theatre by fire in 1808. In the autumn of 1809 the new edifice which had been constructed opened with an increase of prices, which, with certain obnoxious arrangements in regard to the private boxes, created for a series of nights the disturbances known by the name of the O. P. riots. Kemble retired from the stage 23 June 1817. As an actor he was distinguished for dignity, precision, and studious preparation. His merits were differently appreciated, but by all he was regarded as a highly gifted actor, and the impressions made in characters more immediately adapted to his style of excellence, such as Cato, Coriolanus, Hamlet, John, Jaques, Penruddock, was very great. See Boaden, 'Memoirs of the Life of John Philip Kemble' (1825).

Kemble, Roger, English actor and theatrical manager: b. Hereford 1 March 1721; d. 6 Dec. 1802. John Philip Kemble (q.v.) and Mrs. Siddons (q.v.) were his children. He organized in 1753 a traveling company in which many members of his family appeared. In 1788 he appeared at the Haymarket as Falstaff and the Miller in 'The Miller of Mansfield,' when, although rated as a mediocre actor, he is said to have played "with very superior effect."

Kemeys, Edward, American sculptor: b. Savannah, Ga., 31 Jan. 1843; d. 11 May 1907. He was educated in New York and served in the Civil War as captain in the artillery. He resigned in 1866 and went west, where he saw something of Indian life, and became familiar with the habits and forms of big game. He returned to New York and worked as a civil engineer in the laying out of Central Park, but did not choose the profession of art until 1870, when he resolved to become a sculptor. He went abroad in 1877 and his exhibits in Paris and London attracted attention, especially his 'Fight between a Buffalo and Wolves' in the Salon of 1878. He made American wild animals his specialty. He was in short the American Barye; his ‹Panther and Deer,› his ‹Coyote and Raven,› are noteworthy for their fidelity to nature and life-like expression, and he was also remarkably successful in his figures of the North American Indian.

Kem'nitz, Martin. See CHEMNITZ, MARTIN.

Kempe, Charles Eamer, English worker in stained glass: b. Ovingdeane, Sussex, 29 June 1837. He received his early education at Rugby, and was graduated at Oxford University. His principal works have been in stained glass of the 13th century style in which the color, drawing and expression are of a unique excellence. He is distinctly a religious painter, who choosing as his medium the most difficult and intractable of methods and materials, has achieved supreme artistic and devotional success. His principal production in this country is the remarkable Jesse window in the Church of the Advent, Boston, which bears comparison with the more famous Jesse window of Troyes, France. He has designed and executed many fine windows for the cathedrals of Lichfield and Durham, and the ‹Jane Austen› window recently set up in Winchester Cathedral is one of his latest creations.

Kem'per, James Lawson, American soldier and politician: b. Madison County, Va., 11 June 1823; d. Orange County, Va., 7 April 1895. Graduated from Washington College (Lexington, Va.) in 1842, he studied law at Charlestown (Va.), served in the Mexican War as captain of volunteers, and for ten years was a representative in the Virginia legislature, during two of which he was speaker of the house. In 1861 he was appointed colonel of the 7th Virginia, C. S. A.; in 1862 fought at Fair Oaks (31 May–1 June), where he was commissioned brigadier-general; and later also at Frayser's Farm (30 June), South Mountain (14 September), Antietam (16–17 September); and Fredericksburg (13 December). He was severely wounded at Gettysburg, was subsequently detailed to command the forces in and about Richmond, and 1 March 1864 was promoted major-general. After the war he practised law in Madison County, was Democratic governor of the State in 1874–8 and at the close of his term became a planter in Orange County. He published a collection of messages to the State legislature (1876).

Kemper, Reuben, American soldier: b. Fauquier County, Va., 1770; d. Natchez, Miss., 10 Oct. 1826. He emigrated to Ohio in 1800, and subsequently removed with two of his brothers to the Territory of Mississippi, where they were leaders in the movement to rid West Florida of Spanish rule. The Spanish authorities caused the Kempers to be kidnapped, but they were rescued by the commander of the American fort at Point Coupee. The Kempers pursued with great ferocity all who were engaged in this wrong upon them, and Reuben devoted himself to the task of driving the Spaniards from the American continent. He was engaged in an attempt to capture Mobile, which failed; and on the fitting out of the formidable expedition of Gutierrez and Toledo, in 1812, against the Spanish authority in Mexico, was assigned the rank of major, and afterward chosen colonel of the force, which co-operated with the Mexican insurgents. The expedition advanced into Texas, fought several bloody battles, in which Kemper and his Americans performed extraordinary feats of valor, and won brilliant victories. Kemper was subsequently engaged under General Jackson in the defense of New Orleans, and added greatly to his reputation as a soldier by his activity and efficiency. At the conclusion of the war he became a planter in Mississippi.

Kempff, Louis, American rear-admiral: b. Belleville, Ill., 11 Oct. 1841. He was graduated at the United States Naval Academy in 1861 and served with distinction throughout the Civil War. He was promoted captain in 1891, and became rear-admiral in 1899. When the Boxer troubles began in China in 1900 he was placed in command of the United States naval forces in Chinese waters. On 29 May he sent 108 marines ashore, who co-operated with the men landed from the other foreign warships in the harbor at Taku. When the Chinese forts were shortly after bombarded by the allied naval forces he declined to participate in the attack, on the ground that his government was not at war with China. For the judgment displayed on that occasion a joint resolution was pending in the 57th Congress conferring on him the thanks of Congress. He was retired from active service in October 1903.

Kem'pis, Thomas â, German devotional writer: b. Kempen, near Cologne, 1380; d. Mount Saint Agnes, near Zwolle, Netherlands, 26 July 1471. He was educated at Deventer by the Brethren of the Common Life, a religious order of men who passed a contemplative existence in transcribing manuscripts, compiling and writing religious books of various sorts, and religious exercises. In 1399 he entered the monastery of Mount St. Agnes, near Zwolle, of which his brother was prior, took the monastic vows in 1406, was ordained priest six years afterward, and in 1425 was elected sub-prior. He excelled as a copyist, and delighted to transcribe the Scriptures, the church fathers, and works of ascetic piety, while the fame of his eloquence and zeal was widely extended. He owes his present renown to his treatise ‹De Imitatione Christi,› which has been translated into every language in Christendom. It has been wrongly but somewhat naturally attributed to the renowned theologian Gerson, chancellor of the University of Paris, and the question was debated with a view to national honor and the interests of ecclesiastical orders. The evidence in favor of the authorship of à Kempis is overwhelming. Three writers nearly his contemporaries mention him as author. Moreover several copies written in his own hand are extant, and in one ancient copy he is expressly named as the author. Both the literary style and the tone of refined piety which characterize this work are also distinguishing features of the devotional works of which he is certainly the author. Consult Kettlewell, ‹Thomas à Kempis and the Brothers of the Common Life› (1884); Wolfsgruber, ‹Giovanni Gerson, sein Leben und sein Werk De Imitatione Christi› (1880).

Ken, or **Kenn, Thomas,** English bishop and hymnologist: b. Little Berkhamstead, Hertfordshire, 1 July 1637; d. Longleat, Wiltshire, 19 March 1711. He was educated at Winchester School, graduated from New College, Oxford, and became successively domestic chaplain to Bishop Morley (1665); rector of Brightstone, Isle of Wight (1667); and prebend of Winchester (1669). He spent five years traveling on the continent with his nephew Izaak Walton, living principally at Rome (1675–80), and accompanied Mary, Princess of Orange, to Holland, as domestic chaplain. In 1680 he was appointed chaplain to Charles II., attended him in his last illness, and was nominated by him to the bishopric of Bath and Wells (1684). He suffered deprivation with other non-jurors (q.v.) on the accession of William of Orange, for maintaining allegiance to James II. (1691). He was one of the lights of the English Church in one of the darkest periods of English social life, and by his zeal and devotion did much to maintain the standard of Christian conduct, his personal example of goodness being backed by learning, taste, and breadth of sympathy. His theological and devotional writings are principally valuable for the personality with which they are connected, but his immortal ‘Morning and Evening Hymns’ have won for him imperishable fame as the guide and inspirer of Christian devotion. Consult: Plumptre, ‘Life of Bishop Ken’ (1888).

Kenai, kĕ-nī′, a peninsula in the southern part of Alaska, with William Sound on the east, Gulf of Alaska east and south, and Cook Inlet on the west. It is about 160 miles long and 110 miles across the widest part. It has good harbors, valuable coal fields, and some gold has been discovered.

Ken′dal, Margaret Brunton Robertson (GRIMSTON), English actress: b. Great Grimsby 15 March 1849. She was a sister of T. W. Robertson, the dramatist (q.v.); was known on the stage as «MADGE ROBERTSON» and made her first appearance in London, as Ophelia, in 1865. She soon gained a reputation as an excellent actress of high comedy. On her marriage to W. H. Grimston (q.v.) in 1869 she assumed with him the stage name of Kendal. The Kendals made several visits to America after 1889 and secured favorable notice wherever they were seen.

Kendal, William Hunter (WILLIAM HUNTER GRIMSTON), English actor: b. London 16 Dec. 1843. After his marriage to Madge Robertson (see KENDAL, M. B. R.) in 1869, he played leading parts with her. He commenced his career on the stage at Glasgow in 1862, where he remained till 1866, supporting such stars as Mr. and Mrs. Charles Kean, Helen Faucit, G. O. Brooks, etc.; made his first appearance in London at the Haymarket Theatre in 1866, in ‘A Dangerous Friend,’ played there such parts as Charles Surface, Captain Absolute, Romeo, Orlando, Pygmalion, and in 1879–88 was lessee and manager with John Hare of the St. James Theatre, where were produced ‘The Queen's Shilling’; ‘The Squire’; ‘Impulse’; ‘The Ironmaster’; ‘A Scrap of Paper’; ‘Lady of Lyons’; and ‘As You Like It.’ He toured with Mrs. Kendal in the United States and Canada in 1889–95.

Ken′dall, Amos, American journalist and statesman: b. Dunstable, Mass., 16 Aug. 1789; d. Washington, D. C., 11 Nov. 1869. He was graduated from Dartmouth in 1811, studied law at Groton, Mass., in 1811–14, was admitted to the bar at Frankfort, Ky., in 1814, was postmaster and editor of the ‘Patriot’ at Georgetown, Ky., in 1815–6, and in 1816–29 co-editor and part owner of the ‘Argus of Western America’ at Frankfort. In 1829 he was appointed fourth auditor of the United States treasury, and during the Jackson administration he was extremely influential. He aided in the formation of the President's anti-bank policy (see JACKSON, ANDREW), was a special treasury agent to conduct negotiations with State banks, and is thought to have written several of Jackson's state papers. Appointed postmaster-general by Jackson in 1835, he was retained by Van Buren, but in 1840 resigned because of ill health. He cleared the post-office department of debt, and introduced numerous reforms. He established ‘Kendall's Expositor,’ bi-weekly, in 1841, and the ‘Union Democrat,’ weekly, in 1842, but both journals shortly ceased publication. In 1845 he became associated with S. F. B. Morse (q.v.) in the ownership and management of the Morse electric telegraph patents, and by his able direction ensured their commercial success and a fortune for himself. He gave largely in Washington for philanthropic purposes. Though calling himself a Jackson Democrat, he strongly opposed secession. He wrote an incomplete ‘Life of Andrew Jackson, Private, Military, and Civil’ (1843); ‘Full Exposure of Dr. C. T. Jackson's Pretensions to the Invention of the Electromagnetic Telegraph’ (1867), and an ‘Autobiography,’ posthumously published (1872).

Kendall, George Wilkins, American journalist: b. Amherst (now Mount Vernon), N. H., 1809; d. Oak Springs, Texas, 22 Oct. 1867. Settling in New Orleans in 1835, he was one of the founders of the New Orleans *Picayune* in 1837, which became under his direction one of the leading journals of the South. He wrote ‘Narrative of the Texas Santa Fe Expedition’ (1844), an expedition in which he took part; and ‘The War Between the United States and Mexico’ (1851).

Kendall, Henry Clarence, Australian poet: b. Ulladalla district, New South Wales, 18 April 1841; d. Redfern, near Sydney, 1 Aug. 1882. He became a lawyer's clerk at Sydney in 1860, in 1863 a clerk in the lands department of the New South Wales public service; later was in the colonial secretary's office; in 1869–73 was active as a journalist at Melbourne; and for some time previous to his death was an inspector of forests. His chief volumes are: ‘Leaves from an Australian Forest’ (1869), and ‘Songs from the Mountains’ (1880). He has been called the «poet of the bush» because of his skilful delineation of the character of Australian landscape. In 1886 appeared a collected edition of his verse, with a memoir.

Kendall, William Sergeant, American painter: b. Spuyten Duyvil, N. Y., 20 Jan. 1869. He began as a member of the Art Students' League of New York, and subsequently was a pupil of Thomas Eakins of Philadelphia. He went to France and attended the Ecole des Beaux Arts, and also studied under Olivier Merson. He is equally successful in figure, portrait, and landscape, and has received several honors in acknowledgment of his merit as a fine colorist and powerful draftsman. One of his best pictures is ‘The End of the Day,’ in which tender sentiment is united with workmanship of excellence.

Ken′drick, Asahel Clark, American Baptist clergyman and scholar: b. Poultney, Vt., 7 Dec. 1809; d. Rochester, N. Y., 21 Oct. 1895. He was graduated from Hamilton College, Clinton, N. Y., in 1831, and was professor of Greek at Madison (now Colgate) University, Hamilton, N. Y., 1831–50; and held a similar post in the University of Rochester from 1850. Besides translations and several text-books, and revising and editing Olshausen's ‘Old Testament Commentary’ and Meyer's ‘Commentary on John,’ he published ‘Our Poetical Favorites’ (1880); ‘The Moral Conflict of Humanity’ (1894); etc. He was one of the American committee of New Testament revisers.

Kendrick, John, American navigator: b. Boston about 1745; d. Hawaii 1800. During the Revolution he sailed a privateer, and in 1787, while in command of the Columbia and the Washington, explored the northwestern coast of America and various Pacific islands. In 1791 he voyaged to the South Seas, and established the Chinese trade in sandalwood, which for a long time he successfully carried on. He was among the earliest American sailors to attempt voyages for discovery.

Kendrick, John Mills, American Protestant Episcopal bishop: b. Gambier, Ohio. He was educated in the university of his native town, and was ordained deacon 1864, and priest in the following year. After several years' experience as rector and missionary, in 1889 he was consecrated bishop of Arizona, a post he still occupies, with Phœnix, Arizona, as his see city.

Kenealy, kĕ-nēl′ĭ, **Arabella,** English novelist: b. Sussex. She is a daughter of Dr. Kenealy, the famous advocate of the Tichborne «Claimant,» and after pursuing medical studies practised as a physician in London and at Watford 1886–94. She has published ‘Dr. Janet of Harley Street’ (1893); ‘Such Men Are Such Gentlemen’ (1894); ‘Woman and the Shadow’ (1898); ‘A Semi-Detached Marriage’ (1899); ‘Charming Renée’ (1900); etc.

Kenesaw (kĕn-ĕ-sâ′) **Mountain,** a mountain in Georgia 25 miles northwest of Atlanta. It is famous as the scene of a battle in the Civil War between the Union troops under Sherman, and the Confederates under Johnston.

Kenesaw Mountain, Battle of. On the night of 18 June 1864 Gen. J. E. Johnston fell back before Gen. Sherman's persistent advance and took a new line with Kenesaw Mountain as its salient, his right wing thrown back so as to cover Marietta, and his left covering the railroad back to the Chattahoochee. Sherman worked to the right, threatening the railroad, and was attacked by Hood's corps at Kolb's Farm (q.v.), 22 June. After much study of the ground, Sherman concluded that he had no alternative but to assault Johnston's line or turn his position. Either course had its difficulties and dangers, but as the enemy and his own officers had settled down to the conviction that he would not assault fortified lines, but would execute flanking movements only, he considered that a successful assault would have a good moral effect and show that he could move against an enemy behind breastworks; so he resolved to attack the left centre of Johnston's position, and orders were given on the 24th that on the 27th McPherson should assault near Little Kenesaw and that Thomas should assault about a mile further south. Kenesaw was strongly intrenched and held by Loring's and Hardee's corps, Loring on the right, opposite McPherson, Hardee on the left, opposite Thomas. About 9 A.M. of the 27th the troops moved to the assault, and all along the lines for ten miles a furious fire of artillery and musketry was kept up. A part of Logan's Fifteenth corps, formed in two lines, fought its way up the slope of Little Kenesaw, carried the Confederate skirmish-pits, and tried to go further, but was checked by the rough nature of the ground and the fire of artillery and musketry delivered at short range from behind breastworks. Logan's assault failed, with a loss of 600 men, and his troops were withdrawn to the captured skirmish-pits. About a mile to the right Thomas assaulted with Newton's and Davis' divisions. The troops charged up the face of the mountain, drove in the skirmish-line, and reached the main works, but were unable to carry them under the heavy fire of canister and musketry at short range; after heroic effort and the loss of Gens. C. G. Harker and Daniel McCook, commanding brigades, and 1,580 killed, wounded, and missing, fell back and intrenched 75 yards from the enemy's works. The assault was over by 11.30 A.M., and was a failure. It was the most serious reverse sustained by Sherman in the campaign. The entire Union loss was nearly 2,500; Johnston admits a Confederate loss of 808 killed and wounded. Consult: ‘Official Records,’ Vol. XXXVIII.; Cox, ‘Atlanta’; Van Horne, ‘History of the Army of the Cumberland,’ Vol. II.; Sherman, ‘Personal Memoirs,’ Vol. II.; Johnston, ‘Narrative’; The Century Company's ‘Battles and Leaders of the Civil War,’ Vol. IV.

E. A. CARMAN.

Kenia, kā′nẹ-ä, **Mount,** an isolated extinct volcano situated in British East Africa, a few miles south of the equator. Its summit is covered with perpetual snow, and for this reason it is known as Doenyo Ebor or White Mountain. Its height is from 18,000 to 19,000 feet. It was discovered by Krapf in 1849, and its summit was first reached (by Kolb) in 1895.

Kenilworth, kĕn′l-wėrth, a novel by Sir Walter Scott, published in 1819, when its author had long been distinguished both as poet and novelist. It was the second of his great romances drawn from English history; the central figure is that of Queen Elizabeth, surrounded by the brilliant and famous characters of the period — Burleigh, Edmund Spenser, Sir Walter Raleigh; and also by a host of petty sycophants.

Ken′ly, John Reese, American soldier: b. Baltimore 1822. He served in the American army during the Mexican War, attaining the rank of major, and during the Civil War commanded the 1st Maryland regiment, which was captured by Stonewall Jackson at the battle of Front Royal, 23 May 1862. He subsequently commanded a brigade and was brevetted major-general of volunteers at the close of the War. His experiences during the Mexican War are recounted in his ‘Memoirs of a Maryland Volunteer’ (1873).

Ken′nan, George, American traveler, author, and lecturer: b. Norwalk, Ohio, 16 Feb. 1845. He received a secondary education, became a telegraph operator, in 1865 went to northeastern Siberia as an explorer and telegraph engineer, and in 1866–8 superintended the construction of the middle division of the Russo-American telegraph line. In 1870–1 he explored the mountain region of eastern Caucasus and Daghestan, upon his return to America was active as lecturer and journalist, and in 1877–85 was night manager of the Associated Press at Washington, D. C. In 1885–6, with G. A. Frost, an artist, he accomplished a journey of 15,000 miles through Russia and Siberia in investigation of the Russian exile system. He visited all the mines and prisons between the Ural Mountains and the headwaters of the Amur, and published an account of his observations in ‹Siberia and the Exile System› (1891), first printed in the ‹Century Magazine› (1889–90). From 1886 he lectured in Great Britain and the United States on his Siberian experiences. In 1898, during the Spanish-American war, he visited Cuba with the Red Cross Society and as special commissioner of the ‹Outlook› of New York, to which he contributed valuable articles. In 1902 in company with American scientists he explored Mt. Pelée, Martinique, and the scene of the St. Pierre disaster. He further published in book form: ‹Tent Life in Siberia› (1870), and ‹Campaigning in Cuba› (1890).

Kennebec (kĕn-e-bĕk′) **River,** a river in Maine, next to the Penobscot the most important in the State. Its principal source is Moosehead Lake, on the boundary line between Somerset and Piscataquia counties. After a course of 20 miles it receives Dead River from the right. It enters the Atlantic in Sagadahoc County through Sheepscott Bay, an irregular indentation of the coast studded with many islands. The largest tributary of the Kennebec is the Androscoggin, which joins it 18 miles from the ocean at Merrymeeting Bay. The outlets of a number of small ponds, and Sebasticook and Sandy rivers, also flow into it. The most important towns on its banks are Bath, Richmond, Gardiner, Hallowell, Augusta, and Waterville. It has falls at Waterville and at three points above, which afford excellent motive power. Its whole length is about 150 miles, in which it has a descent of 1,000 feet. The influence of the tide extends to Augusta, 42 miles from the sea. A dam with locks was constructed at Augusta for the purpose of improving the navigation above that point, and increasing the water power. The structure is 584 feet long and 15 feet above ordinary high water mark, and cost $300,000. It forms a pond 16½ miles in extent, with an average depth of 16 feet. The river is closed by ice at Hallowell from the middle of December to about 1 April; below Bath it is open at all seasons except during winters of unusual severity.

Kennebunk, kĕn-ẹ-bŭnk′, Maine, town in York County, on the Kennebunk and Mousan rivers and the Boston & Maine railroad, 24 miles southwest of Portland. The ample water-power here is utilized for various manufacturing industries, among the articles produced being leatheroid, sample-cases, shoe-stiffenings, fibreboard, and lumber. The town has a free circulating library containing several thousand volumes. It is one of the old towns of Maine, its settlement dating from about 1650. Until 1820, the year in which Maine became a separate State, Kennebunk was a part of Wells. Pop. (1890), 3,172; (1900), 3,228.

Kennebunkport′, Maine, town in York County, 25 miles southwest of Portland, on the Atlantic Ocean, at the mouth of the Kennebunk River, and on the Boston & Maine railroad. It is situated on a good harbor, has an excellent beach, fine boating facilities on the river, and is a favorite summer resort with superior hotel and boarding-house accommodations. Besides Talbot's Library, the town has public and circulating libraries. Its industries include the manufacture of lumber and the building of boats and canoes. The town was settled in 1629, and incorporated as Cape Porpoise in 1653. Having been nearly destroyed by Indians in 1703, it was reincorporated in 1717 as Arundel, and in 1821 took its present name. Pop. (1890), 2,196; (1900), 2,123.

Ken′nedy, John Pendleton, American novelist: b. Baltimore, Md., 25 Oct. 1795; d. Newport, R. I., 18 Aug. 1870. He was graduated at Baltimore College in 1812, and in 1814 served as a volunteer in the ranks, taking part in the battles of Bladensburg and North Point. In 1816 he was admitted to the practice of the law, which he followed successfully for 20 years. In 1818 he commenced authorship, by the publication, in connection with his friend Peter Hoffman Cruse, of the ‹Red Book,› a serial of light character in prose and verse issued about once a fortnight, and continuing two years. In 1820 he was elected to the Maryland house of delegates, and re-chosen the two next years. In 1832 he published his first novel, ‹Swallow Barn, or a Sojourn in the Old Dominion,› descriptive of the plantation life of Virginia. In 1835 appeared ‹Horseshoe Robinson, a Tale of the Tory Ascendency,› the most successful of his writings. In 1838 he published ‹Rob of the Bowl, a Legend of St. Inigoes,› relating to the Maryland province in the days of Cecilius Calvert, second Lord Baltimore. Kennedy was a member of Congress 1839–45, and was prominent among the Whig members. In 1849 appeared his ‹Life of William Wirt, Attorney-General of the United States,› and in 1852 he became secretary of the navy. His works not previously named include: ‹Annals of Quodlibet› (1840); ‹Mr. Ambrose's Letters on the Rebellion› (1865). He was a friend of Thackeray, and wrote or sketched in outline the fourth chapter of the second volume of ‹The Virginians.› Consult ‹Life› by Tuckerman.

Ken′net River, a tributary of the Thames, in England. It rises in Wiltshire, flowing east through Berkshire, emptying into the Thames at Reading, after a course of 46 miles. It is a part of the waterway connecting the North Sea with Saint George's Channel.

Kenney, kĕn′ĭ, **Richard Rolland,** American politician: b. Little Creek Hundred, Sussex County, Del., 9 Sept. 1856. He was graduated was State librarian, 1879–83. In January 1887, was admitted to the Delaware bar in 1881, and was State librarian, 1879–83. In January, 1887, he was elected to the United States Senate as a Democrat and became a popular leader. His term expired in March 1901, and a deadlock occurring in the Delaware legislature, which was Republican, a successor to Kenney was not elected and Delaware is now (1903) unrepresented in the National Senate.

Ken'ny, Sir Edward, Canadian statesman: b. County Kerry, Ireland, 1800; d. Halifax, N. S., 16 May 1891. He removed to Halifax in 1824, where he engaged in business, and was mayor at one time. He was member for 26 years of the legislative council of Nova Scotia, during 11 of which he was president; served as receiver-general of Canada 1869–79; president of the privy council 1869–70; and senator 1867–70; being knighted in the year last named.

Kenosha, kĕ-nō'sha̤, Wis., city, county-seat of Kenosha County; on Lake Michigan, and on the Chicago & N. railroad; about 35 miles south of Milwaukee. It has steamer communication with many of the ports on the Great Lakes. It is a trade centre for quite an extent of country. Its chief manufactures are leather, typewriters, furniture, wagons, lamps, machinery, iron bedsteads, and flour. It is the seat of Kemper Hall School (P. E.). The Simmons Memorial Library contains about 6,000 volumes. The city owns and operates the waterworks; the water is obtained from the lake and artesian wells. Pop. (1890) 6,532; (1900), 11,606.

Ken'rick, Francis Patrick, American Roman Catholic bishop: b. Dublin, Ireland, 3 Dec. 1797; d. Baltimore 6 July 1863. After studying in Rome 1815–21, he was ordained priest in the latter year and sent to this country to take charge of a seminary at Bardstown, Ky. He remained at Bardstown nine years till his appointment as coadjutor bishop of Philadelphia in 1830. Twelve years later he became bishop of Philadelphia and there founded the seminary of St. Charles Borromeo. In 1851 he was installed archbishop of Baltimore and the next year presided over the first plenary council of American Roman Catholic prelates. He became honorary primate of the United States in 1859. He was prominent as a controversalist and a Biblical scholar, and published 'Dogmatic Theology' (1839–40); 'Moral Theology' (1841–3); a revision of the Douai English Bible, with notes, etc.

Kenrick, Peter Richard, American Roman Catholic archbishop: b. Dublin, Ireland, 17 Aug. 1806; d. St. Louis, Mo., 4 March 1896. After studying at Maynooth he was ordained priest in 1830, and came to the United States in 1833. He was professor of dogmatics in the seminary of the diocese of Philadelphia and subsequently became vicar-general. In 1841 he was appointed coadjutor to Bishop Rosati, of St. Louis, succeeded to that bishopric in 1843, and was created first archbishop of St. Louis in 1847. He opposed the dogma of papal infallibility but acquiesced in its final decree. He published 'The Holy House of Loretto'; 'Anglican Ordinations'; 'Vaticana'; etc. Consult O'Shea, 'The Two Archbishops Kenrick' (1904).

Kenrick, William, English miscellaneous writer: b. about 1725; d. London 10 June 1779. He believed himself a genius, and was for years active as a libeler of successful authors and actors. Among those whom he attacked were Goldsmith, Garrick, Johnson, Colman, and Fielding. He lectured, too, on subjects ranging "from Shakespeare to the perpetual motion, which he thought he had discovered."

Kenrick, William, American nurseryman: b. 1795; d. 1872. He was the son of a nurseryman, whose gardens occupied the locality where John Eliot first preached to the Indians, and at 28 he became a partner with his father. He is remembered as having introduced into America the culture of the mulberry tree in order to establish a native silk industry, his book, 'The American Silk Growers' Guide,' in reality a work on mulberry culture, being issued in 1835. Among other novelties he introduced into America was the Lombardy poplar.

Ken'sett, John Frederick, American painter: b. Cheshire, Conn., 22 March 1818; d. New York 14 Dec. 1872. His uncle, Alfred Daggett, an engraver, gave him his first lessons in art, but in 1840 he went abroad and for seven years traveled in England, Switzerland and Italy. The fruit of this student-ramble was a large number of sketches and paintings, out of which he exhibited in 1845 in the Royal Academy. On returning to America he lived chiefly in New York and in 1849 was elected a National academician. His landscapes are more remarkable for sweetness than for strength, but he maintains a uniform standard of merit in all of them. His technique is delicate and refined, especially in his small canvases. He delights in the scenery of the Hudson, and of the seacoast, and some of his effects are exquisitely charming. Among his landscapes the most interesting are 'Sunset on the Coast' (1858); 'October Afternoon' (1864); 'Noon on the Sea-Shore,' which has been engraved by Hunt. Several of his pictures are in the Metropolitan Museum of Art, New York, the finest of them being 'White Mountains,' a masterpiece of its class. He was for some years a member of the national art commission appointed to direct the decoration of the National Capitol.

Ken'sington Gardens, a celebrated public park in London four miles west of Saint Paul's, and well known for its royal palace. In former times Kensington Palace was a favorite royal residence; and King William III., Queen Mary, Queen Anne, and George II. died here. Kensington Gardens and Hyde Park are much frequented in summer, and form a great ornament to the metropolis. They cover about 350 acres, and contain the Albert Memorial. In South Kensington the chief attractions are the South Kensington or Victoria and Albert Museum, the Indian Museum, the Natural History Museum, and the Imperial Institute.

Kensington Palace. See Kensington Gardens.

Kensit, John, English anti-ritualist: b. London about 1852; d. Liverpool 8 Oct. 1902. He kept a small bookshop in Paternoster Row, London, but in 1896 began an attack upon the Roman Catholic Church and the ritualistic party in the Church of England. He organized bands of preachers, called Wicliffites, that disturbed public worship and frequently caused riots. At the public ceremony of the confirmation of Canon Gore as bishop of Worcester (22 Jan. 1902) he objected, and then and at the subsequent consecration disturbances occurred. Since his death the movement has had no prominence.

Kent, Charles Foster, American Biblical scholar: b. Palmyra, N. Y., 13 Aug. 1867. He was graduated at the universities of Yale (1889) and Berlin (1892), and the following year became an instructor in the University of Chicago.

In 1895 he was elected professor of Biblical literature and history at Brown University, a position which he held until 1901. He is at present Woolsey professor of Biblical literature at Yale University. Among his writings are: 'Outlines of Hebrew History' (1895); 'The Wise Men of Ancient Israel and Their Proverbs' (1895); 'History of the Hebrew People, the United Kingdom' (1896); 'History of the Hebrew People, the Divided Kingdom' (1899); 'Messages of the Earlier Prophets' (1899); 'Messages of the Later Prophets' (1900).

Kent, Jacob Ford, American general. b: Philadelphia, Pa., 14 Sept. 1835. He entered the army as 2d lieutenant 6 May 1861, became captain in January 1864; and was brevetted colonel of volunteers in October 1864, for faithful and meritorious services in the field during the campaign before Richmond. At the opening of the war with Spain he was colonel of the 24th infantry. He was made major-general of volunteers 8 July 1898, and served with distinction in Cuba, and afterward in the Philippines. He was retired in October 1898.

Kent, James, American jurist: b. Philippi, Putnam County, N. Y., 31 July 1763; d. New York 12 Dec. 1847. Kent was graduated at Yale College in 1781, studied law, was admitted in 1785 as an attorney, and in 1787 as a counsellor, and commenced the practice of his profession in Poughkeepsie. He soon became remarkable among his contemporaries for his legal learning and literary attainments. He was elected successively in 1790 and 1792 a member of the legislature for Dutchess County. Kent became an active and leading Federalist, attracting the notice and confidence of Hamilton and Jay. It was by Hamilton's counsel that the reading of the young lawyer was directed to the doctrines of the civil law, and the treatises of the jurists of continental Europe. In 1793 Kent removed to New York, was appointed one of the two masters in chancery for the city of New York. In 1796 he became a member of the legislature. He was also elected professor of law in Columbia College. The body of his lectures at Columbia formed in after years, in some degree, the basis of his celebrated 'Commentaries.' In 1797 he was appointed recorder of the city, and in 1798 judge of the supreme court. He continued a member of this tribunal till 1814, having been from 1804 chief justice. The supreme court at that time differed widely from the court as at present constituted. It was formed after the model of the English king's bench, being composed of five judges, who rode the circuits to try jury cases, and convened during the year at four appointed terms to decide reserved questions of law. There were no American law books, and no reports of American decisions, except those of Dallas, just commenced. The proceedings of the court were languid and dilatory; and resort was had for rules of procedure and principles of law almost exclusively to English precedents and decisions. The accession to the bench of a young, energetic, and able judge, produced a striking change. It was the task of the court to expound the principles of the common law, as applicable to American institutions; to define and limit our new constitutional provisions; to construe recent statutes; to bring the principles of commercial law to bear upon transactions of trade and commerce; to devise rules of practice; and in short to adapt to a young and rising nation a complicated yet practical code of laws. By the constitution of New York as it then existed an important political duty was imposed on the judiciary of the State. The judges of the supreme court and the chancellor formed with the governor a council of revision with a qualified veto on legislative acts. This council was abolished in 1822. In 1814 Kent became chancellor and the seven volumes of Johnson's 'Chancery Reports,' which contain Chancellor Kent's decisions, afford a profound exposition of the system of equity law. His term of office as chancellor expired in 1823, and returning to New York he resumed his professorship at Columbia and his lectures there were given to the world, in his 'Commentaries on American Law' (1826–30). This work has since passed through 14 editions, and acquired a world-wide celebrity. It has assumed in the United States the position which Blackstone in his own country has long filled by his 'Commentaries on the Laws of England.' It embraces not merely the jurisprudence of the Federal Union, but the municipal law, written and unwritten, of the several States. Consult William Kent, 'Memoirs and Letters of Chancellor Kent' (1898).

Kent, William, English artist, architect and landscape gardener: b. Yorkshire 1684; d. London 12 April 1748. He was apprenticed to a coachmaker in 1698, went to London in 1703, and there made some attempts at painting, and to Rome, where he was a pupil of the Cavalier Luti, and whence he was brought to England by the Earl of Burlington, his patron for the rest of his life. He was employed in portrait-painting and the decoration of walls and ceilings; but Hogarth said that «neither England nor Italy ever produced a more contemptible dauber.» However, he did invent a less formal method of gardening and planting, and excelled as an architect. The Horse Guards and treasury buildings, and Devonshire House, Piccadilly, are his work. He published the 'Designs of Inigo Jones' (1727).

Kent Island, the largest island in Chesapeake Bay, Md., some 15 miles long, and situated 7 miles east of Annapolis. It was here the first settlement in Maryland was made by William Claiborne (q.v.) in 1631. Pop. (1900) 2,525.

Ken'ton, Simon, American pioneer: b. Fauquier County, Va., 3 April 1755; d. Logan County, Ohio, in 1836. At 16 he had an affray with a young man, and believing he had killed his adversary, fled beyond the Alleghanies and became a companion of Boone and the other early pioneers of Kentucky. For a time he acted as a spy of Governor Dunmore, and subsequently participated in the warfare waged against the British and the Indians west of the Alleghanies, showing remarkable courage, sagacity, and endurance. In 1782, learning that his former opponent was living, he returned to his native place, and soon after removed with his father's family to Kentucky. He was frequently engaged in Indian warfare, until the expedition under Wayne in 1793–4 restored tranquillity to the western frontier. As the country began to fill up with settlers, his lands, to which, in consequence of his ignorance of or indifference to legal forms, he had never secured perfect titles, were taken from him, and by repeated lawsuits he was reduced to penury. He nevertheless in the War of 1812 fought with the Kentucky troops at the battle of the Thames. In 1824 he appeared in Frankfort in tattered garments to petition the legislature of Kentucky to release the claim of the State upon some mountain land owned by him. His appearance at first excited ridicule, but upon being recognized he was treated with much distinction by the legislature; his lands were released, and a pension of $240 was procured for him from Congress. He died near the spot where, 58 years previous, he had narrowly escaped death at the hands of the Indians.

Kenton, Ohio, city, county-seat of Hardin County; on the Scioto River, and on the Erie, the Toledo & O. C., and the Cleveland, C., C. & St. L. R.R.'s; about 54 miles northwest of Columbus and 67 miles south of Toledo. It is situated on the divide which separates the waters of the Ohio River from those of Lake Erie. It was settled in 1833 and incorporated in 1885. The surrounding country is a farming section, with some large forests. The chief manufactures of the city are hardware, agricultural implements, iron, lumber, and dairy products. Its principal public buildings are the armory, jail, court-house, and the municipal buildings. The mayor holds office two years. The waterworks plant is owned by the city. Pop. (1900) 6,852.

Kentucky (Cherokee, «prairie,» «the Barrens,» and not meaning «dark and bloody ground,» as popularly supposed), one of the old «Border States» (q.v.), next south of the Ohio; the second district settled beyond the Alleghanies, and the first to become a State; second State admitted to the Union, next after Vermont. Capital, Frankfort. It is excessively irregular in shape, varying from 171 miles broad between Cincinnati and Cumberland Gap to 40 south of Paducah at the mouth of the Tennessee; and is 458 miles from east to west. Area 40,400 square miles. Lat. 36° 30′ to 39° 6′ N.; lon. 82° 2′ to 89° 40′ W. Pop. (1900) 2,147,174; (1903) government estimate about 2,250,000.

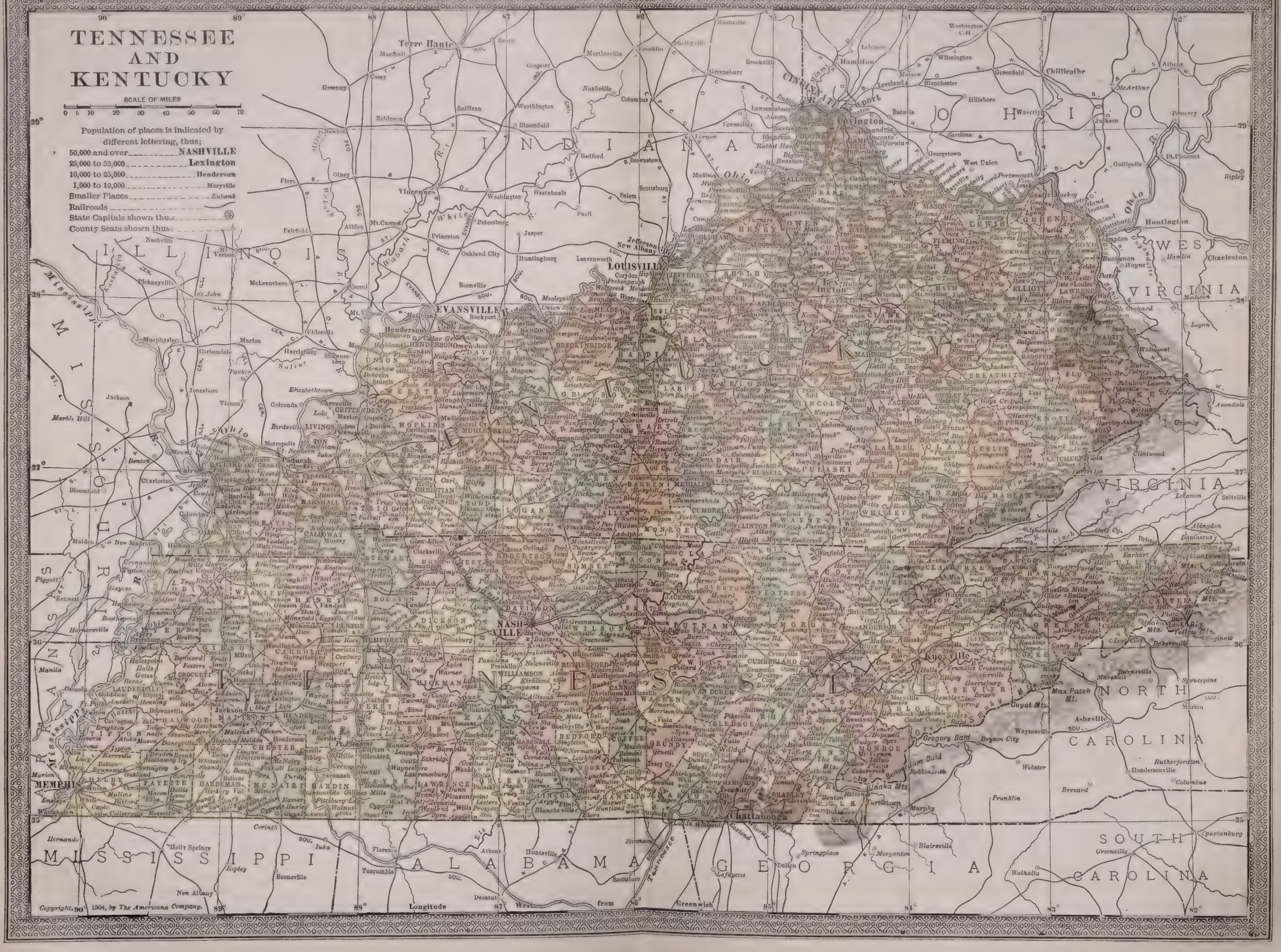
Topography and Hydrography.—Its northern and western boundaries are formed by the convolutions of the Ohio and Mississippi separating it successively from Ohio, Indiana, Illinois, and Missouri; the east end is a sharp angle, the north side formed by the Big Sandy flowing northwest, the south side against West Virginia by the main Cumberland range and Pine Mountain running northeast and southwest. On the south it is separated its entire length from Tennessee by a nearly straight boundary with a «jog» at the Tennessee. The surface is mainly a plateau averaging about 800 feet above sea-level, sloping in general northwestwardly from the southeastern mountains to the Ohio. Parallel with the Cumberland range within the State is Pine Mountain, along whose eastern flank the Cumberland River flows, breaking through at a point 960 feet above the sea. The Cumberland valley between is 15 miles wide by 75 long, and from 1,000 to 1,500 feet in elevation, buttressed by peaks sometimes 3,500 feet high, while the two ranges are 2,000 to 3,000, making the valley the finest scenic portion of the Appalachian system. Pine Mountain throws out spurs to the northwest as high as the main range, which sinks into the coal fields at an elevation of nearly 1,600 feet. The great north and central Blue Grass region (limestone) is an undulating plateau, circled by a continuous hill-ridge taking many different local names, as Big Hill, King's Mountain, Muldrow's Hill, and others, but extending in a great southern sweep from the mouth of Salt River to opposite the mouth of the Scioto, with rough escarpments at the east and fading into the upland at the west.

The drainage system is mainly (except for the immediate watersheds of the great rivers) by a series of rivers flowing northwestward into the Ohio, following the surface trend; the Big Sandy with its Louisa fork, the Licking, Kentucky, Salt and Green. Near the western end the last 60 or 70 miles of the widely eccentric course of the Cumberland and Tennessee, its greatest internal rivers, follow the same direction to the same goal 15 miles apart. The Cumberland, rising near the eastern edge, flows crookedly through the southern part, dips into Tennessee, and returns to the State; the Tennessee, rising near it in the Appalachians, takes a wider sweep southward into Alabama, and almost joins the Cumberland before it ends. These streams have nearly all deep rock channels, never overflowed; especially the Kentucky in its lower course has channeled a superb gorge through over 400 feet of limestones, with perpendicular walls like a cañon. Southwest from the centre only the larger stream channels show on the surface; the ground is full of depressions where the water sinks away and dissolves the soft limestones, finding subterranean paths; where this underground channel is stopped up a pond is formed. This is the district of the Mammoth Cave (q.v.), the largest in the world; as in all limestone districts, the waters have dissolved the stones irregularly and left fantastic channels and rock sculptures, huge chambers and narrow flumes, forming deep pools and cascades, and creating pendants and upright shafts; its immense size and length, and the navigable branches of a considerable subterranean stream, make it convenient for exploration and a fascinating spot for tourists.

Geology and Mineralogy.—This district was at one time the bed of a vast lake of the Lower Silurian period; on its floor were laid several sedimentary deposits. Upper Silurian, Devonian, Subcarboniferous, some 5,000 feet deep, and on these, Carboniferous (coal measures) to 3,000 feet more. The great Appalachian uplift raised this some 5,000 feet, the surface forming a dome in the centre; then forces of denudation acted planewise across the top, cutting away all the superincumbent strata down to the original Lower Silurian in the middle — whence the outcrop of blue limestone in the Blue Grass region — and others to different extents in other parts, leaving the coal measures exposed in two great patches 100 miles apart at the edges. The Subcarboniferous limestone is at the top in the southwest districts where are the great sinks and caves.

The great mineral product of Kentucky is coal. The eastern (Appalachian) field has some 9,000 square miles; the western but 4,000; but the latter at present yields more than the former. In 1902 the total production was 6,421,266 short tons against 2,972,640 in 1892, nearly all bituminous, though perhaps 100,000 tons were

TENNESSEE AND KENTUCKY



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cannel. Beds of high-grade iron ore are also found in the coal fields, and elsewhere to the extent of 32 counties in all; 71,562 tons of pig iron were turned out in 1900. Building and other stones are extensively quarried: limestone products (including Kentucky River marble), as well for fertilizers and charged waters as for building, were valued at $176,861 in 1900; sandstones, $130,557, besides $20,191 worth of clays. Extensive mining of fluor-spar is carried on in Crittenden and Livingston counties; valuable salt and other mineral springs are utilized; petroleum is found in the counties along the Cumberland and its affluents, formerly distilled from shales and now drilled for, its discovery in several counties in 1902 having caused considerable excitement. Its accompaniment, natural gas, is found in Meade County.

Climate and Rainfall.—The Mississippi bottom lowlands are malarious, but most of the State is mild and notably salubrious, the death rate being low and the army statistics placing Kentuckians at the very top in physical characteristics. The lowest recently recorded temperature is 8° F., and the summer heats are less than in the States to the north and west. The State is ideally watered for agriculture, the mean rainfall is about 47 inches per year, and there are no years of excessive drought.

Forests.—Over a third of the surface of the State is forested. The bottom lands are thick with densely timbered swamps; the western part is a heavily wooded region once open prairie ("the Barrens," where the Indians burnt off the undergrowth to make pasturage for the wild game, and the more tenacious roots grew under the soil); and in the east along the Alleghany slopes there is a great quantity of fine timber, most of it being hardwood of astonishing variety. Oaks of many different sorts — white, red, black, post, overcup, chestnut, and black-jack,— hickory, black walnut, blue and black ash, maple, elm, beech, chestnut, poplar, sweet gum, box-elder, wild cherry, yellow pine, cypress, sycamore, and hackberry, are only a portion of its wealth, still largely virgin, though now being rapidly opened up. The poplar and black walnut which are accessible have been already largely harvested.

Soil.—The soils are locally divided into three main grades — first, second, and third rate. The first is the deep alluvium of the river bottoms, estimated at 1,000 square miles. The second (such only by comparison with the first, being one of the finest farming soils known) is the upland Blue Grass soil, covering over 10,000 square miles in 32 counties self fertilized by the decomposition of limestones and phosphatic shales so that farms a century old show no signs of exhaustion, and with decent management need no artificial fertilizer. The third are the shaly lands with insufficient drainage. Besides these there are about 1,500 square miles in swamps and barrens and some thousands where the mineral wealth is worth more than the surface would be for farming land.

Agriculture.—Though Kentucky and Tennessee are apparently artificial divisions from the same body of land, the slight difference in latitude and soils works a complete change in the characteristic products of the two. Tennessee is preeminently a cotton State, raising in 1899 234,592 bales, valued at over $8,000,000; while Kentucky raised but 1,369 bales, in a few counties near the Mississippi bottoms. But the immense fertility and water supply of Kentucky have made it one of our leading agricultural States; the value of its crops in 1899 was $123,266,785, and its live stock was valued at $73,737,106. The leading farm products are corn, tobacco, wheat and hay; and it raises nearly all the hemp produced in the United States. Vegetable and orchard fruits are grown in large quantities in the region along the Ohio, between and near the two great cities of Cincinnati (with its Kentucky suburbs Covington and Newport) and Louisville, which furnish large markets. In 1900 85.9 per cent of the land surface was in farms, and of this 62.5 per cent was improved against 35.2 per cent in 1850. The number of farms had more than trebled in the meantime, it had increased 30.9 per cent. since 1890. The average size of farms decreased in the decade, under intensive cultivation, from 119.4 acres to 93.7; the size being smallest in the northeast, the region of tobacco and corn, and largest in the stock-raising counties, but in most counties the size keeps near the average. The difference in proportion of colored population from the States where cotton is a leading crop is strikingly shown by the statistics of farm ownership and tenure. Out of 234,667 farms only 11,238 were operated by colored farmers; and as their farms averaged only 39.9 acres, they farmed only two per cent. of the land. The most conspicuous change in the decade was that of tenure, the number of cash tenants remained about the same, that of share tenants doubled. But the owned farms were over two thirds of the whole.

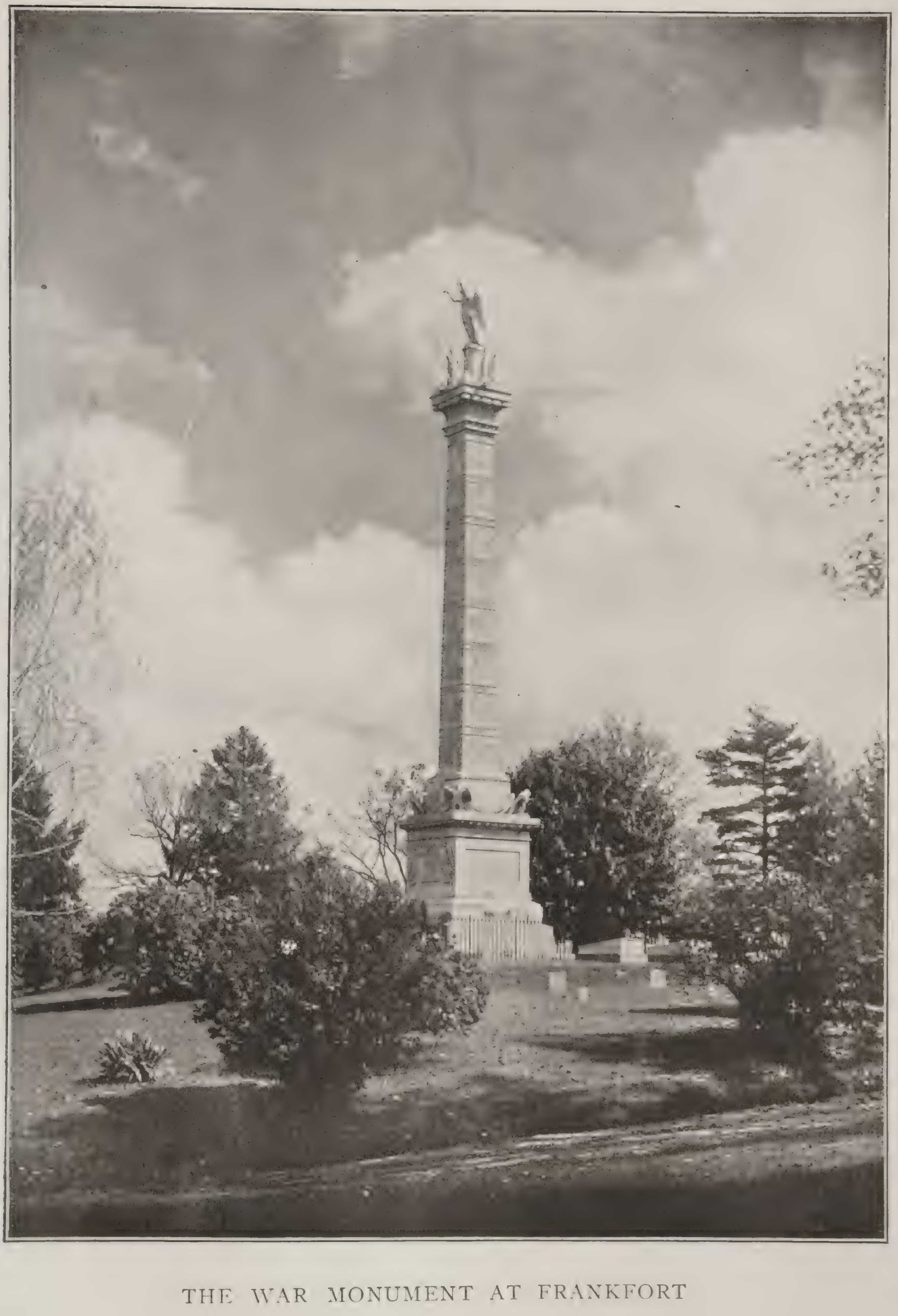
The great specialty of Kentucky, and its principal sale crop (most of the cereals being used in the State), is tobacco. In 1900 it not only produced two and a half times the amount of any other State,— 314,288,050 pounds, valued at $18,541,982, against 127,000,000 and 122,000,000 for North Carolina and Virginia respectively,— but 36 per cent of the entire product of the United States. This was an increase of 41.6 per cent. over 1890, and the largest crop ever reported. The yield averaged 816.7 pounds per acre, and the price 5.9 cents per pound. The preeminence of Kentucky in this is due not only to the favorable constituents of the soil for the plant's growth, but to the sunny equable climate, free from those violent extremes which are death to the delicate plant. The leading section is the west: Christian and Daviess counties head the list. Hemp is a famous product as being almost peculiar to Kentucky; but other fibres have driven it out of the market very largely, and it is of minor practical importance, having steadily declined since 1859. In that year it reached its climax, 78,818,000 pounds; in 1899 it was only 10,303,560, valued at $468,454, a decrease of about 86.93 per cent since 1859; and was grown by 937 farmers in 17 counties, the chief being Fayette (Lexington), and the rest mainly to the south of it. The largest crop in value was corn, which has long been the great staple, not only for human food, but even more for provender and as a basis of the great distillery interest. Its acreage in 1900 was over half the total for all crops together, and more than double that for the next largest, wheat, and the crop was valued at nearly $30,000,000. Wheat, for a long time dropping off, gained nearly 60 per cent. in the decade, with a total of 14,264,500 bushels, valued at $8,923,760. Hay and forage from grasses of several different kinds on the superb pasture of the State, came next, with a total of 776,534 tons, valued at $6,100,647; grass seed also had considerable importance. Oats and potatoes each came to the total of nearly a million and a quarter dollars; orchard fruits, nearly $2,000,000; sweet potatoes, onions and miscellaneous vegetables, nearly $5,000,000. Floriculture is an important industry, the receipts amounting to over $100,000.

Stock-raising.— The mild winter climate, in which cattle can remain out all winter with little feed, the superb pasture afforded by blue grass, which forms a thick fine turf, and grows to perfection in the shade of the forests, and the abundant and excellent water, have given Kentucky unsurpassed natural advantages for rearing live stock. But these would not have availed but for a succession of breeders of rare intelligence and perseverance, who have made it the centre of the Union for high-grade blooded stock. Especially is this the case with horses. The old Virginia stock, bred from choice imported English animals, themselves bred to combine speed and endurance, were taken by the Kentucky breeders, the strains carefully kept pure except to mix with equally good fresh blood; and they have developed the finest road horses in the country, Kentucky horses it has been estimated have made three fourths of all the winnings on the American turf. There were in the State in 1900 over 450,000 horses valued at about $23,500,000 besides some 200,000 mules and asses. Dairy products were also of high importance, furnishing nearly $10,000,000 of product, from 364,025 cows. There were nearly 2,000,000 swine and 1,300,000 sheep, but both have been falling off for many years. The animals sold live and dead, came to about $25,000,000; the poultry and eggs to nearly $8,500,000.

Manufactures.—Kentucky has great natural facilities for manufacturing; her immense hardwood forests, her large coal fields, and plentiful natural waterways, for half a century and more after her admission to the Union kept her abreast of her western neighbors. But since then, there has been a relative falling off. In part it is due to the change in distribution of industries; the development of steam navigation threw Lexington, for instance, which in 1810 had 114 manufactures, into the shade to build up the river towns. But other causes — tardiness in extending railroad facilities to the forests and coal fields is held partially accountable, but this was itself due to general business conditions, and has been mostly remedied — have retarded it relatively, though not absolutely. In 1850 the number of wage-earners was 21,476, in 1900 62,962, but the former was 2.2 per cent of the total population against Ohio's 2.6, the latter 2.9 against Ohio's 8.5. The largest growth was in the decade 1880–90, the wage-earners increasing over 50 per cent. Tobacco is the foremost manufacturing industry, as it is the foremost agricultural product, and steadily growing. In 1900 the 337 establishments employed nearly one ninth of all hands, and turned out one seventh of all the product of the State's manufactories, to a value of $21,922,111, nearly double that for 1890. Over two thirds of this was chewing and smoking tobacco and snuff; the cigar manufacture, though the chief early one, having declined relatively. The industry dates from the 18th century, when tobacco was legal-tender currency; every town in the State had its small cigar factories, and many of the farms worked up their own product. Louisville has been for many years a principal leaf-tobacco market of the world, from its great facilities for distribution by river and rail; and tobacco industries of other kinds have therefore tended to concentrate themselves there, though Owensboro and Henderson have extensive establishments which prepare leaf for shipment. Flouring and grist-milling rank next with a product in 1900 of $14,515,161, an increase of 50 per cent. since 1890. Louisville has large flouring mills with a considerable export trade. Cottonseed oil and cake are important,— $4,683,000 in 1900. One of the great specialties of Kentucky for over a century has been corn whiskey, known as «Bourbon» from the county of Kentucky to which a number of western Pennsylvania «moonshiners» removed after the suppression of the Whiskey Insurrection (q.v.) in 1794; but the manufacture had been already established at Louisville in 1783, in three other towns soon after, and a Maryland colony in 1787 set up a number of distilleries along Salt River. For the management of the stills, see Internal Revenue System. Since the Civil War the old farm and village distilleries, producing one or two barrels a day, have mostly given way to mammoth establishments. But the total product is heavily declining, having dropped from $15,159,648 in 1890 to $9,786,527 in 1900. The manufacture of malt liquors, on the contrary, increased about one fourth; and is mostly concentrated in Louisville. In May 1902 there were 339 distilleries. The internal revenue receipts from the State in that year, mostly from liquors and tobacco, were $21,096,013.

Pork packing was an early industry in Kentucky, and from the first centred in Louisville. Louisville and Cincinnati were long the rival heads of the slaughtering and meat packing business in the United States; but the great northwestern grain fields have taken it from the Ohio Valley. The use of artificial ice, permitting summer packing, has caused a great revival of it in Louisville. The fortunes of packing and of mere slaughtering, however, are singularly in reverse; the former dropped in the decade from $2,966,227 to $635,685; the latter increased from $405,784 to $5,081,482. From the hides of these cattle was made leather to the value of $3,757,016. The chief agent is the bark of the chestnut oak, which is not only excellent for tanning, but has the great advantage over hemlock that cutting down the tree does not necessarily kill it as it does the latter; shoots spring from the stump, if the tree is not too old, and in about 20 years are fit for another stripping. The first large custom tannery was started at Louisville in 1848; that city now has a number, and is the centre of the manufacture, the establishments outside having mostly been abandoned. Sole leather and harness leather are the principal products, although some sheepskins are tanned for the manufacture of shoes and saddles. The industry has declined somewhat since 1883, its climax, but is still one of the leading specialties.

The exploitation of the rich forests now



THE WAR MONUMENT AT FRANKFORT

going on its shown by the increase of lumber and timber products, from $7,904,428 in 1890 to $13,774,911 in 1900. Logging is an extensive industry on the upper waters of the Cumberland, Kentucky, and Licking Rivers; and the government improvements in the Kentucky, Green, and other rivers enable logs to be floated almost from their original home to the Ohio.

Of iron and steel, there were in 1900 eight establishments, employing 2,402 hands and turning out $6,676,093 worth of goods, an increase in the decade of over 150 per cent. The early furnaces were abandoned for lack of transportation facilities; in 1846 others were built at Eddyville on the lower Cumberland by William Kelly; and in 1851, five years before Bessemer patented his pneumatic process, Kelly began his "air-boiling" process, essentially the same, for turning iron into steel. During these years steamboats built at Cincinnati were using boiler plate practically the same as the Bessemer, but made by the Kelly process; and the latter finally secured a royalty.

Louisville is also one of the great centres of the manufacture of jeans clothing, from cloth made largely in the State mills; but of late years this has been partly replaced by the cassimeres. Louisville produces over half the total manufacturing product of the State, and its relative share is increasing.

Transportation.—Kentucky has 813 miles of navigable water on its boundary alone,— the Ohio 643 miles, the Mississippi west 50 miles, the Big Sandy east 120 miles. The Cumberland and Tennessee are navigated their entire course in the State; the Kentucky, Licking, Salt, and Green are more or less navigable for considerable portions of their lower courses, and some improvements have been made by dams and locks, but are little used. The great canal around the falls of the Ohio at Louisville has largely increased the value of that channel, which with the strip of the Mississippi is the creator of the State's commerce. The railroad system of the State has been greatly hampered by the difficulty of approach from the southeast over the mountains: several thousand square miles of this section, in a solid block, have not a mile of railroad track. This mountain district is a part of Appalachian America (q.v.) and presents, along with interesting Saxon survivals, grave problems in education and the enforcement of law. As the great transcontinental lines run mostly north of it, moreover, it has not been developed as other sections. The State has now about 3,300 miles of railroad in operation; the chief systems are the Louisville & Nashville, the Queen & Crescent, the Illinois Central, and the Chesapeake & Ohio.

Banks.—For the establishment of the banking system, see *History.* The great landmarks are the establishment of the Bank of Kentucky at Frankfort in 1806, and that of the Louisville clearing-house in 1875, which has more than once saved the more solid banks of the State from catastrophe. In 1902 there were 95 national banks in operation, with capital of $13,334,000, surplus of $4,015,000, cash and other items, $3,904,000, loans $37,976,000, deposits $30,577,000; 229 State banks, with $9,264,000 capital, $2,110,000 surplus, $3,805,000 cash, etc., $29,999,000 loans, $32,045,000 deposits; and 22 private banks, with $606,000 capital, $163,000 surplus, $297,000 cash, etc., $2,513,000 loans, $3,233,000 deposits. The exchanges of the United States clearing-house at Louisville and Lexington for the year ending 30 Sept. 1901 aggregated $480,595,304.

Education.—In 1901 there were 7,900 white and 1,157 colored teachers in the State, the males slightly in excess among the white teachers, females considerably so among the colored; average monthly salary of whites $40.60, of colored $29.95; of men $44.03, of women $37.18. The average length of school term was 115 days; this, however, does less than justice to the cities and much more than justice to the rural districts. Entering the Union at an early date, Kentucky failed to receive the land grants which have given rise to large school funds in some other States; and the sentiment for universal education could not become prevalent until after the abolition of slavery. In the cities and among the wealthy, private schools absorbed the interest of the people, so that public education languished until recent years. At present many of the cities and larger towns, as Louisville and Ashland, have very creditable public high schools. The condition of the rural schools is unsatisfactory. The unpaid local trustees prove inefficient, and the erection of school-houses is hindered by legal difficulties over the raising of taxes. School legislation has been wisely adapted to meet the conditions in which the State is placed. The local teachers are paid from a general State fund, so that the richer portions of the commonwealth assist the poorer parts. The election of a superintendent of public instruction in each county is an arrangement contributing to progress. The public instruction provided for the colored people is in separate schools under colored teachers. The difficulties of maintaining schools in the mountain counties, and the impossibility of at once bringing under instruction the negro population, formerly enslaved, gives the State a poor showing in the matter of illiteracy. However, Kentucky is in better condition than most southern commonwealths and shows gratifying evidences of progress: 13.9 per cent. of its white voters are illiterate, and 49.5 per cent. of its negro voters. The expenditures for school purposes in 1900 were $2,650,100.

For higher education there were in 1900, 69 public high schools, 82 private secondary schools, 6 public and 8 private normal schools, 13 colleges for men, or coeducational, and 11 colleges for women alone. The Kentucky University, which has had a long and varied history, is now controlled by the Disciple denomination. Center College at Danville (Presbyterian) has been the Alma Mater of many distinguished men, and recently, in combining with Central University, has taken that name. Other schools under religious auspices are, Georgetown College (Baptist) at Georgetown; and Wesleyan College (Methodist, South) at Winchester; Berea College (religious but not sectarian) at Berea, was founded by the anti-slavery element which existed in Kentucky before the War, and has in addition to the ordinary college courses, large normal and industrial departments with special adaptations to the needs of the mountain region. Receiving "all young people of good moral character" it has an attendance of colored students comprising about one seventh of the whole number. The "State College" at Lexington occupies the position of a State university, enjoying the funds provided by the United States government for «instruction in Agriculture and the Mechanic Arts,» and affording special opportunities for the study of the natural sciences. The medical schools of Louisville are attaining reputation and importance. And that city is also the seat of a Baptist and a Presbyterian Theological Seminary.

Churches.— No religious census has been taken since 1890; but no considerable changes have taken place since that date, when the Baptists were far in the ascendant, though divided into «missionary,» «predestinarian,» and other varieties. Methodist Episcopal South is next in size; then came in order the Disciples of Christ, the Methodist Episcopal, the Colored Baptist, the Roman Catholic, the Cumberland Presbyterian, the African M. E., the African M. E. Zion, and the Protestant Episcopal.

Charitable and Penal Institutions.—There are insane asylums at Lexington, Hopkinsville, and Anchorage; a notable institution for the education of the blind at Louisville; a State school for deaf-mutes at Danville; and an institution for feeble-minded children at Frankfort, which, however, restricts the ages to the period of six to 18, and requires that they shall not be too feeble-minded for training. The State penitentiaries are at Frankfort and Eddyville.

Government.—The State officers are elected for four years, on the November preceding the Presidential election; they cannot be re-elected. The governor has a veto by items, but a majority vote overrides it. If he dies in the first two years of his term, a new election is held; if later, the lieutenant-governor and the president of the senate succeed in order. The legislature consists of 38 senators chosen for four years, and 100 representatives for two years. Sessions are biennial, and limited to 60 days (legislative days). Provisions concerning revenue bills and impeachments follow the model of Congress. Women (by a law of 1902) can hold office on school boards. No State, county, city, or town officers except members of city legislative boards can be elected in the year of a Presidential election. The judiciary is headed by a Court of Appeals, consisting of not over seven or under five elective judges, with terms of eight years. There are no townships, only «magisterial districts,» and the county, as in old Virginia is the political unit. Each county is entitled to three sittings of a circuit court each year. The circuit judges are elected for six years, in districts. There is a county judge, and a monthly court day. County officers are elected for four years, except a circuit court clerk for two years, and the sheriff is ineligible to re-election except in alternate terms. Counties must have a minimum area of 400 square miles, and the county-seat must be at least ten miles from the boundary. There are 11 representatives in Congress.

Finance.—The State's assessed valuation in 1902 was $667,056,375; the bonded debt, $1,171,394. The tax rate was $5 per $1,000. The State revenues are divided into «funds,» for different departments; the «general expenditure» fund is unfortunately fixed too low and entirely inadequate to the needful expenses, so that the State expends about double the amount of the fund, giving an appearance of a large deficit which is not correct as to the resources or income as a whole. The financial world, however, takes note of this fact, and Kentucky has perfectly good credit.

Population.—The population of the State at the various censuses has been as follows: 1790, 73,677; 1800, 220,955; 1810, 406,511; 1820, 564,135; 1830, 687,917; 1840, 779,828; 1850, 982,405; 1860, 1,155,684, including 10,684 free negroes, and 210,981 slaves; 1870, 1,648,690; 1880, 1,858,635; 1900, 2,147,174. The foreign-born were but 50,249; considerably more than half Germans, about 10,000 Irish. The colored population was 284,865, not so large as in 10 other States, and not so large a percentage as in 17 others; nor are the colored people increasing so fast as the whites, there having been a relative decrease for the past two decades. The agricultural characteristics of the State have prevented the over-development of specially slave industries, and the mountain districts of course have very few. There seems also to have been some tendency among the negroes to emigrate, and a large emigration of whites is continually going on, so that natives of Kentucky form a notable element in Ohio, Indiana, Missouri and the West.

The one great independent city of Kentucky is Louisville (204,731) at the falls of the Ohio, the third in size on the river, excelled only by Cincinnati and Pittsburg. Covington (42,938), Newport (28,301), Bellevue (6,332) and Dayton (6,104) are virtually suburbs of Cincinnati, the first-named west of the Licking, the last three east of it. Other cities on the Ohio, which monopolizes much the greater part of the urban development and manufacturing of the State, are in the west, Paducah (19,446) at the mouth of the Tennessee, Owensboro (13,189) and Henderson (10,272); in the northeast, Maysville (6,423); on the east, Ashland (6,800), now the head of a rapidly growing iron district. Lexington (26,369), formerly the capital, once called «Athens of the West,» is the head of the Blue Grass region. Frankfort (9,487), the capital, on a magnificent gorge of the Kentucky River; Bowling Green (8,226), the head of navigation on the Barren River, a tributary of the Green; Hopkinsville (7,280) in the southwest; and Winchester (5,964) in the north centre, are the only other places of over 5,000.

History.— The earliest explorers found this territory, though formerly inhabited by mound-building, agricultural Indians and presenting every advantage to such tribes, practically deserted, save at two points on the Mississippi and Ohio. It was a ground contested by powerful tribes, who slaughtered any others attempting to hunt there. Kentucky was originally a part of Fincastle County, Virginia, explored by Boone and his companions, as well as previous travelers, soon after 1760. The first settlement was at Harrodsburg in 1774. Boonesborough was founded the following year. With the exception of French settlements, these two towns are the oldest in the West. In the former year the victory at Point Pleasant forced the northwestern Indians to give up their claims, and the «Transylvania Company» (Richard Henderson and associates) bought about 2,500 square miles west of the Kentucky River, from the Cherokees, whose chief told Henderson he «had bought a fine territory but might have some little difficulty in occupying it»; in fact, the settlement was harassed by bloody Indian wars, and

Virginia refused to confirm the sale. In 1776 the district was organized as Kentucky County. As the scene of the principal exploits of Daniel Boone, and the birthplace of Kit Carson, Kentucky's early history was typical of American pioneer life. Its separation from Virginia cost seven different conventions, the last in 1790; besides an attempted Spanish intrigue for its withdrawal from the Union and the setting up of an independent government with a Spanish Protectorate. Kentucky was finally admitted to the Union 1 June 1792. Under the influence of Henry Clay and his associates, Kentucky was a strong Whig State with antislavery tendencies. With its diverse elements of mountains and Blue Grass, anti-slavery and pro-slavery sentiment, the State naturally hesitated at the opening of the Civil War, at first assuming an attitude of «strict neutrality,» which was at last exchanged for a stand for the Union. It filled its full quota of Union soldiers under Lincoln's various calls, while half as many more went southward to join the armies of the Confederacy. The commonwealth had thus brilliant representatives in both armies, and suffered as a border State from the invasion of Bragg in '62, and the continual raids of Morgan. The State refused Lincoln's overture for compensating slave-holders if it would abolish slavery, and that institution was finally swept from existence by the amendments to the Federal Constitution. Disgust over this loss, and resentment at some of the acts of the Federal commanders in the State, alienated so many Union men that the State has since been largely Democratic. Since the Civil War the commonwealth has made steady if not rapid progress in education and wealth.

Wm. Goodell Frost, Ph. D.,
President Berea College, Berea, Ky.

Kentucky, Agricultural and Mechanical College of, a coeducational institution at Lexington, Ky., founded in 1865. It has agricultural, engineering, scientific, and collegiate courses which lead to the bachelor's degree; it has also a preparatory department. The campus contains 52 acres, presented by the city of Lexington, and the experiment station farm contains 48 acres. The income for 1901 was, from the State, $42,810; from the Land Grant Fund of 1862, $12,967; from the Federal Government (act of 30 Aug. 1890), $21,375; tuitions, $1,582; miscellaneous, $31,552; incidental fees, $673; making a total of $110,959. The Federal appropriation for the experiment station was (1901) $15,000. The income in 1902, derived from the Land Grant Fund, the State and the Federal appropriations, was $106,252. The number of instructors in 1902 was 42, and the number of pupils in attendance was 611. The number of volumes in the library, about 6,000.

Kentucky Bluegrass. See Grasses.

Kentucky Coffee-tree, a large tree (*Gymnocladus dioica*), allied to the locusts and redbuds of the family *Cæsalpinaceæ,* and growing rather sparsely throughout the middle region of the Mississippi Valley. It bears greenish-white flowers growing in terminal racemes; and these produce in early autumn legumes, broad and 6 to 10 inches long, containing several hard gray seeds. These seeds are locally called «coffee-nuts,» because the early settlers of Kentucky tried to use them as a substitute for coffee. The timber is suitable for cabinet work; the bark is very bitter, and contains saponine. When bare of foliage in winter this tree presents such a forlorn appearance that it is called «stump tree.»

Kentucky Resolutions, a famous series of nine resolutions introduced into the Kentucky legislature in 1798, by George Nicholas, though it was afterward known that Thomas Jefferson was the author of them. They were directed against the Alien and Sedition laws, and against acts passed to punish frauds on the Bank of the United States, and emphasized the rights of the several States. These resolutions were the outgrowth, together with a similar series known as the Virginia Resolutions, of a feeling that the Federal party was making a strained and illegitimate use of the powers granted to the Federal government by the Constitution. The Kentucky Resolutions were passed for the purpose of defining the strict-construction view of the relative powers of State and Government. They declared that the Union was not based on the «principle of unlimited submission to the General Government»; that the Constitution was a compact, to which each State was a party as over against its fellow States; and that, in all cases not specified in the compact, each party had a right to judge for itself, as well of infractions as of the mode and measure of redress. They proceeded to set forth the unconstitutionality of the Alien and Sedition Acts, and invited other States to join in declaring them void. No favorable response was evoked. In 1799 the Kentucky legislature went further, and declared a nullification of a Federal law by a State to be the rightful remedy in cases of Federal usurpation. Upon these resolutions the doctrines of nullification and secession were later founded.

Kentucky River, a river of Kentucky, formed by two forks which rise in the Cumberland Mountains, and, after a winding northwest course of about 250 miles, enters the Ohio, 12 miles above Madison, Ind., midway between Cincinnati and Louisville. The river runs through part of its course between perpendicular limestone walls. It is navigable by steamboat beyond Frankfort, a distance of 60 miles, and flatboats can ascend 100 miles farther.

Kentucky University, an educational institution at Lexington, Ky., under the control of the Christian Church. It was founded in 1836 under the name of Bacon College at Georgetown; the name was changed in 1858, and it was later consolidated with Transylvania University, which was situated at Lexington. Its present organization comprises the college of liberal arts, with classical, literary, and scientific courses, the commercial department, the college of the Bible, and the medical department; of these the first two are coeducational; the last is situated at Louisville. In 1903 the number of students was 1,200; instructors, 60; the annual income amounted to $27,000; the library of about 18,500 volumes had been consolidated with that of the city of Lexington.

Kentucky Warbler. See Warbler.

Ken'yon, James Benjamin, American poet and Methodist clergyman: b. Frankfort, N. Y., 26 April 1858. After his graduation from Hungerford Collegiate Institute in 1875, he studied theology, entered the Methodist ministry and has since held several pastorates. He is well known among American verse writers of the present, his published collections of poems including: ‘The Fallen and Other Poems’ (1876); ‘Out of the Shadows’ (1880); ‘Songs in All Seasons’ (1885); ‘In Realms of Gold’ (1887); ‘At the Gate of Dreams’ (1892); ‘A Little Book of Lullabies’ (1898). In prose he has published ‘Loiterings in Old Fields’ (1901).

Kenyon College, founded in 1824, at Worthington, Ohio, under the auspices of the Protestant Episcopal Church. It was then called Theological Seminary of the Protestant Episcopal Church, in the Diocese of Ohio. In 1827 it was removed to Gambier, Ohio, where it is now. In 1891 the name was changed to Kenyon College. The school is now composed of a preparatory department, a college, and a theological seminary. In 1903 the endowment fund was $501,000. Marcus A. Hanna gave (1901) $60,000 to aid in the building of a new dormitory. The number of professors and instructors, in 1903, was 28, and the number of students, 203. On the graduate roll of this school are the names of many distinguished men, among them Rutherford B. Hayes and Edwin M. Stanton.

Keokuk, kē'ō-kŭk, Iowa, city, one of the county-seats of Lee County; on the Mississippi, near the mouth of the Des Moines River, and on the Toledo, P. & W., the Wabash, the Chicago, B. & Q., the St. Louis, K. & W., and the Keokuk & W. R.R.'s. The river at this point falls about 21 feet in 11 miles, thus furnishing great water-power. A ship canal has been built around the rapids at this place, at a cost to the Federal government of nearly $8,000,000. It was first used in 1877. The chief manufactures are stoves, tin cans, cereals, flour, boots and shoes, ready made clothing, gunpowder, lumber, canned fruits and pickles. It has a poultry-packing plant, wholesale stores, cold storage buildings for meat, vegetables, and fruits. Its excellent transportation facilities by land and water make it a trade centre for a large extent of country in Iowa, Missouri, and Illinois. The iron bridge which here spans the Mississippi is over 2,000 feet in length. Rand Park is noted for being the burial-place of the Indian chief, Keokuk. Keokuk has a medical college founded in 1849, a dental college, a government building, a public library which contains about 18,000 volumes; Saint Joseph's Hospital, Home for the Friendless, a high school, Saint Vincent's Academy, a Y. M. C. A. building, and an opera house. It is one of the four cities of the State which are governed by a special charter. The difference in the form of government is chiefly in the way of appointment of the subordinate officials. Some are appointed by the mayor, others by the council; and the park commissioners, city weigher, and library committee are appointed by the mayor, subject to confirmation by the council. Pop. (1900) 14,641. Consult ‘Annals of Iowa.’

Keokuk Moses, an American Indian of the Sac and Fox tribe, after whom the city of Keokuk, Iowa, was named: b. 1818; d. near Kansas City, Mo., October 1903. Probably the best description of Keokuk's boyhood is contained in Drake's ‘History of the North American Indians.’ It tells of his visit to Washington after the Black Hawk war. Keokuk succeeded his father as chief of the Sac and Fox tribe, and removed with his people from Quenemo, Kan., to their reservation in what is now Oklahoma, in 1868.

Kepler, Johann, yō'hän kĕp'lĕr, German astronomer: b. Weil der Stadt, Würtemberg, 27 Dec. 1571; d. Ratisbon 15 Nov. 1630. He studied at the University of Tübingen, and in 1593 he was appointed a teacher of mathematics at Gratz (Styria). Here he devoted himself with much ardor to the study of astronomy; but in 1599 religious persecutions commenced in Styria, and Kepler, being a Protestant, gladly accepted Tycho Brahe's invitation to Prague, to assist in the preparation of the new astronomical tables, called the Rodolphine Tables. Tycho died in 1601, and Kepler continued the work alone, being appointed imperial mathematician and astronomer. After 25 years' incessant labor the tables were published in 1627 at Ulm. Kepler had become the possessor of all Tycho's papers, and the mass of observations made by that astronomer during 20 years, with a precision till then unsurpassed, enabled Kepler to establish the famous ‘Kepler's Laws’ (q.v.), which have proved so fruitful in the development of astronomical science. Kepler enjoyed the patronage of the emperors Rodolph and Ferdinand, the dukes of Würtemberg and Wallenstein, but his life was a continued struggle; he was exposed to much religious persecution, and his domestic relations were equally unfortunate. The latter part of his life was chiefly passed at Linz as professor of mathematics. He wrote much, but the work that has rendered him immortal is his ‘Astronomia Nova, seu Physica Cœlestis tradita Commentariis de Motibus Stellæ Martis’ (New Astronomy, or Celestial Physics delivered in Commentaries on the Motions of Mars) (1609). His ‘Harmonice Mundi’ appeared in 1619; and among other works may be cited: ‘De Stella Nova in Pede Serpentarii’ (1606); ‘De Cometis’ (1613); ‘Chilias Logarithmorum’ (1624). Consult: Breitschwert, ‘Johann Keplers Leben und Wirken’ (1831); Reitlinger, ‘Johann Kepler’ (1868); Reuschle, ‘Kepler und die Astronomie’ (1871); Hasner, ‘Tycho Brahe und Kepler in Prag’ (1872).

Kepler's Laws, in astronomy, three laws discovered by Johann Kepler (q.v.) on which were founded Newton's discoveries, as well as the whole modern theory of the planets: (1) Every planet describes an ellipse, the sun occupying its focus. (2) The radius vector (line joining the centre of the sun with the centre of the planet) of each planet sweeps over equal areas in equal times. (3) The squares of the periodic times (the periods of complete revolution round the sun) of two planets are proportional to the cubes of their mean distances from the sun. These laws enabled Newton to determine the laws of the attraction of gravitation.

Kep'pel, Augustus, British admiral: b. 25 April 1725; d. 2 Oct. 1786. He was the second son of the Earl of Albemarle, entered the sea service at an early age, and in 1755 commanded the North American squadron in Hampton Roads. He was placed in command of the Channel fleet in 1778, and in July of that year engaged the French fleet off Ushant. Having become partly disabled he signaled for his van and rear divisions, but Palliser in command of the rear ignored the signal until too late. Palliser accused him of incapacity and cowardice, but Keppel was honorably acquitted. In 1782 he was raised to the peerage under the title of Viscount Keppel and Baron Eldon. He was first lord of the admiralty 1782–3.

Kepp'ler, Joseph, American caricaturist: b. Vienna, Austria, 1 Feb. 1838; d. New York 19 Feb. 1894. He early made his reputation as a satiric artist and the leading periodicals of his native city were publishing his witty sketches, almost before he had left the Academy of Fine Arts. But art was not then a serious business to him, and he took to the stage as a comedian and opera singer, and actually began to study medicine at St. Louis, Mo., where he made his residence in 1868. But it was in St. Louis that he found his real vocation. There he established the German ‹Puck,› which, while it failed as a commercial enterprise, made his reputation. It was seen at once that a caricaturist of rare skill as a draftsman, of mental fertility and freshness, of witty and incisive satire, had appeared. He was engaged from 1872 to 1877 as caricaturist for ‹Frank Leslie's Illustrated Newspaper› in New York, to which city he had removed, and in 1875 he started a New York German ‹Puck› in association with Adolph Schwartzman. This was followed in 1877 by the English ‹Puck.› He was the first to use colored cartoons in caricature, and drew upon a vast store of classical and historical incidents for adaptation in criticising modern social and political life.

Ker'atin (from Gr. *keras,* a horn), a substance obtained from claws, feathers, hair, horn, nails, wool, and other epidermal appendages. This tissue or substance is distinguished from gelatinous tissue by becoming soft when acted on by water for some time, but no glue is produced. It is insoluble in alcohol and in ether.

Kerguelen (kėrg'ĕ-lĕn) **Land,** or **Desolation Island,** an island in the Indian Ocean, intersected by lat. 49° 3′ S., lon. 68° 18′ E.; length about 100 miles; greatest breadth about 50 miles. It has a remarkably barren and desolate appearance, due to the fact that it consists of lofty masses of basalt and other volcanic rocks. These rise to the height of 2,500 feet, presenting numerous bold headlands and ranges of precipitous cliffs, and possessing a very scanty vegetation. Sea-fowl are numerous but no land animals are known to exist on it. Its indentations furnish several bays and inlets affording good harbors. It was annexed by France in 1893, and some settlers have made their abode there. Of the flora, which is arctic, the most noteworthy species is the Kerguelen cabbage (*Pringlea antiscorbutica*), a large edible plant, in many ways resembling common garden cabbage, and which has been valued on account of its antiscorbutic properties.

Kermes, kėr'mēz, dried female scale insects (*Coccus ilicis*) found in many parts of Asia and South Europe on the leaves of an oak (*Quercus coccifera*), supplying a durable red and scarlet dye. They have been utilized for dyeing purposes in the East from very ancient times, but since the introduction of cochineal (q.v.) their use is confined to the Eastern countries and Spain, where the collection of these insects still gives employment to a number of people, but is diminishing under the competition of the aniline dyes.

Kermes Mineral, a name given to amorphous antimony trisulphide. The native antimony trisulphide occurs in well-developed orthorhombic prisms. When this compound is fused for some time, and suddenly thrown into cold water, its crystalline structure is entirely destroyed. Kermes is a brown-red powder, becoming blackish-gray when washed with boiling water. By fusion it may be obtained as a solid mass, but it is totally devoid of crystalline structure. See ANTIMONY.

Kermess, kėr'mĕs, **Kirmess,** or **Kermis,** formerly a church festival held by the Dutch and in Flanders, and later in other parts of Europe, on the feast-day of the principal saint of a place or church. In the United States the word has come into general use for entertainments given for charitable purposes.

Kern (kėrn) **Lake,** a body of water in Kern County, in the southern part of California; one of a small group of basins in the midst of an almost arid part of the State. Part of the year there is no apparent outlet, but at the period of high water the lake overflows into Kern River. The country around this lake and in the vicinity is noted for its large amount of game.

Kern River, a stream in the southern part of California; almost its whole course is among the mountains of the southeast. The country in the vicinity is noted for game, and at one time valuable mining interests. In the western part of Kern County, the slough of the Kern River occupies an area of about 80 square miles. It flows into Tulare Lake. The Edison Company of Los Angeles are using the valuable water power of this river for their electric-power plant established on this river.

Kernahan, kėr'nā-ạn, **Coulson,** English novelist: b. Ilfracombe, Devonshire, 1 Aug. 1858. He was educated at St. Albans, and afterward privately by his father, a scientist and Biblical scholar. He has contributed to most of the principal English and American periodicals, and has written: ‹A Dead Man's Diary›; ‹A Book of Strange Sins›; ‹Sorrow and Song›; ‹God and the Ant›; ‹The Child, the Wise Man and the Devil›; ‹A Literary Gent›; etc. He has been for many years literary adviser to Ward, Lock, and Company.

Kernstown, Battle of. Gen. «Stonewall» Jackson abandoned Winchester, Va., 11 March 1862 and retreated up the Shenandoah Valley, followed by Shields' Union division beyond Strasburg. Shields was recalled to Winchester on the 20th, and Jackson followed him, his advance cavalry under Turner Ashby engaging Shields on the afternoon of the 22d, near Kernstown, in which Shields received a severe shell-wound. Jackson came up on the afternoon of the 23d and, being informed that Williams' division of Banks' corps had left Winchester and was moving through the Blue Ridge for Manassas Junction, and that Shields had but four regiments in his front, determined to crush these and thus recall Williams and detain him in the valley. Shields had nearly 8,000 infantry and cavalry and 24 guns, two of his brigades on a ridge covering the road half a mile north of Kernstown, both under command of Col. N. Kimball. Jackson had about 3,000 infantry and 27 guns. Kimball was too well posted to be attacked in front, so leaving Ashby with the cavalry and a small brigade of infantry to hold the road and threaten Kimball's centre and left, Jackson seized a low ridge on Kimball's right, and placed on it his artillery and infantry. Tyler's brigade, which had been held in reserve, was brought up and made unsuccessful efforts to dislodge him, upon which Kimball, drawing from his left and centre, formed a column of seven regiments and, under a terrific fire of artillery and musketry, led it forward, came up on Tyler's left and after a fierce combat broke Jackson's line. Kimball pressed his advantage, and as night closed in, Jackson was in full retreat, leaving his dead and wounded and two guns on the field of his first defeat. He said that he considered the engagement «a fiercer fight during its continuance than any portion of the battle of Manassas.» The Union loss was 118 killed, 450 wounded, and 22 missing; the Confederate loss, 80 killed, 375 wounded, and 263 missing. Consult: 'Official Records,' Vol. XII.; Allan, 'Jackson's Valley Campaign'; The Century Company's 'Battles and Leaders of the Civil War,' Vol. II.

E. A. Carman.

Kernstown (Winchester), **Second Battle of.** On 22 July 1864 Gen. Crook, with four small divisions of infantry and cavalry, joined Gen. Averell's cavalry division at Winchester, Va., Crook assuming chief command of the united force of 11,000 men. On the 23d Crook advanced four miles south to Kernstown and skirmished with Confederate cavalry, and on the 24th went into position on the same ground held by the Union troops in the battle of 23 March 1862. The infantry divisions of Cols. Thoburn, Duval, and Mulligan covered the valley pike, with the cavalry of Duffié and Averell on either flank. Upon the approach of the enemy Averell was sent down the Front Royal road to turn his right. Gen. Early, who, after his raid on Washington, had recrossed the Potomac and taken position beyond Cedar Creek on the 21st, hearing of Crook's advance, put all his army in motion on the morning of the 24th to attack him. At Bartonsville Ramseur's division moved by a road to get around Crook's right, while the divisions of Gordon, Rodes, Breckinridge, and Wharton moved along the valley pike and on either side of it. The cavalry was divided and moved in two columns, one on the right along the Front Royal and Winchester road, the other on the left and west of Winchester, the two to unite in rear of Winchester and cut off Crook's retreat. At 10 A.M. Crook's skirmishers were driven in, and it was discovered that his left extended through Kernstown, and that Averell having left, that flank was exposed; whereupon Wharton's division was moved under cover of some ravines on the right to attack it. The movement was promptly executed, and Wharton struck the left flank and rear of Col. Rutherford B. Hayes' command as it was advancing and threw its left into some confusion. Hayes changed front and, forming behind a stone fence, held Wharton in temporary check. Almost simultaneously with Wharton's flank attack, Rodes, Gordon, and Ramseur advanced on Crook's centre and right, and the entire line gave way and retreated through Winchester, followed by Early's infantry and artillery beyond Winchester, and by Rodes' division as far as Stephenson's Depot. The retreat was continued on the 25th through Martinsburg to the Potomac, Crook crossing at Williamsport and marching down the north side of the river to Maryland Heights and Harper's Ferry. Early occupied Martinsburg and began the destruction of the Baltimore & Ohio railroad. The Union loss, 23–26 July, was 100 killed, 606 wounded, and 479 missing. Among the mortally wounded was Col. Mulligan, commanding division. The Confederate loss is not accurately known, but it was comparatively light. Consult: 'Official Records,' Vol. XXXVII.; Pond, 'The Shenandoah Valley in 1864'; The Century Company's 'Battles and Leaders of the Civil War,' Vol. IV.

E. A. Carman.

Ker'osene, an illuminating oil; the principal product of the distillation of petroleum, the crude domestic oil yielding 70 per cent. of its weight. The oil is colorless, possessing a characteristic taste and smell; insoluble in water, moderately soluble in alcohol, but very soluble in ether, chloroform, and benzene. It dissolves camphor, iodine, phosphorus, sulphur, fats, wax, and many resins. The flashing point of a safe kerosene should not be less than 34°, and the igniting point 43°. The finest quality of illuminating oil is produced from distillates ranging in specific gravity from 0.775 to 0.780. It has a high flashing point, 48° to 60°, and contains none of the lighter parts of the crude oil. A good illuminating oil should neither be too viscous nor too volatile, and it should not take fire when a light is applied to it. See Oil; Petroleum.

Kerr, kėr, **Michael Crawford,** American politician: b. Titusville, Pa., 15 March 1827; d. Rockbridge, Alum Springs, Va., 19 Aug. 1876. He was graduated from the law school of Louisville University in 1851. The next year he moved to New Albany, Ind., and began the practice of his profession; in 1854 he was city attorney, and in 1855 prosecuting attorney for the county. In 1856 he was elected to the State legislature; in 1862 he was reporter for the supreme court of Indiana, and published five volumes of reports of unusual value. In 1864 he was elected to Congress as a War Democrat, and served till 1872. In that year he refused the nomination from his own district, but ran as congressman-at-large, and was defeated by a very small majority; in 1874 he was re-elected to Congress in spite of much opposition, and was made speaker on the organization of the House. He served however only during the first session of that Congress (the 44th), as he died four days after its adjournment. While a member of the House he served on several important committees, including the committee of ways and means; he opposed the reconstruction policy of the Republican party and was an advocate of free trade. He was also a close student of financial problems, favored the resumption of specie payment, and was strongly against the Greenback movement in regard to which he opposed a large part of his constituency and many of the politicians of his State.

Kerr, Orpheus C. See Newell, Robert Henry.

Ker′ril, a sea-snake (*Distira cyanocincta*), olive with blue-black bands, numerous along the coasts from Persia to Japan, and considered one of the most venomous of its race. See Sea-Snake.

Kerrville, kėr′vĭl, Texas, town, county-seat of Kerr County; on the Guadalupe River, and on a branch of the San Antonio & A. P. railroad. It is situated in an excellent agricultural region in which cotton cultivation and sheep raising are the principal occupations. The altitude of the town is about 1,800 feet, which accounts for its agreeable climate. The chief industrial establishments are stock-yards, flour-mills, cotton gins and, in the vicinity, stone quarries. The town has considerable trade in lumber, and is one of the principal wool markets of the State. Pop. (1900) 1,423.

Kersey, kėr′zĭ, a kind of woolen cloth, differing from broadcloth by being woven as a twill. A very thin fine variety of kersey is called cassimere.

Ker′shaw, Joseph Brevard, American soldier: b. Camden, S. C., 5 Jan. 1822; d. there 13 April 1894. He entered the Confederate army at the outbreak of the Civil War, and as brigadier-general commanded a brigade in the Peninsular campaign of 1862. He took part in the capture of Harper's Ferry, 15 Sept. 1862, and was active at Antietam, Fredericksburg, Chancellorsville, Gettysburg, and Chickamauga. After the War he became president of the South Carolina Senate, and was judge of the 5th circuit of South Carolina, 1877–93.

Kes′trel, one of the smaller of the European falcons (*Tinnunculus alaudarius*), resembling the sparrow-hawk, and formerly much used in falconry by the peasantry. The American sparrow-hawk and sharpshin (qq.v.) may be called kestrels.

Ketch, a vessel equipped with two masts, namely, the mainmast and the mizzenmast, and usually from 100 to 250 tons burden. Ketches were principally used in former times as yachts for conveying princes of the blood, ambassadors, or other great personages from one place to another. Ketches in use at the present day are chiefly coasters.

Ketones, kē′tōnz. See Acetone.

Ketteler, kĕt′tĕl-ĕr, **Clemens August,** Baron von, German diplomat: b. Potsdam 1853; d. Peking 20 June 1900. He served for a time in the army, but entered the diplomatic service, in 1882 as attaché at Peking drew up the first treaty between Germany and Korea, in 1883 was appointed acting consul at Canton, in 1892 became secretary of the German legation at Washington, and when in 1893 the legation was made an embassy was appointed first secretary to the embassy and councillor of state. In 1896 he became minister to Mexico, in 1899 minister to China. In 1900, at the time of the «Boxer» disturbance in northern China, he was selected, owing to his familiarity with the Chinese language, to represent the foreign diplomats in their communications with the government. While on such a mission he was shot in the street. Prince Chun, brother of the emperor, was sent to Germany to apologize for the murder, and 18 Jan. 1903 a memorial arch, set up at the expense of the Chinese government, was dedicated at Peking.

Kettle Drum, a musical instrument, formed of thin copper, and has a head of parchment or vellum. Kettle drums are used in pairs, slung on each side of the withers of a cavalry horse. One drum is tuned to the key note, and the other to the fifth of the key in which the piece in which they are to be used is written. The tuning is by a hoop and screws. Also a name for a tea party held by fashionable people in the afternoon before dinner.

Ketu′pa, the generic and vernacular name of a group of large owls of the East Indies, specifically the Javan one (*K. javanensis*), which subsist mainly on fish, crabs, and the like, which they are expert in catching along the shores of sea and rivers. Their legs and talons are long and not feathered.

Keuka (kė-u′kạ) **Lake,** or **Crooked Lake,** a body of water in New York State extending from Steuben County to Yates County, a distance of 20 miles. It is about 2 miles wide and of irregular form. It has a depth of 200 feet and lies 718 feet above the sea. Steamboats navigate the lake in summer between Hammondsport and Penn Yan.

Keuka, College, N. Y., a college at Keuka Park; founded in 1892 under the auspices of the Free Baptists. It had in 1901: Professors and instructors, 15; students, 176; volumes in the library, 3,000; productive funds, $150,000; income, $11,000.

Kew, kū, England, a small village in the county of Surrey, on the right bank of the Thames, opposite Brentford, with which it is connected by a bridge. The royal botanic gardens and the connected pleasure-grounds, the former covering about 75 acres, the latter 250, are the chief attraction of visitors to Kew. They contain the finest collection of plants in the world, and are decorated with various ornamental buildings, including a Chinese pagoda 163 feet high. The botanical constructions here are really magnificent, and have been much augmented in recent years; they include a great conservatory for palms, tree-ferns, and other tropical plants, 362 feet long altogether, the centre portion being 137 feet 6 inches long, 100 feet wide, and 69 feet high, the wings 50 feet wide and 33 feet high; a house for succulent plants, such as cactuses, euphorbias, etc., 200 feet long and 30 wide; a great «temperate house» for trees and shrubs of temperate climates that require protection during the winter; a large orangery, hothouses, greenhouses, etc., of great size. The gardens are open to the public on Sundays as well as week days.

Kew Observatory, a celebrated astronomical structure in Richmond Park, between Kew and Richmond, Surrey, England. It was built by George III. as a private enterprise for the observation of the transit of Venus in 1769 and was then called the King's Observatory. It was transferred to the British Association as a physical observatory in 1841, and given its present name. In 1871 it was placed under the control of the Royal Society.

Kewanee, ke-wä'nē, Ill., city in Henry County; on the Chicago, B. & Q. railroad; about 100 miles north by west of Springfield and 122 miles southwest of Chicago. It is situated in an agricultural region, and coal-fields are in the vicinity. The chief manufactures are agricultural implements, boilers, pumps, steam-heating machinery, gloves, mittens, and carriages and wagons. The tube and boiler works employ about 3,520 men. The public library has about 10,000 volumes. The city owns and operates the waterworks. Pop. (1890) 4,569; (1900) 8,382.

Kewa'tin. See KEEWATIN.

Kewaunee, kẹ-wâ'nē, Wis., city, county-seat of Kewaunee County; on Lake Michigan at the mouth of the Kewaunee River, and on the Kewaunee, G. B. & W. railroad. The first permanent settlement was made in 1850, and the city received its charter in 1882. Its chief industrial establishments are foundries, machine-shops, pea-canning works and coffin factory. Pop. (1900) 1,773.

Keweenaw (kē'wẹ-nâ) **Bay**, an arm of Lake Superior, north of Michigan. It is 8 miles long, by 2 to 6 miles in length. The town of Baraga lies at the head of the bay.

Keweenaw Point, a peninsula in northern Michigan, projecting into Lake Superior. It is rich in copper mines, the maximum thickness of the strata here being 40,000 feet. The peninsula is as large as the State of Delaware, and includes Houghton and Keweenaw counties. Among the towns on the peninsula are Calumet, Houghton, Eagle Harbor, and Copper Harbor.

Keweenawan (kē'wẹ-nâ-ạn) **Series**, a great series of rocks, believed to be of Pre-Cambrian age, typically developed on Keweenaw Point, Mich., but found over a large area in Michigan, Wisconsin, and Minnesota. Rocks of the same age occur also in Canada, and possibly in the Adirondack Mountains in New York. The series on Keweenaw Point and southward has a maximum thickness of perhaps 50,000 feet; the lower part consists mostly of thick sheets of lava and intrusive rocks with some sandstone and conglomerate; the upper part is a mass of sedimentary rocks. In the series occur the famous Lake Superior copper deposits. The Keweenawan series is included in the Algonkian or Eozoic system.

Key, David McKendree, American jurist and cabinet officer: b. Greene County, Tenn., 1824; d. Chattanooga, Tenn., 3 Feb. 1900. After studying law he was admitted to the bar in 1849, and in 1853 took up his residence in Tennessee, establishing a successful law practice at Chattanooga. After vainly attempting to prevent the secession of Tennessee, when once that step was taken he joined the Confederate army and served through the War, but at its close joined the Republican party, succeeded Andrew Johnson in the United States Senate (1875); in 1877 was made postmaster-general; and in 1880 was appointed United States district judge for the Eastern and Middle Districts of Tennessee, a position he held till his death.

Key, Francis Scott, American lawyer and song writer: b. Frederick County, Md., 1 Aug. 1779; d. Baltimore 11 Jan. 1843. He was educated at St. John's College, Annapolis, and commenced the practice of the law in Frederic City. Subsequently he removed to Washington, where he was for many years district attorney of the District of Columbia. As a song writer he is chiefly known by his 'Star-Spangled Banner,' a popular national lyric, suggested and partially written while the author was detained in the British fleet during the bombardment of Fort McHenry, near Baltimore, of which he was an anxious and interested witness. A posthumous collection of his miscellaneous poems was published in 1856.

Key, in music: (1) A mechanical contrivance for closing or opening ventages, as in flutes, clarinets, ophicleides, etc. By means of keys on such instruments, apertures too remote to be reached by the outstretched fingers are brought under control of the player. (2) A lever which brings the pallets of an organ under the control of the hand or foot of an organist. (3) A lever which controls the striking apparatus of a key-stringed instrument. In the harpsichord it acted on the jack; in the pianoforte it acts on the hammer. (4) The wrest or key used for tuning instruments having metal pegs. Its end is hollowed out so as to fit over the four-sided end of the peg, and the cross-bar with which it is surmounted gives leverage to the hand of the tuner, so that he is enabled to tighten or loosen a string, or (in the case of a drum) slacken or strain a parchment. (5) The sign placed at the commencement of the musical stave which shows the pitch of the notes, was originally called a clavis or key. This sign is called in modern music a clef. (6) Key, in its modern sense, is the starting point of the definite series of sounds which form the recognized scale. Different starting points require the relative proportion of the steps of the scale to be maintained by means of sharps or flats in the signature. The key of C major requires no flats or sharps for this purpose, hence it is called the normal key.

Also a metallic instrument for shooting the lock-bolt of a door; an instrument formed with cavities or interstices corresponding to the wards of a lock, by which the bolt is moved backward or forward.

Key West, Fla., city, port of entry, county-seat of Monroe County; about 60 miles southwest of Cape Sable and nearly 100 miles north by east of Havana, Cuba. The city is on Key West Island, one of a group of coral islands, called Florida Keys. It is the farthest south of any city in the United States. The first permanent settlement was made in 1822 and the city received its charter in 1832. Key West Island is covered by only a thin layer of soil upon which vegetation grows luxuriantly. The island averages about 11 feet above the sea. The harbor is excellent; at the main entrance, on an artificial island, is located Fort Taylor. The city has regular steamer communication with the large cities on the Atlantic and Gulf coasts and with the West Indies and Central America. It is a United States naval station, and during the war with Spain, it was the rendezvous of the United States navy. The chief industries are manufacturing of cigars, gathering sponges, and fishing. There is a large trade in fish, fruit, vegetables, turtles, turtle-shell ornaments, salt, tobacco, both raw and manufactured. In connection with the naval station there are barracks, machine-shops, marine hospital, docks, etc. Some of the chief public buildings are the government buildings, post-office and custom-house, county court-house, city-hall, and the Martello towers. The principal educational institutions are a Methodist Seminary and the Holy Name Academy. The convent of the Holy Name was used as a hospital for soldiers during the Spanish war. The free public library and the public and parish schools are excellent. There are two banks with a combined capital of $150,000. The government has erected two light-houses in the harbor and others among the islands; but still many wrecks occur each year. The city owns and operates the waterworks. Pop. (1900) 17,114.

Keyes, kēz, **Edward Laurence,** American surgeon: b. Charleston, S. C., 28 Aug. 1843. He is a son of Erasmus Keyes (q.v.) and was graduated from Yale in 1863 and from the medical department of the University of New York in 1866. He has practised his profession in New York from 1867, and is now (1903) consulting surgeon to Bellevue Hospital. He has published: ‘The Venereal Diseases’ (1880); ‘Treatise on Surgical Diseases of the Genito-Urinary Organs’ (1881); etc.

Keyes, Emerson Willard, American educator and financial writer: b. Jamestown, N. Y., 30 June 1828; d. 13 Oct. 1897. He graduated from the State Normal School, was deputy superintendent of public instruction in New York 1857–65, and acting superintendent 1861–2. In the latter year he was admitted to the bar, became deputy superintendent of the banking department of New York State in 1865, and was appointed bank examiner five years later. In 1882 he was appointed chief clerk of the Brooklyn (N. Y.) Board of Education, a position which he filled until his death. He published: ‘New York Court of Appeals Reports’ (1867–9); ‘History of Savings Banks in the United States’ (1878); ‘New York Code of Public Instruction’ (1879); etc.

Keyes, Erasmus Darwin, American general: b. Brimfield, Mass., 29 May 1810; d. Nice, France, 11 Oct. 1895. He was graduated from West Point in 1832, and served in Charleston in 1832–3. He was later placed on frontier duty in the Northwest during the Civil War, and won distinction at Fair Oaks and elsewhere. He was promoted major-general of volunteers 5 May 1862, and on 31 May of that year was brevetted brigadier-general United States army. He resigned in 1864 and settled in California. He published ‘Fifty Years’ Observation of Men and Events’ (1884).

Keyes, the name given to coral and other reefs or slightly sunken rocks off the shores of Florida, Central America and the West India Islands. The term is derived from the Spanish *cayo* (an islet, rock).

Keyser, kī'zėr, **Ephraim,** American sculptor: b. Baltimore, Md., 6 Oct. 1850. On the completion of his academic course in his native city, he studied art at the Royal Academies in Munich and Berlin, where his success was marked. He has had studios in Rome, Italy, New York, and Baltimore, where he now resides, in charge of the sculpture and modeling classes at the Maryland Institute School of Art. His most important public works are the De Kalb statue at Annapolis, Md., and President Arthur's tomb at the Rural Cemetery, Albany, N. Y. He has made numerous portrait busts, among others those of Cardinal Gibbons, Daniel Coit Gilman, and Sidney Lanier. While abroad he received the Michael Beer scholarship.

Keyser, Leander Sylvester, American Lutheran clergyman and ornithologist: b. Tuscarawas County, Ohio, 13 March 1856. After graduation from Wittenberg Divinity School he filled various Lutheran pastorates in Indiana and Ohio, and has been pastor of Midland College Church, Atchison, Kan., from 1897. He has published: ‘The Only Way Out’ (1888); ‘Birddom’ (1892); ‘In Bird Land’ (1894); ‘Birds of the Rockies’ (1902).

Keystone State, a name given to Pennsylvania, because it was the seventh, or central of the original 13 States.

Khaki, kä'kĭ, a kind of light-brown, drab, or dust-colored cloth, originally used for making the uniforms of East Indian regiments. In the South African war of 1899–1901 the British troops wore khaki uniforms for purposes of protective coloration, and khaki was also worn by the United States troops in the Spanish-American war.

Khalifa, kä-lē'fä, **The** (Sayed Abdullah Ibu-Sayed Mohammed), Arab religious leader: b. Darfur 1846; d. battle of Om-Debrihat, Egypt, November, 1899. He fought against the Egyptian invasion of Darfur, and subsequently, having heard of the troubles of the Mad Mullah (q.v.), Mohammed Ahmed, with the Egyptian authorities, he visited Mohammed, and proclaimed that the latter was the divinely-sent Mahdi, or «director,» appointed for the regeneration of Islam. It was by his councils that the Mahdi caused the troubles in Kordofar and Darfur. Ere long he was made «khalifa,» or vice-gerent, his acts to be regarded as equivalent to the Mahdi's own. He was named by the Mahdi as successor, and from 1885 ruled over the Sudan and such adjacent districts as he brought within his sway. His capital was situated at Omdurman, near which, on 2 Sept. 1898, his army, though fighting with great bravery, was almost annihilated by the British and Egyptian forces under Sir Horatio (now Lord) Kitchener (q.v.). He escaped northward, but in November 1899 was slain at the combat of Om Debrihat. See also Egypt — *History;* Sudan.

Khammurabi. See Hammurabi, The Code of.

Khan, kän or kăn, or **Caravansary,** in Turkey and other Eastern countries. There are two kinds, those for poor travelers and pilgrims, where a lodging is furnished gratis; and those for traders, which are usually more convenient, a small charge being made for each chamber.

Khandesh, khän-dēsh', or **Candeish,** British India, an inland district in the presidency of Bombay, with an area of 10,907 square miles. The chief town is Dhulia (pop. 21,880). Pop. 1,460,851.

Khargeh, khär'gĕ, or **Kharga,** Egypt, town, in the oasis of the same name; 100 miles west of Thebes. Here are the ruins of the temple of Ammon. Pop. 4,000.

Kharkov, ʜär-kŏf′, or **Charkov,** Russia, (1) a southern government bounded north by Kursk and Voronezh; west and southwest by Poltava; south by Ekaterinoslav; east by the Don Cossacks; area, 21,041 square miles. There are forests in a few parts, but the country generally is open, the soil dry and of a mixed loamy and sandy nature, but usually fertile. The climate is mild, though the winter is somewhat severe; the summer is frequently very hot. Agriculture and the rearing of sheep and other domestic animals form the chief employment of the inhabitants. Sugar and tobacco are manufactured. Pop. (1897) 2,509,811. The principal town is (2) Kharkov, the capital, at the confluence of the Kharkovka and Lopanj, 400 miles southwest of Moscow. The houses are mostly of wood, whitewashed, and have a cleanly appearance. The city is the see of an archbishop, contains a cathedral and other churches, a university with a library, a museum and botanical garden, a technological institute and a veterinary institute, several gymnasia, two theatres, etc. The inhabitants carry on a considerable trade in soap, candles, and leather; and among the chief industries are wool-washing and the manufacture of tobacco and cigars. Pop. (1897) 174,841.

Khartum, ʜar-toom′, or **Khartoum,** capital of the Egyptian Sudan, on the left bank of the Blue Nile, near its junction with the White Nile. Founded under Mehemet Ali in 1823, it rapidly rose to be the chief town of the Egyptian Sudan, but after its conquest by the Mahdi it was abandoned for Omdurman, on the opposite bank of the river. In the latter part of 1898 it was again occupied by British and Egyptian troops, who found it in a ruined and neglected condition. It is a straggling place covering a wide area, with irregular streets, and houses mostly built of sun-dried bricks. The situation of Khartum made it the emporium of a large trade in ivory, gums, ostrich feathers, senna, etc., which is again developing under Anglo-Egyptian rule. It was the scene of Gordon's heroic defense against the insurgent Sudanese, and of his death in January 1885. The Gordon College, established here after the British occupation, was named in honor of him. Pop. 40,000.

Khayyám, Omar, ō′mär khī-yäm′. See Omar Khayyám.

Khedive, kĕ-dēv′ (*Khidîv*), a Persian word signifying lord, the title of the Pasha of Egypt, granted him by a firman from the sultan in 1866. In Persia it was at different eras adopted by provincial governors who were independent of the shah. The title, which had fallen into disuse both among Persian and Turkish governors, was revived in order to give additional honor to Ismail Pasha.

Khiva, ʜē′vä, or **Chiva,** a vassal state of Russia, in Central Asia. It formerly occupied a large extent of surface on both sides of the Amu-Daria or Oxus, but since the cession to Russia, in 1873, of its territory on the east of the Amu, is now confined to the west side of this river. It is of a triangular shape, each of its three sides — of which Amu forms one — being about 300 miles in length. One of its angles rests on the Sea of Aral. A great part of the surface consists of deserts, thinly inhabited or uninhabitable; but along the Amu the land is of a very different character, consisting of rich alluvial loam of the greatest natural fertility. Owing to the great dryness of the atmosphere, however, it soon becomes so stiff and hard that it cannot be penetrated by any ordinary implement. For this the obvious remedy is irrigation; and accordingly, from the earliest period, a mode of culture resembling that of Egypt has been practised. Large canals from the river, with numerous minor branches, intersect every part of the surface, supplying moisture where it is wanted, or removing it where it is in excess, and securing the most luxuriant crops of wheat, maize, rice, barley, and legumes. Cotton and madder are also generally cultivated. The vine thrives well, but requires to be defended against the winter cold by a covering of straw and earth; all the ordinary fruits, including apples, plums, cherries, apricots, figs, and pomegranates, are common. Trade is carried on chiefly with Russia. The principal exports are raw and spun cotton, in return for which are received various articles of European manufacture, as metals and ironware, woolen, cotton, and silk goods, etc. From Bokhara also are obtained cotton and silk goods, green tea, raw tobacco, Chinese porcelain, etc. These are sometimes paid for in money, but more frequently in Russian wares. The government of Khiva is an unmitigated despotism. The greater part of the inhabitants are Tajiks and Uzbeks, in nearly equal numbers. After these are Persians, Karakalpaks, Jamshids, and Turcomans. The designs of Russia on Khiva long caused disquietude in Britain, which has always been jealous of Russian advances in Asia, mainly from a dread of interference with her Indian empire. Accordingly Count Schouvaloff was despatched to England in January 1873, to give explanations respecting an intended expedition to Khiva. Its object was represented as simply the suppression of brigandage, the recovery of a few Russian prisoners, and to teach the khan to desist from acts of violence in the future. The emperor, it was said, had given positive instructions that Khiva should not be taken possession of. In spite of these protestations, however, Khiva was taken possession of on 10 June; and later in the year, though the nominal independence of the khan was stipulated for, it was decided to annex to the Russian dominions the Khivan territory on the right bank of the Amu. The khan also renounced all right of making wars or treaties without Russian sanction. The population is estimated at 700,000 to 1,000,000.

Khokand, ʜō-känd′. See Ferganah.

Khoozistan′. See Elam.

Khorasan, ʜo-rä-sän′, Persia, an extensive northeastern province; area, about 140,000 square miles. The surface is to a great extent uninhabitable. The mountainous region of the north has many well watered valleys with a fertile soil. The most valuable mineral is the turquoise. In many parts cotton, hemp, and tobacco grow freely, and aromatic plants and drugs are numerous and valuable. The principal manufactures are silk and woolen stuffs, carpets, firearms, and sword-blades. About two thirds of the inhabitants are Persians; the remainder are Turcomans, Kurds, and other tribes, who lead a nomadic life. The chief town is Meshed. Pop. estimated at 860,000.

Khorsabad, khōr-sä-bäd'. See Nineveh.

Khyber (hī'bėr) or **Khaibar Pass,** a mountain pass on the frontiers of India and Afghanistan, leading from Punjab to Jelalabad and Cabul. The pass winds northwest through a range of hills, called by the same name, for a distance of about 33 miles, and forms the bed of two streams, the one flowing northwest, the other south-southeast. It is at one part as narrow as 10 feet in width, and in many places the hills on either side are quite precipitous and inaccessible, rising at one point to the height of 1,300 feet. At 9½ miles distance from the Indian entrance of the pass is the fort of Ali Masjid, which has several times been taken by the British from the Afghans. The highest point of the pass is Lundi Kotal, 3,373 feet above sea-level. The pass forms the northern military route from India to Afghanistan, and is now under British control.

Kiang, kē-äng', **Dziggetai** or **Kulan,** the large wild ass (q.v.) of Tibet and Mongolia, characterized by its large size (11 to 12 hands high), dark reddish color and the narrowness of the black stripe along the spine; some have faintly barred legs. They dwell upon the lofty, sterile plateaus north of the Himalayas, moving about in bands which travel at amazing speed over the stony plains and up and down the steep hillsides, feeding mainly on twigs of woody desert plants, and acquiring great hardiness. They are hunted by the Mongols as game, yet are not shy as a rule, coming close to a traveling party or camp, apparently actuated by extreme curiosity, unless driven away. The voice has been described as like the neigh of a horse; but the general and truer opinion is that it is more nearly the shrieking bray of the ass. The animal is nowhere domesticated, except a few captive specimens in zoological gardens. See Onager.

Kiang-Si, kē-äng'sē, or **Kiangse,** one of the 18 provinces of China proper. It is bounded on the north by Hupeh and Ngan-Hui, on the east by Che-Kiang and Fu-Kien, on the south by Kwang-Tung, and on the west by Kwang-Si and Hunan. The area is 72,176 square miles. The province contains the treaty port of Kiu-Kiang on the Yang-tse-Kiang. The Nan-Ling or Southern Mountains traverse the eastern half of Kiang-Si, and in the north is the large inland lake of Po-Yang-Hu. Here are established famous manufactories of porcelain. The principal river aside from the Yang-tse-Kiang, is the Kin-Kiang. The province produces tea and silk, besides porcelain. The English have large railway concessions. There are telegraph lines connecting the treaty port with other centres of commerce.

Kiang-Su, kē-äng'soo, an important maritime province of China proper, bounded north by the province of Shan-Tung; east by the Yellow Sea; south by the province of Che-Kiang, and west by the provinces of Ngan-Hui and Ho-Nan. Kiang-Su has an area of 44,500 square miles (about that of Pennsylvania). The great commercial importance of this province is denoted by its possession of four treaty ports, Shanghai, Nankin, Su-Chau and Chin-Kiang. Kiang-Su was in fact the first province opened to foreign commerce by means of a treaty port. It is traversed almost its whole length by the Grand Canal, the ancient Chinese system of waterways. The British have valuable railway concessions and the Germans claim mining rights here. Half the foreign population of China is established in this province.

The Yang-tse-Kiang empties into the sea through this province and enables it to control the trade of all southern China. There are large cotton mills. The capital of the province is Nankin, which was formerly the capital of the Chinese empire. The Tai-Ping rebellion of 1853–4 had its headquarters in this province. Kiang-Su is rapidly becoming the centre of Chinese manufacturing industries, especially in textiles. Commercially, the province is controlled by the English, who have invested largely in railways, mills, and government concessions. Pop. (1900) estimated, 28,000,000.

Kianganes, a Philippine tribe. See Quianganes.

Kiao-Chau, kē-ä-ō-chow', or **Kiao-Chow,** a Chinese walled city and a protectorate of the German empire, around the shores of Kiao-Chau Bay on the east coast of the province of Shan-tung. The bay is some 15 miles across from east to west and north to south, and has deep-water anchorages suitable for foreign vessels in its southeastern portion. Kiao-Chau was seized by Germany in November 1897, and in March 1898 the town, harbor, and district were transferred to Germany by treaty on a lease for 99 years, the territory, which covers about 200 square miles, being then declared a protectorate of the German empire. It comprises 33 townships, with a population of 60,000. Around the leased territory is a neutral zone of 2,500 square miles in area. The protectorate is administered by the navy department, its governor being a naval officer. The German garrison, about 2,400 strong, consists of marines and marine artillery.

Kibit'ka, a carriage without springs used in Russia; also the name of a tent used by the nomad tribes of Kirghiz Tartars.

Kick'apoos, a tribe of Algonquian Indians, formerly occupying a portion of the Ohio Valley. They were a powerful nation in the early history of that region, and were constantly in arms against the whites until in 1819 they concluded the sale of most of their lands and removed to the Osage River Reservation in Kansas. In 1852 a considerable number of them went to Texas and from there to Mexico; some of these returned, however, and settled in the Indian Territory. In 1900 the total number of Kickapoos in the United States and Mexico was estimated at 1,000. See Indians.

Kidd, Benjamin, English sociologist: b. 9 Sept. 1858. He entered the inland revenue service of Great Britain in 1877 and rose to sudden fame by the publication of 'Social Evolution' in 1894. The volume was translated into most of the languages of Europe, and gave rise to considerable controversy, President Roosevelt publishing a series of papers in opposition of the views propounded in it. Its main proposition was that high moral and religious development in society was a process that ran exactly contrary to natural evolution and the Darwinian process of survival. He has also published: 'The Control of the Tropics' (1898); and 'Principles of Western Civilization' (1902).

Kidd, William, American pirate: b. probably Greenock, Scotland, about the middle of the 17th century, executed London 24 May 1701. He appears to have followed the sea from his youth, and about 1695 was known as one of the boldest and most successful shipmasters that sailed from New York. At this time the depredations of pirates upon British commerce had become so extensive that a company was organized in England, in which William III. and several noblemen were shareholders, to fit out an armed vessel for the purpose of suppressing the practice, as well as of deriving a profit from recaptures. Kidd, who had obtained some experience as captain of a privateer against the French, received a commission signed by the king, and directed to «the trusty and well beloved Captain Kidd, commander of the ship Adventure Galley,» a vessel of 30 guns. Sailing from Plymouth, England, in April 1696, he cruised off the American coast for some months, occasionally entering New York, and finally sailed for the East Indies and the east coast of Africa. Upon his way he resolved to turn pirate, and finding his crew not averse to the project, forthwith commenced a career of plunder and outrage among the shipping which frequented the coasts of Malabar and Madagascar, returning in 1698 with a large store of booty to New York. He took the precaution to bury a portion of his treasure on Gardiner's Island at the east end of Long Island, and subsequently went to Boston, where he boldly made his appearance in the streets, not doubting that under his commission he could clear himself from any charge of piracy. Such, however, had been the scandal which the report of Kidd's depredations had caused in England, that the Earl of Bellamont, governor of Massachusetts and New York, and one of the shareholders in the enterprise, caused him promptly to be arrested and conveyed to England for trial. The charge of piracy was difficult to prove; but having been arraigned for killing one of his crew, named Moore, in an altercation, he was convicted after a grossly unfair trial, and hanged at Execution dock. His name and deeds have been interwoven into popular romance, and form the subject of the well-known ballad commencing: «My name is Captain Kidd, as I sailed, as I sailed,» many of the incidents of which, however, are apocryphal. The treasures he had left, consisting of 738 ounces of gold, 847 ounces of silver, and several bags of silver ornaments and precious stones, were secured by Bellamont. But according to popular belief this inconsiderable amount constituted but a tithe of all he had collected, and down to the present time the shores of Long Island Sound and various parts of the banks of the Hudson River continue occasionally to be explored in the hope of discovering the abandoned wealth of the great pirate.

Kid'der, Frank Eugene, American architect: b. Bangor, Maine, 3 Nov. 1859. He was graduated from the University of Maine in 1819, studied at the Massachusetts Institute of Technology 1880–1, and has published ‹Architects' and Builders' Pocket Book› (1885); ‹History of the Kidder Family› (1886); ‹Churches and Chapels› (1895); ‹Building Construction and Superintendence› (1896).

Kidder, Frederic, American historical writer: b. New Ipswich, N. H., 1804; d. Melrose, Mass., 1885. He gave much attention to the language and religion of the New England Indians, and published ‹The Expeditions of Capt. John Lovewell› (1865); ‹History of the First New Hampshire Regiment in the War of the Revolution› (1868); ‹History of the Boston Massacre› (1870); etc.

Kid'derminster Carpet, so called from being made in the town of that name in England. Another of its names, ingrain, signifies that it is made of wool or worsted dyed in the grain; that is, before manufacture. Its names two-ply or three-ply indicate the number of webs which go to the making of the fabric.

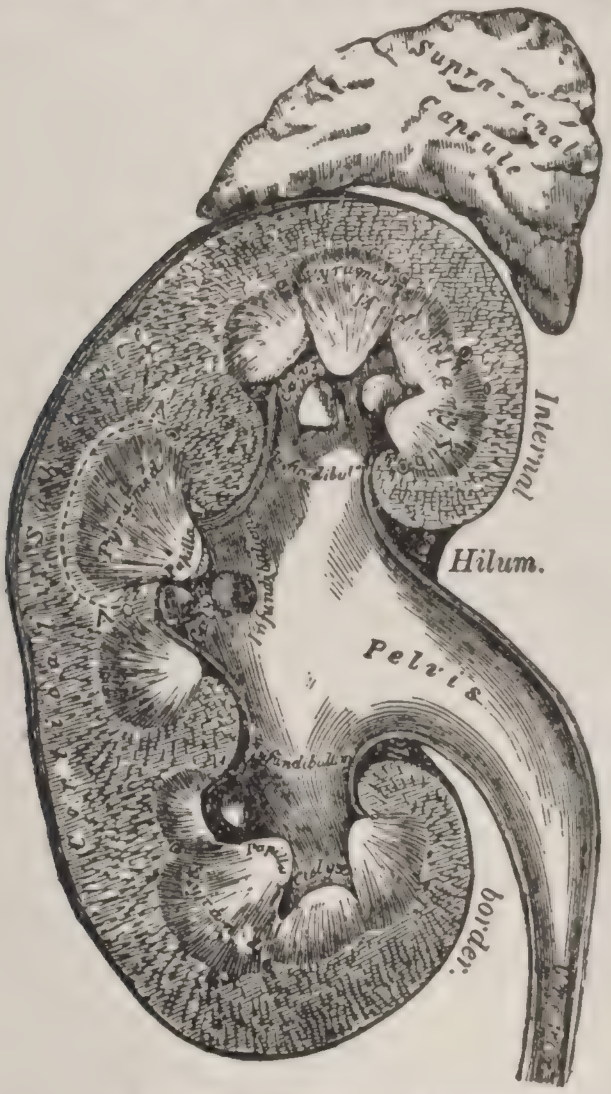
Kidnapped, a romance by Robert Louis Stevenson, published in 1886, when the author was 36. In his own opinion, it was his best novel; and it is generally regarded as one of his finest performances in romantic story-telling. The full title reads: ‹Kidnapped: Being Memoirs of the Adventures of David Balfour in the Year 1751›; and the contents of the tale are further indicated on the title-page, thus: «How he was Kidnapped and Cast away; his Sufferings in a Desert Isle; his Journey in the Wild Highlands; his acquaintance with Alan Breck Stewart and other notorious Highland Jacobites; with all that he Suffered at the hands of his Uncle, Ebenezer Balfour of Shaws, falsely so called.»

Kid'napping, is not a legal term, but is frequently applied as such in popular language, both in Great Britain and the United States, to the offense of stealing or carrying off by force a child or adult. In its more limited sense, it is applied to the obtaining of slaves or native labor by force, as practised by the Arabs in Africa. This barbarous traffic existed in very recent years in the South Seas, carried on by Europeans, but now happily suppressed by the appointment of government labor agents. In Great Britain this term was formerly also applied to the illegitimate recruiting for the army and navy. See ABDUCTION.

Kid'ney Bean, a bean of the genus *Phaseolus,* of which European species and varieties have been cultivated from a time immemorial (see BEAN). The wild kidney bean of the United States is a high-climbing vine (*P. perennis*), bearing small purple flowers. The so-called «kidney-bean tree» is *wistaria* (q.v.)

Kidney-root, the purple boneset (q.v.).

Kidneys, the principal excreting organs of the body. They are two in number, fixed in position at the back of the abdominal cavity by a thick layer of fat and the peritoneum which passes in front of them; their lower border is slightly below the last ribs; their shape is characteristic; they have an outer, upper, and lower convex margin, and an inner margin deeply indented, allowing the entrance of the renal artery and exit for the veins and ureter. This indentation corresponds to a considerable hollowing of the interior, which is occupied by the funnel-like origin of the ureter (the pelvis). The kidney is surrounded by a firm membrane called the capsule; inside of this is the substance proper, made up of a connective-tissue groundwork in which are embedded the blood-vessels and the secreting glands called the uriniferous tubules. These tubules start in tiny rounded bodies (Malpighian bodies), and after an orderly arrangement of windings a number of the tubules form slightly larger tubules (collecting tubules), so grouped together as to form striated pyramids which have their apices projecting into the pelvis of the kidney. A Malpighian body is made up of a tuft of blood-vessels, a glomerulus, surrounded by a dilated end of the tube (capsule of Bowman), so that the endothelial lining of the capillary and the epithelium of the end of the tubule are in apposition. By a process similar to filtration the excess of water in the blood passes through these walls and out of the body. There is a similar arrangement of the blood-vessels around the winding tubules, but through these the solids in solution in the blood that are of no further use to the body are taken up by the epithelium of the tubules and added to the watery element inside the tubes. This mixed fluid, called the urine, is then passed out into the ureter, whence it is conveyed to the bladder and stored until passed. The ureters are about 16 inches long, with the diameter of a goose-quill; they are lined by a mucous membrane, outside of which there are thin muscular and fibrous layers of tissue.



Vertical Section of Kidney.

Urine.— The urine is an amber or yellowish fluid containing about 95 per cent of water, having a specific gravity of 1.018 to 1.025, an acid reaction, and rather characteristic ammoniacal odor. The inorganic solids held in solution are the chlorides, phosphates, and sulphates of sodium, magnesium, potassium, calcium, and iron. More important than these is a group of substances elaborated in the body during metabolism (q.v.), some of which may act as poisons if not properly discharged; the principal ones being urea, uric acid, creatinine, hippuric acid, and the xanthin bases. That of most importance is urea, which should in normal adults be excreted to the amount of 500 grains daily. In kidney disease the deficiency of this substance is taken as an index of the organ's impairment.

Visible Abnormalities of the Urine.— While the average amount of urine passed by a healthy adult in 24 hours is 50 ounces (3 pints), there are constant variations from this rule, depending on the amount of water ingested and the amount lost through the skin and bowels: so also do the amount of solids vary with the diet and amount of exertion. White cloudiness of the urine may be caused by the presence of pus, phosphates, mucus, or bacterial growths. Reddish or «brick-dust» deposit is caused by an excess of urates, a condition ordinarily of no importance and never an indication of kidney disease. There is apt to be a diminution of the amount of urine in nephritis, and a great increase in diabetes.

Albumen in the urine is the serum albumen of the blood. In health the kidneys may allow the passage of faint traces of this substance, but the presence of amounts large enough to be discovered by the «heat and nitric acid» test usually indicates some abnormality of the epithelium of the tubules — congestion of these organs, inflammation of the ureter, bladder, or urethra, or an admixture of blood with the urine. Albumen may appear in the urine after severe exertion without apparent congestion of the kidneys. Certain individuals go on for years showing albumen in the urine at certain times of the day and never develop any further evidence of Bright's disease. In some persons certain articles of food, particularly those rich in albumen, cause a temporary albuminuria. Although these forms are called «functional,» there is always a possibility that they may indicate some slight kidney impairment, and it is the custom of the insurance companies to refuse applicants with albuminous urine.

Urinary casts are tiny cylinders or plugs formed in the uriniferous tubules under abnormal conditions. They are formed of coagulated albumen blood and epithelial cells, granular matter the result of epithelial cell degeneration, and so-called waxy matter. The clear «hyaline casts» may sometimes be found in small numbers in the urine from normal kidneys, but the constant presence of casts indicates a disease of the kidneys. These bodies are entirely invisible to the naked eye.

Uræmia.— This term denotes a group of symptoms that may appear in the course of diseases of the kidneys and during pregnancy. (See Puerperal Eclampsia.) Some toxic substance is held in the blood and causes one or more of such symptoms, which may not be characteristic of uræmia but to which, because of the general complex of symptoms and the known condition of the urine, the term uræmic is applied. The various symptoms which it is customary to include in the category are headache and sleeplessness, hemiplegia and aphasia, general convulsions and spasms of groups of muscles, blindness, delirium and coma, vomiting, dyspnœa, and increased arterial tension. This last condition is due to spasm of the smaller arteries and to hypertrophy of the heart.

Diseases of the Kidneys.— Acute congestion may result from sudden obstruction of the veins, certain irritant poisons, exposure to cold, severe surgical operations, overexertion, or from the infectious diseases. Besides the changes seen in the urine, albuminuria and casts, if the congestion be severe there may be fever, abdominal pain, nausea and vomiting, and partial or complete suppression of urine. The treatment consists in the removal of the cause and the relief of congestion by the hot pack over the lower half of the body. In its severe forms the conditions may be fatal.

Chronic Congestion.— This condition results from obstruction to the venous outflow, as seen in disease of the lungs, heart, and liver, and from the pressure of tumors: it leads to actual change of structure.

Acute Nephritis, Acute Bright's Disease.— This is an inflammation of the vital part of the kidney structure, the secreting membrane of the uriniferous tubules and of the structures around them. In such an inflammation there is congestion of the whole organ, degeneration of the epithelial lining of the tubes, exudation of serum from the blood-vessels into the tubes, and consequent disturbance of the function of the organ. The most common causes of this condition are exposure to cold and wet, the poisons of scarlet fever, pregnancy, etc., certain causes being undiscoverable. The condition may also be due to other infectious diseases, to the ingestion of poisons, or to the presence of large burns of the body surface.

Some cases are so mild that the kidneys are not suspected, the patient having a slight fever, headache, loss of appetite, and general malaise. The ordinary cases show considerable diminution of urine, which is loaded with albumen and casts; there is considerable fever; nausea and vomiting are usual; and these are accompanied by more or less of dropsy, headache, and the other manifestations referred to under the name of uræmia, and by a rapidly developing waxy pallor. These various symptoms are not constant, but the picture is sufficient when the condition of the urine is investigated. As a rule, when this condition lasts only a few weeks these cases recover completely, and the kidneys are as good as before, but the cases of longer duration and of great severity may be fatal, or may leave permanent changes in the organ. This last effect is particularly liable to follow when nephritis begins late in the course of scarlet fever, because of the permanent changes of structure induced by some particular poison generated at that time.

The treatment of these conditions consists in absolute rest, diet of the simplest sort, preferably milk, opening of the various emunctories (the bowels and skin), and attending to such symptoms as threaten the life of the patient.

Chronic Bright's, Chronic Nephritis.— This disorder is characterized by a permanent change in the tissue of the kidney, which may follow acute inflammation, or may come on insidiously as a result of poisoning by alcohol, of syphilis, of prolonged nervous strain, with consequent disturbance of digestion and metabolism, of suppurative inflammations in other parts of the body, and of many undiscoverable causes. The changes in the kidneys consist in growth of connective tissue around the glomeruli and tubules, more or less degeneration of the epithelium lining the tubes, and arteritis. The disease may be very insidious in development, albumen and casts being discovered on routine examination of the urine. Loss of nutrition may be noticed, or a disturbance of the gastro-intestinal tract may first call attention to the disease. The urine may be increased in amount or diminished, but as the disease progresses the specific gravity grows less from the decrease of urea. Dropsy appears around the ankles and spreads usually as the disease advances. Anæmia is fairly constant, but not severe. Sooner or later that general condition of poisoning known as uræmia is apt to develop because of the inability of the kidneys to excrete the toxic substances. Some cases suddenly develop one or more of the various symptoms, either dyspnœa, dropsy, failure of the hearts' action, coma, convulsions, or hemiplegia, without the nephritis having occasioned distinct symptoms previously.

Prognosis in Chronic Nephritis.— The prognosis is not necessarily bad, although as a rule the disease progresses and causes the death of the patient. Intercurrent diseases throw extra strain on the kidneys, and may hasten a fatal termination. Many cases live for years in comparative health, and are carried off by another affection. The actual prognosis of a case is determined by the work the kidneys are able to do on a known diet and under stated conditions of work. This is best determined by an estimation of the excretion of urea in a 24-hour collection of urine.

Treatment.— No treatment of the disease, so far as cure is concerned, is possible, but the progress of the affection can be stayed and the patient kept in comparative good health by careful attention to mode of life, diet, and regulation of the bodily functions. At the time of the more acute exacerbations symptoms are relieved as they arise, and the skin and bowels are called upon to assist the kidneys in the work of excretion by diaphoresis (by the hot pack) and catharsis. When the output of urine becomes small, some benefit may result from the administration of diuretics. For the disturbance of the circulation arterial dilators and cardiac stimulants are employed, and sometimes bloodletting, with the greatest benefits.

Renal Calculi or Kidney-Stones.— See CALCULUS.

Tuberculosis of the Kidney.— This malady occurs in the form of tiny miliary tubercles scattered through the kidney, usually as a part of a general tuberculosis, and in the form of a tubercular pyonephrosis due to extension from the bladder; more rarely the process may be primary in the kidney and then extend to the bladder. The symptoms are frequent micturition, pyuria, hematuria, and occasionally the presence of a tumor. The diagnosis is difficult unless there be tuberculosis of the bladder, testes, or seminal vesicles. Although the prognosis is always grave, cases have recovered where the kidney has been inspected but not removed. Nephrectomy is not performed unless the other kidney can be proven sound.

Injuries of the Kidney.— Severe contusions of the abdomen or loins may cause laceration of the kidney substance and the capsule, or the kidney may be perforated by stab or gunshot wounds. Slight contusions cause pain and transient hematuria, but the more severe contusions and wounds allow the urine to flow out into the surrounding tissue, sometimes with inflammation following. The wound may require sutures, or the kidney may have to be removed.

Suppuration in and around the Kidney.— This condition is due to the infection of the part with micro-organisms, which may reach the part in three ways — through the blood, from the bladder, and through perforating wounds. It is now commonly noticed that persons in health may pass bacteria through their kidneys without resulting suppuration; and it seems that some injury must take place to allow them to grow there and cause actual damage. Such damage may be made by calculi or contusions. Pylitis is an inflammation of the pelvis of the kidney, and this part is first involved when the inflammation travels up from the bladder. Pyelonephritis is an inflammation of both pelvis and kidney structure. Pyonephrosis is the name used to describe the condition of dilatation of the pelvis and the kidneys with pus: the organ may be entirely destroyed. Perinephritis is an inflammation of the cellular tissue and fat around the kidney. In pyæmia there may be many small abscesses in the kidney substance.

The symptoms of these various forms depend on the severity and site of the inflammation: there are the changes in the urine (the presence of pus, blood, and epithelium from the various parts), the local signs (pain, and possibly swelling), and the general signs of poisoning (fever, rigors, septic look, nausea, vomiting, etc.). An abscess in the kidney may burrow through to the surface; it may drain sufficiently through the normal channels and become chronic; or the patient may die of acute sepsis.

In the treatment of the milder forms it may be sufficient to remove the cause; the bladder may be cleansed by irrigation; or if a penetrating wound be the cause it may be enlarged and cleansed. If there be a perinephritis or a severe pyelonephritis, the abscess-cavity must be drained. The kidney is removed (nephrectomy) if destruction has gone too far.

Movable or Floating Kidneys.— By this phrase is meant a condition in which the kidneys leave their fatty bed and travel downward or otherwise through the abdomen. In the milder grades of this condition the kidney is displaced downward during inspiration, but in the more severe grades one or both are constantly low, even down to the pelvis. No symptoms whatever may arise from this condition; but on the other hand the dragging on the vessels and nerves may give rise to pain in the back and sides, minor disturbances of digestion, or nausea and vomiting. The nervous system is so deranged that it is common to have most confusing symptoms. Occasionally the ureter becomes twisted and dams back the urine, causing marked distention of the pelvis of that organ, a condition called hydronephrosis. When such an obstruction persists, the kidney structure is gradually thinned until its function is lost. It is customary to have the sufferer from a floating kidney wear a support around the abdomen; at times the operation of fixation of the kidney in its normal place may be advisable.

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Brooklyn, N. Y.

Kieffer, kēf'ėr, **Henry Martyn,** American German Reformed clergyman and author: b. Mifflinburg, Pa., 5 Oct. 1845. He was graduated from Franklin and Marshall College, Lancaster, Pa., 1870, and from the Theological Seminary there in 1873. Enlisting at 16 as a drummer in a Pennsylvania regiment he served three years, his experiences in that capacity appearing in his popular ‹Recollections of a Drummer Boy› (1883). He was pastor of a German Reformed Church at Norristown, Pa., 1873–84 and has held a similar pastorate at Easton, Pa., from the date last named. His ‹College Chapel Sermons› was issued in 1891.

Kieft, kēft, **Willem,** Dutch administrator in America: b. Holland about 1600; d. off the Welsh coast 1647. He came as the fifth governor of New Netherlands, and arrived in the colony 28 March 1638. He was greedy, choleric, and tyrannous; began his administration by concentrating the executive power; and was soon involved in troubles with the Indians. In 1640 he despatched a force to murder the Raritan tribe. He was not wholly successful; the act was avenged, and when in 1643 he arranged for the destruction of the River tribe, which had sought the protection of the colony against the Mohawks, he deemed it wise to obtain sanction for the proceeding through the signatures of three citizens. A desolating war ensued, almost to the extinction of the colony. Public sentiment was strong against him, and he finally conceded the selection of a «Council of Twelve,» who stood for the beginning of representative government in New Netherlands, but practically were figure-heads quite disregarded by the governor. The Puritans at the east and the Swedes at the west were making encroachments upon Dutch territory, and Kieft was finally recalled and succeeded by Peter Stuyvesant. On 16 Aug. 1647 he sailed for Holland with his enemy, Dominie Bogardus, who had denounced his tyranny, and whose services he had revengefully disturbed by having soldiers make noises under the meeting-house windows. The vessel was wrecked on the coast of Wales, and Kieft, Bogardus, and nearly all the rest on board were drowned. Kieft rebuilt Fort Amsterdam, improved the appearance of the settlement, and effected several administrative reforms.

Kiel, kēl, town of Prussia, in Holstein, situated on a deep bay of the Baltic, which presents all the appearance of a lake, and has finely wooded banks, 54 miles north by east from Hamburg, with which it is connected by railway. It was formerly the place of meeting for the Schleswig and Holstein states, and the seat of a superior appeal court for the duchies. It possesses a university, founded in 1665, with an attendance of about 900 students, a library of 200,000 volumes, museums for antiquities and ethnology, and a zoological institute. Kiel is admirably situated for trade, the whole bay on which it stands forming a safe roadstead, and the town being provided with spacious quays. Since the construction of the railway connecting it with Hamburg it has entered into formidable competition with Lübeck, and as a fortified naval port of Germany, and the station of the greater part of the imperial fleet, is rapidly rising in importance. The Kaiser-Wilhelm Ship Canal from the mouth of the Elbe joins Kiel Bay at Holtenau, somewhat north of Kiel proper. Kiel has works for sugar, soap, machinery; woolen factories, iron foundries, tan-works, tobacco works, ship-building yards, etc. Pop. (1890), 69,172; (1900), 121,824.

K'ien-Lung, kē-ĕn-loong', emperor of China: b. 1710; d. Peking 7 Feb. 1799. He succeeded his father, Yung-Ching, in 1735. He favored the Christian religion in private, but in 1753 interdicted its exercise by a formal order; and the missionaries were, in consequence, obliged to proceed with great caution, although several of them were in the emperor's service, and treated with great respect as men of science and learning. On the suppression of the Jesuits in 1774 China was less visited by scientific persons than formerly, which induced K'ien-Lung to send to Canton and invite artists and learned men of all the European nations, and particularly astronomers. Resolving to immortalize the remembrance of his victories by the graver, he engaged French artists to copy some Chinese paintings in which they were represented; but Louis XV. had them engraved for him at his own expense. The larger Chinese collection on agriculture contains several poems of this monarch on rural occupations and incidents; and he established a library of 600,000 volumes, containing copies of all the most interesting works in China. In 1795 he abdicated in favor of his son.

Kieserite, kē′zėr-īt, a hydrated magnesium sulphate found at Stassfurt, Germany, and elsewhere, and employed as a source of epsom salts and in the manufacture of manures. Mixed with quicklime and water it hardens into a mass which, after heating, pulverizing, and again mixing with water, becomes of a marble-like consistency, and may be made into ornamental articles, etc.

Kiev, kē′ĕv, or **Kief,** a government of Russia; length, 210 miles; average breadth, about 170 miles; area, 19,691 square miles. The surface is in general flat or undulating. The Dnieper and its affluent the Pripet are the only navigable streams. There are no lakes of any extent. The climate is remarkably mild and dry. The rivers freeze in December, and are again open in February. In summer the heat is so great and the quantity of rain so small that the channels of many streams become dry. Large crops of all kinds of grain are raised, and much attention is paid, especially in the south, both to the rearing of cattle and the dairy. Sugar, tobacco, spirits, and beer are manufactured, and there is a large export of grain, cattle, honey, wax, and tobacco. Pop. (1897) 3,576,125.

Kilauea, kē-low-ā′ä, an active volcano in Hawaii. It has an oval crater, 9 miles in circumference, with a lake of red and boiling lava at the bottom over 1,000 feet below the crater's mouth. The volcano lies 10 miles from the sea, and 30 miles from Hilo, on the eastern slope of Mauna Loa, 4,000 feet above the sea. Kilauea crater forms a great cavity on the side of the mountain, 3 miles long, 2 miles wide and 800 feet deep. At the southwestern end is a small lake of boiling lava called Halemanman, or House of Everlasting Fire. Great eruptions occurred here in 1789, 1823, 1832, 1840, and 1868.

Kilbourne, kĭl′bėrn, **James,** American pioneer: b. New Britain, Conn., 19 Oct. 1770; d. Worthington, Ohio, 9 April 1850. He was successively employed as an apprentice, clerk, merchant, and manufacturer, and having secured a competence, presented himself as a candidate for orders in the Protestant Episcopal Church, and was ordained about 1800. In 1801–2 he organized the Scioto Company, under whose auspices a colony of about 100 persons, under the lead of Kilbourne, was in 1803 established in what is now the township of Worthington, Ohio. Having organized here the Episcopal parish of St. John's, as well as others in the neighborhood, and procured the establishment of a western diocese by the general convention of the Protestant Episcopal Church, he retired from the ministry in 1804, and was soon after appointed a civil magistrate, an officer of militia, frontier, and surveyor of a large portion of the public lands. In 1812 he was one of the commissioners to settle the boundary between the public lands and the great Virginia reservation, and also commissioned as a colonel in the frontier regiment; and in the succeeding year he entered Congress, of which he remained a member until 1817. He was the first to propose donations of lands to actual settlers in the northwest territory, and afterward served for some years in the Ohio legislature.

Kil′deer. See KILLDEE, or KILLDEER.

Kilham, kĭl′ạm, **Alexander,** founder of the Kilhamites or New Connection Methodists: b. Epworth, Lincolnshire, 10 July 1762; d. Nottingham 20 Dec. 1798. He professed conversion at 18, became a preacher in 1783 and two years later was enrolled by Wesley as a regular itinerant. He was strongly in favor of complete separation from the Established Church, a step to which Wesley had always been opposed. On the death of the latter this subject came under discussion. He at once urged separation and sought moreover for the distribution of administrative power between the ministry and the lay members. For several offensive passages in his ‹Progress of Liberty› (1795) the pamphlet in which these views were expounded, he was tried at a conference held in 1796 and expelled from the denomination, upon which he immediately organized the «New Connection Methodists, or Kilhamites.»

Kil′ian, or **Kuln, Saint,** the apostle of Franconia. He was of noble Scottish extraction and had entered a monastery in Ireland when hearing of the spiritual destitution of German Franconia, he asked and received from the pope a commission to preach the Gospel to the German idolators, and with Colman his priest, and Totnan his deacon was instrumental in converting great numbers at Würzburg, and among them Duke Gosbert. On being rebuked by Kilian for marrying Geilana, his brother's widow, Duke Gosbert promised to put her away, and hearing this, Geilana caused the three missionaries to be secretly assassinated (690) without her husband's knowledge. Kilian is honored as the first bishop of Würzburg, and his festival is 8 July.

Kilimanjaro, kĭl-ē-män-jä′rō (the Great Mountain), a double-peaked, snow-clad mountain of Africa, in German East Africa, about 100 miles inland from the port of Mombasa. The highest peak, estimated at 19,270 feet, is the highest known in the African continent.

Killarney, kĭ-lär′nĭ, market town in Ireland, in the county of Kerry, on the Great Southern and Western railway. In summer, Killarney is thronged with visitors to the lakes and the delightful scenery in the neighborhood. Fancy articles of wood, particularly of arbutus, which attains to great perfection in the environs, are made to a considerable extent, and are in great request by tourists. Pop. (1900) 5,500.

Killarney, Lakes of, three connected bodies of water, the lowermost of which is within 1½ miles of the town of Killarney, Ireland. These famous lakes are situated in a basin in the midst of the mountains of Kerry, some of which rise abruptly from the water's edge densely clothed with trees from base to summit. Between the lower and the middle lakes is the fine ruin of Muckross Abbey.

Kill′dee, or **Killdeer,** the most common and best-known species of American plover (*Ægialitis vocifera*). It is found throughout temperate North America, especially in the western United States, breeding northward to Newfoundland and in winter migrating to South and Central America. It is nine or ten inches long and the sexes are similarly colored — brown above with a chestnut tinge on the rump; around the neck is a white ring bounded in front by a complete, and behind by an incomplete black ring; the lower parts are white and there is a white stripe through the eye; the wing-quills and tail are variegated black and white. The killdee is distinctively a bird of the interior, spreading over the prairie lands and fields, and frequenting the seashore chiefly during the winter. During the summer it is usually found in pairs, breeding in corn and hay fields or along water courses. The four, clay-colored, spotted, pyriform eggs are deposited in a slight depression in the ground. Though always noisy birds, the cry or whistle, from which their name is derived, is heard in its perfection when the nest is approached, and the frightened hen endeavors by various devices to lead the intruder away. Like that of other plovers, the food is chiefly of an animal nature. In the late summer and early autumn the killdee is sought by gunners, but much less so than related migratory species of the same genus. Consult: Baird, Brewer and Ridgeway, 'Water-birds of North America'; and Elliot, 'North American Shore Birds.'

Killebrew, kĭl′ĭ-broo, **Joseph Buckner,** American railway official: b. Montgomery County, Tenn., 29 May 1831. He was graduated from the University of North Carolina, was Tennessee commissioner of agriculture and mining in 1871–81, acting superintendent of public instruction there in 1871–3, and in 1880 was appointed by Gen. F. A. Walker special expert for the 10th census on the culture of tobacco in the United States, his report (1881) being an acknowledged authority. In 1893 he became a railway official in the South. He was appointed editor-in-chief of the 'Rural Sun,' and published 'The Resources of Tennessee' (with J. M. Safford, 1874–5); 'Geology of Tennessee' (with Safford, 1876); 'Tobacco Leaf' (with H. Myrick, 1897); and other works.

Killer, a kind of whale, or large porpoise, also called orca or grampus, of the family *Delphinidæ,* and constituting the genus *Orcinus.* It reaches a length of about 25 feet. The head is rounded and the lower jaw is a little shorter than the upper. The dorsal fin is extraordinarily high in the adult males, like a broadsword, nearly vertical and about six feet in length from base to tip; in the female it is prominent but much lower. The pectoral fins are large, broad, and rounded, and the flukes, or tail-fin, also broad and thick. The color is peculiar, being black above and on the fins, and white below; the margins of the two colors sharply defined. The white of the belly extends forward to the end of the lower jaw, and upward on each side where it forms a large, oblong, white area. Above and somewhat behind the eye is a conspicuous oblong, white spot. In the young the white areas are tinged with yellow. The upper and lower jaws are armed with thick, powerful, somewhat curved teeth, numbering in all from 40 to 56.

The killer is the largest and most powerful representative of the dolphin family. It hunts in packs and is rapacious and exceedingly voracious. Unlike all other cetaceans it feeds upon warm-blooded aquatic animals, and chiefly on young seals, porpoises and whales. It attacks the larger whales without hesitation, biting them on the lips and throat, sometimes in order to force them to surrender their young, which are torn to pieces and devoured. In one instance the stomach of a killer was found to contain the bodies of thirteen porpoises and fourteen seals. The best known species (*Orcinus orca*) inhabits all seas. A second species is found in the South Pacific. Others have been described, but their validity is doubtful.

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Killiecrankie, kĭl-ĭ-krăng′kĭ, a pass of Scotland, in the Grampians of northern Perthshire, on the Highland Railway, three miles southeast of Blair-Athole. A viaduct of ten arches carries the railway over the pass. Here Claverhouse, Viscount Dundee, defeated the forces of William III. under Mackay on 7 July 1689, but was killed in the moment of victory.

Kil′lifish, one of a group of small fishes of the family *Cyprinodontidæ.* They have broad, depressed, scaly heads, large cycloid scales, no lateral line, small very protractile mouths with several rows of pointed teeth, and a well-developed air-bladder which possesses somewhat of a pulmonary function. The common killifish, mud-fish, or mummichog (*Fundulus heteroclitus*) seldom exceeds three inches in length, and is exceedingly abundant in shallow waters along the shores of bays and estuaries, in brackish pools, and tidal rivers from Maine to Mexico. It is extremely hardy and is important economically as food for larger fishes. The sexes differ in color. The large killifish (F. *majalis*) reaches a length of six inches, and is found in shallow salt and brackish bays from Florida to Cape Cod. The males have transverse and the females longitudinal black bars. The species of *Fundulus* are oviparous, but some genera of the family are viviparous and strongly dimorphic, sexually.

Killingly, kĭl'ĭng-lĭ, Conn., town, including several villages in Windham County, on the Quinebang and Five Mile rivers, 25 miles northeast of Norwich; on the New England railroad. It has the Danielson Public Library, Danielson High School, churches and town-hall, and manufactures of cotton and woolen goods, boots and shoes, etc. It was settled in 1693, and until 1708 was known as Aspinock. Pop. (1890) 7,027; (1900) 6,835.

Killington (kĭl'ĭng-tȯn) **Peak,** an elevation of the Green Mountains, in the State of Vermont; about 10 miles southeast of Rutland. It is 4,241 feet high, and the view from its summit is most beautiful; a large number of pretty villages and charming valley may be seen on a clear day.

Kiln Pottery. After centuries of gradual development kilns as used in the clay industries have become fixed, so far as may be, in three general types, up-draft, down-draft and muffle kilns. The last named stands alone as its distinctive feature lies not in the method of firing or the direction of the draft but in the fact that the kiln consists of a single laboratory closed to the direct entrance of flame and heated by radiation through the walls. This type of kiln is used in all cases where it is necessary that the contained wares should be protected from dust and smoke but where it is not convenient to enclose them in saggers. Large ware such as porcelain bath-tubs and sinks, heavy pieces of terra-cotta, etc., cannot be set in saggers as pottery is on account of weight and size. They are therefore burned in a muffle kiln being set directly upon the brick floor. Muffle kilns are also used for burning painted wares. These are smaller than the kilns for heavy goods and are burned to a much lower temperature. Such kilns can be set, burned, cooled and drawn in 24 hours, while the large muffles cannot be turned in less than 10 days.

General kilns for pottery burning are of the open type. The wares are enclosed in saggers which are set over one another in tiers (bungs). Saggers are cases made of refractory clay and suited as to size to the wares they are to contain. The flames and kiln gases pass freely round the saggers and the whole chamber is uniformly heated.

The usual form of kiln is cylindrical with a slightly domed crown. Outside this is the «hovel» or conical top familiar to the inhabitants of pottery towns. The hovel serves the purpose of a chimney and collects the smoke from a number of apertures in the kiln crown. The fire mouths range in number from six to ten according to the size of the kiln. In the up-draft kiln the gases simply pass up between the bungs of saggers and find a free vent at the top. In the down-draft type the top of the crown is closed and the gases after passing up the walls and under the crown are led down a centre stack and up again through flues arranged for the purpose. The structure of the down-draft kiln is more complicated than the up-draft, but a considerable economy of fuel is effected. The kiln also cools more rapidly.

Kilns for burning brick follow the same general lines but vary in form. For this purpose the square kiln is among the most popular, being usually operated on the down-draft principle.

Many plans have been devised for the perfect utilization of heat, but none that is entirely satisfactory One of the best is that of the continuous kiln. This has been applied in Germany to the burning of porcelain, but nothing better than brick has been entrusted to it in America. The continuous kiln is a long low tunnel built in the form of a parallelogram with rounded ends. This is divided into as many chambers as may be necessary, each chamber having an entrance at each side and two fire mouths. Paper partitions are used in order to secure the correct movement of the draft, and as each successive chamber is filled with ware and the proper dampers opened the heat from the burning chambers is drawn through the unburned brick bringing them up to a high temperature without any additional fuel. Meanwhile the chambers in which the firing has been completed are beginning to cool and so the work goes on continuously. The economy of the method is very great, but a considerable output is necessary in order to avoid stoppage. Kilns are, for the most part, burned with coal, both hard and soft coals being used. Those in the gas belt are successfully burned with natural gas and in some places oil is used. The temperatures at which different wares are burned are about as follows:

Roofing tile and paving brick	1030°–1070°C
Common brick and drain tile	1090°–1170°C
Faience art pottery — glaze	1150°C
Faience art pottery — body	1230°C
Sewer-pipe and stoneware	1250°–1290°C
Earthenware dishes	1290°–1310°C
Hotel china	1330°C
Bone china	1330°C
Hard porcelain	1390°–1410°C

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Kil'o. See METRIC SYSTEM.

Kil'ogramme, or **Kilogram,** a French measure of weight = 1,000 grammes. See METRIC SYSTEM.

Kil'oliter, kĭl'ō-lē-tėr, or **Kilolitre,** a French measure of capacity for fluids, 1,000 liters. See METRIC SYSTEM.

Kil'owatt. See UNITS; WATT.

Kilpat'rick, Hugh Judson, American soldier: b. Deckertown, N. J., 14 Jan. 1836; d. Valparaiso, Chile, 4 Dec. 1881. He was graduated at West Point in 1861, and in the autumn of that year became a lieutenant-colonel of cavalry. He was appointed a brigadier-general of volunteers in May 1863, and in the following March was active in a raid to Richmond for the release of Federal prisoners. He commanded the cavalry of Sherman's army in its march from Atlanta to Savannah, in 1864, and in June 1865 was promoted major-general of volunteers. After the War he was prominent as a lecturer and a Republican political speaker. He was minister to Chile from 1865 to 1870, and was reappointed in 1881. In 1887 his remains were removed from Chile and interred at West Point. Consult: Moore, ‹Kilpatrick and our Cavalry› (1865).

Kim'ball, Hannah Parker, American poet: b. Boston, Mass., 25 April 1861. She has published: ‹Soul and Sense› (1890); ‹Victory and Other Verses› (1897).

Kimball, Harriet McEwen, American religious poet: b. Portsmouth, N. H. November 1834. Although she has written much verse of a secular nature, it is as a religious poet that she is best known, and several of her lyrics have found an honored place in hymnals. She was the principal founder of the cottage hospital in her native city. Her published works include: 'Hymns'; 'Swallow Flights'; 'The Blessed Company of All Faithful People'; 'Complete Poems' (1889).

Kimball, Heber Chase, American Mormon leader: b. Sheldon, Franklin County, Vt., 14 June 1801; d. Salt Lake City, Utah, 22 June 1868. In 1832 he was baptized into the Church of Latter-Day Saints, in the same year was ordained an elder of the church by Joseph Smith, and in 1835 became one of the 12 Mormon apostles. In 1838 with Brigham Young he led the Mormons from Missouri into Illinois, where they finally settled at Nauvoo, and in 1847 was a pioneer in the exodus to the valley of Great Salt Lake. He was successively chief priest of the order of Melchizidek (1846), a councillor to Young (1847), and chief justice and lieutenant-governor of Deseret.

Kimball, Richard Burleigh, American author: b. Plainfield, N. H., 11 Oct. 1816; d. New York 28 Dec. 1892. He was graduated at Dartmouth College in 1834 and later admitted to the bar; practised his profession at first in Waterford, N. Y., and afterward in New York. He founded the town of Kimball, Texas, and constructed the first railroad in that State, extending from Galveston to and beyond Houston. His publications include: 'Letters from England' (1842); 'Cuba and the Cubans' (1850); 'Saint Leger' (1850); 'Romance of Student Life Abroad' (1853); 'Under-Currents of Wall Street' (1862); 'Henry Powers, Banker' (1868); 'Today in New York' (1870); 'Stories of Exceptional Life' (1887).

Kimball, Sumner Increase, organizer and superintendent of the United States Life Saving Service: b. Lebanon, York County, Maine, 2 Sept. 1834. He was graduated from Bowdoin in 1855; studied law, and was admitted to the bar in 1858. In 1859 he served in the State legislature, and was a member of the committee on judiciary. In 1862 he became a clerk in the second auditor's office in the Treasury Department at Washington, and in 1871 was made chief of the revenue marine service. In that position he had occasion to investigate the condition of the government stations on the New Jersey and Long Island coast where surf boats and other apparatus were stored under the charge of a keeper for use in case of shipwreck; he found the property badly cared for, and the service inefficient. Obtaining an appropriation from Congress he entirely reorganized the service, and so successfully that it was soon extended to Cape Cod and other points on the Atlantic coast. In 1878 the life saving service was organized as a separate bureau and was extended to the Pacific coast and the Great Lakes. He was made the head of the bureau and has introduced many improved methods, including the patrol system, and telephonic connection between adjacent stations; he also obtained the passage of the law, to the effect that inspectors, keepers and crews in the service should be appointed on a strictly non-partisan basis «with reference solely to their fitness.» He has also been acting register, acting comptroller, and acting solicitor of the Treasury; and in 1889 he was the United States delegate to the International Marine Conference. He has written 'Organization and Methods of the United States Life Saving Service' (1889), the most complete monograph on the subject.

Kimberley, kĭm'bėr-lĭ, **Lewis Ashfiėld,** American rear-admiral: b. Troy, N. Y., 2 April 1830. He was appointed to the navy in 1846 and was graduated from the Naval Academy in 1852. In the Civil War as executive officer of the Hartford, Farragut's flagship, he took part in the contests at Port Hudson, Grand Gulf, Warrington, and Mobile Bay; and in 1871 accompanied the United States expedition to Korea. In 1880–3 he commanded the navy-yard at New York, in 1884–5 was a member of the examining and retiring board, in 1885–6 was in command of the Boston navy-yard, in 1887 was promoted to rear-admiral, and in 1892 was retired.

Kimberley, Australia, a northern district of Western Australia, brought into notice by the discovery of gold fields in 1886. It contains immense tracts of splendid pasture and much land suitable for cultivation. The chief port for the district is Derby, on the Fitzroy River, near King Sound. The district, which has an area of 144,000 square miles, is divided into East and West Kimberley. It is separated from the more populous parts of the colony by a stretch of sandy desert.

Kimberley, South Africa, town of Cape Colony, the capital of Griqualand West and of the South African diamond fields, is situated at a distance of 647 miles by rail from Cape Town, and close to the western boundary of the Orange River Colony. Kimberley owes its existence and prosperity to the mining of diamonds, an industry that began in 1870. It stands on an open plain, has wide straight streets, good public and other buildings, and receives a supply of water from the Vaal, 17 miles distant. Some of the most important buildings are the High Court of Griqualand West; the public library; the Kimberley Club, rebuilt in 1895 after destruction by fire; the Masonic Temple; a municipal sanatorium; theatres; several churches and a synagogue, etc. The most important diamond mines are those called Kimberley, De Beers, Bultfontein, Du Toit's Pan, and Wesselton. During the South African war Kimberley was invested by the Boers for 123 days, from 15 Oct. 1899, till its relief by General French on 15 Feb. 1900. Diamonds to the value of over £60,000,000 have been obtained here. Pop. 28,718.

Kimchi, kĭm'kē, **David,** or **Rdak** (Rabbi David Kimchi), Hebrew philologist: b. Narbonne 1160; d. 1240. He was the most learned member of a learned family, and maintains to-day his reputation as grammarian, lexicographer, and exegete. Besides his commentary on Genesis, Chronicles, the Prophets, and the Psalms, he wrote a grammar, 'Michlol' (Venice 1545); a Hebrew dictionary, 'Sefer Haschoraschin,' which was practically a list of roots (Naples 1490). He also wrote a tract under the title 'El Sofer,' which treated of the Massora and the Hebrew Accents and was published for the first time in 1864.

Kinah, kī'nä, **The,** a Hebrew metrical form, usually employed in dirges and songs of mourning, such as the Lamentations of Jeremiah. Each verse member is divided by a cæsura into two unequal parts, of which the first is the longer. The shorter clause simply enforces the thought expressed in the longer; as in the following example:

«He was unto me as a bear lying in wait || a lion in secret places.»

«And thou hast removed my soul far off from peace || I forgot prosperity.»

The kinah, with its long drawn out clause, and its short abrupt closing phrase, is still employed in Oriental countries. It has the effect of a cry, followed by a sob. It seems to halt like the metre which in classic times was called the halting iambus, and it might fittingly be styled the Semitic choliambus.

Kindergarten in America. The kindergarten is a form of education for children too young to enter the regular schools. The principles and methods of the kindergarten were worked out by Friedrich Froebel (q.v.). Its ideal is to develop the child's mental and moral powers through a wise direction of the child's natural self-activity or «play.» Mental development is attained through a connected series of simple objects, called «gifts,» from which the children learn the facts of form, color, size, weight, measure, and general relationship; and through a series of simple occupations in plaiting, weaving, modeling, etc., in which the knowledge gained is used and the powers of observation and attention developed. Games, music and story-telling are also important parts of the work; and much emphasis is laid on the development of the social instincts and sympathies of the children.

The history of the kindergarten in America is the record of four sharply defined movements; the pioneer movement, whose point of departure was the city of Boston; the philanthropic movement, whose initial effort was made in the village of Florence, Mass., and whose greatest triumphs have been achieved in San Francisco; the national movement, which emanated from St. Louis; and the maternal movement which, radiating from Chicago, is now spreading throughout the United States. The first of these movements called public attention to the several most important aspects of the Froebelian ideal; the second demonstrated the efficiency of the new education as a redemptive force; the third is making the kindergarten an integral part of the national school system; the fourth is evolving a more enlightened and consecrated motherhood and thereby strengthening the foundations and elevating the ideals of American family life.

Pioneer Movement.— In 1840 the first kindergarten was established by Friedrich Froebel at Blankenburg, Germany. Nineteen years later Miss Elizabeth Peabody of Boston became interested in Froebel's writings. In 1867 she went to Germany to study the kindergarten system. Returning to America in 1868 she devoted the remainder of her life to the propagation of Froebel's educational principles. Through her labors parents were inspired to seek the help of the kindergarten in the education of their children; philanthropists were incited to establish charity kindergartens; the Boston school board was persuaded to open an experimental kindergarten in one of its public schools and a periodical devoted to the elucidation and dissemination of Froebelian ideals was founded and sustained for four years. The pioneer movement, therefore, broke paths in the four directions of private, public, philanthropic and literary work. Above all through the contagious power of devout enthusiasm it created the consecrated endeavor without which the kindergarten as Froebel conceived it can have no actual embodiment.

In 1872 an independent pioneer movement was begun in New York by Miss Henrietta Haines who invited Miss Boelte to conduct a kindergarten in her school for young ladies. Miss Boelte had studied three years with Froebel's widow, had won a high reputation in Germany, and later had done efficient work in England. About a year after her arrival in America she married Prof. John Kraus and established an independent kindergarten and normal class. Her normal work still continues and she is to-day the leading representative in America of the Froebel tradition. The power of her work results from her resolute adherence to all the details of the original Froebelian method. By this unswerving conformity she has kept alive, through their practical application, ideas which are of the highest importance to the theoretic development of the kindergarten system.

Philanthropic Movement.— In 1874 Mr. S. H. Hill, of Florence, Mass., contributed funds to open the first charity kindergarten in the United States and later put in trust a sum sufficient to sustain and extend the work. Four years later a philanthropic movement was initiated in Boston by Mrs. Quincy A. Shaw, who for the ensuing 14 years supported free kindergartens for poor children, these beneficent institutions reaching at one time to 30 in number. The influence of her example has doubtless conspired with other causes to create the numerous local associations which are now rendering efficient service to the Froebelian cause in different sections of the United States. Of such philanthropic associations the wealthiest and best organized is the Golden Gate association of San Francisco. At the time of its greatest prosperity this organization supported 41 kindergartens, had given training to more than 30,000 children, and had received contributions amounting to $500,000; unfortunately the financial depression of 1893 reduced its subscription list, and the number of its kindergartens dwindled to 23; it conducts a training school for kindergartners. Other associations deserving special mention are the New York Kindergarten association, whose aim is to provide for the children against whom the overcrowded public schools still close their doors; the Brooklyn association, under whose auspices many mothers' meetings are conducted; the Pittsburg and Allegheny association; the Cincinnati association; the Free Kindergarten association of Chicago, which has a flourishing normal school; the Chicago Froebel association, which organized the first charity kindergarten in that city; the Louisville association, which has parents, nurses, Sunday school, boarding and normal departments. Kindergarten work has also been taken up by many churches, kindergarten methods being introduced in the Sunday school, and day kindergartens established under church management; All Souls' church of New York city was the first to open a day kindergarten. The total number of private kindergartens in the United States in 1901 was 2,996, with 93,737 children enrolled.

National Movement.— Valuable as is the work accomplished by private kindergartens and kindergarten associations, it is necessarily a restricted work; and had the Froebelian movement developed only upon these lines the kindergarten must have remained forever the privilege of the wealthy few, and the occasional gift of charity to the abject poor. The public kindergarten opened in Boston, though carried on for several years, was finally given up upon the plea that the city could not afford to appropriate funds to extend the system, and a second public kindergarten, which was opened in Brighton, Mass., in January 1873, was abolished when Brighton was annexed to Boston in 1874. Meantime, however, Hon. William T. Harris, who was then superintendent of schools in St. Louis, had called attention to the kindergarten and suggested that experiments be made with a view to introducing into the public school such features of the system as might prove helpful in the education of children between the ages of four and six. The outcome of this suggestion was the opening of an experimental kindergarten in the fall of 1873. The work was approved by the school board; new kindergartens were opened as rapidly as competent directors could be prepared to take charge of them, and when Dr. Harris resigned his position as superintendent in 1880 the St. Louis kindergartens had an enrolment of 7,828 children and the system was so firmly established that it has since that time proved itself impregnable to all attack.

The experiment in St. Louis was a crucial one, and had it failed it would have been difficult to prevail upon other cities to introduce the kindergarten into their public schools. There were many ready arguments against such an innovation: the argument from expense; the argument based on the age of kindergarten children; the argument that kindergartens would spoil the children and fill the primary grade with intractable pupils; the argument that only rarely endowed and, therefore, rarely to be found persons could successfully conduct a kindergarten. These arguments would have acquired irresistible force when confirmed by an abortive experiment. Dr. Harris steered the kindergarten cause through stormy waters to a safe harbor. He proved that the kindergarten could be made an integral part of the public school system. He reduced the annual expense to less than five dollars for each child. He called attention to the fact that the years between four and six were critical ones and that the needs of the child at this period were not provided for either by the family or the school. He convinced himself that children who had attended kindergartens conducted by competent directors did better on entering school than those who had received no such training, and the weight of his authoritative statement gave other educators faith in the possibilities of the system. Finally, he proved that with wise training young women of average ability made satisfactory kindergartners. It was impossible to go on repeating that a thing could not be done in the face of the fact that it had been done, and with the success of the experiment in St. Louis recognition of the kindergarten as the first stage of all public education became simply a matter of time.

In a report entitled 'Early History of the Kindergarten in St. Louis' Dr. Harris reduced his argument in favor of the kindergarten to a brief statement which no one could dispute and whose force everyone could appreciate; and immediately upon the publication of his report the movement in favor of public kindergartens showed an increased momentum. In the years which have elapsed since the successful experiment in St. Louis the kindergarten has been made part of the public school system in 293 cities; the total number of public kindergartens has increased to 2,111 with 3,611 teachers and 149,710 pupils. The cities which have the most fully developed systems of public kindergartens are Boston, Chicago, St. Louis, Philadelphia, New York, Brooklyn, Newark, Milwaukee, and Los Angeles. Philadelphia, which reports 142 kindergartens, leads in number all the cities of the United States. New York follows with 135 kindergartens, St. Louis with 125, Chicago with 89 and Boston with 78. An estimate, based on the sale of kindergarten material, fixes the total number of kindergartens in New York at over 600, so that, including private work and association work, this city has presumably a more extensive provision of kindergartens than any other in the United States.

The following 10 States have the most extensive provision of kindergartens, public and private. The order of the names indicates the relative extent of the provision:

1. New York
2. Pennsylvania
3. Massachusetts
4. Illinois
5. Michigan
6. New Jersey
7. California
8. Ohio
9. Wisconsin
10. Missouri

In the year 1873 the National bureau of education began collecting statistics with regard to the total number of kindergartens in the United States. The results are necessarily imperfect, but they enable us to form an approximate idea of the growth of the system. Taking public and private work together, the advance of the kindergarten is shown in the following table:

	1873	1882	1892	1902
Kindergartens	42	348	1,311	5,107
Teachers	73	814	2,535	9,926
Pupils	1,252	16,916	65,296	243,447

Results of Kindergarten Instruction.—Since the aim of the kindergarten is not instruction, but development, its results cannot be tested by examinations or expressed in statistical tables, but must be gathered from the testimony of experts who have had time and opportunity to study its influence. In other words, kindergarten children must be judged by elementary teachers and principals of schools, and unless, upon entering the primary grade, they show superiority to children coming direct from the home, the kindergarten cannot be said to have justified its adoption into our national system of education. Conversely, if the mental and moral superiority of kindergarten children prove to have converted primary teachers and school principals from enemies into warm friends of the Froebelian method, this fact should be accepted as convincing evidence of the merit of the work.

Before presenting the testimony which has been collected, it is necessary to call attention to the fact that, in the kindergarten talking is not forbidden, but, on the contrary, children are encouraged to share with the kindergartner and with each other all their happy experience of effort and success. It is, therefore, natural that pupils promoted from the kindergarten should not at first understand the law of silence imposed by the character of the work in the elementary grades, and hence that, without any bad motive on their own part, they should prove troublesome pupils during the first weeks of school life. The failure to understand this fact has caused some unjust criticism of kindergarten children. It will, however, be apparent to all who read carefully the testimony submitted that the adjustment of the kindergarten child to the school environment is a problem which is at present rapidly progressing toward a happy solution.

The more complete the testimony offered, the more certainly should we expect to find some differences of opinion as to the characteristics of kindergarten children. In any large city there will probably be a few incompetent kindergartners and some unintelligent or reactionary primary teachers. That the kindergarten fails to commend itself to teachers who are themselves mere martinets should be accounted a merit rather than a defect. The condemnation of incompetent kindergartners by wise primary teachers is a cause of rejoicing to all true friends of the Froebelian method. The influence of the kindergarten should be determined by the majority report. Variations of opinion should be explained by the occasional defect of the kindergartens and the occasional incapacity or prejudice of the judge.

The most extensive and carefully collected information comes from Boston, and consists of 163 letters from teachers of the first grade in reply to a number of questions sent out by the superintendent of schools.

Of the 163 letters those reporting that less than 10 per cent of the children attending the given primary room had received kindergarten training have been eliminated; also several letters based upon experience with children who had been only a few weeks or months in the kindergarten. The total number of letters omitted was 36. Of the remaining 127 letters 102 are favorable and 25 unfavorable to the kindergarten. Among the letters which are classed as unfavorable one only is unqualified in its disapprobation. All the others admit some distinctive merits in kindergarten children, those most frequently specified being increased power of observation and linguistic expression, greater manual skill, and more general information. The most frequent criticisms are that kindergarten children are talkative and not easily amenable to school discipline. Contrasting the 102 favorable with the 25 unfavorable letters, the first fact which thrusts itself upon the notice of the reader is that the majority of their writers seem to have had little difficulty in solving the problem of discipline. A large proportion of these letters make no direct reference to this question, while the account given of the moral characteristics of kindergarten children precludes the thought that they have been found difficult to control.

Replying to the questions with regard to the relative progress of kindergarten children and the character of their work 38 teachers report both a progress quicker in point of time and improvement in the quality of work; 13 teachers report increased rapidity without change in the character of work, and 28 improvement in the character of work without increased rapidity of progress. Thus 51 report greater rapidity, 66 improvement in quality of work, and 79 a decided gain either in speed or quality or in both. The remaining 23 teachers seem to consider that kindergarten training increases the child's general intelligence but does not noticeably affect the ordinary routine of school work.

To the disciple of Froebel the most interesting paragraphs of the Boston letters are those which answer the question, "What, if anything, have you observed as to the characteristics of kindergarten children as compared with other children?" The specific gains mentioned are clearer ideas of number, form and color; greater knowledge of and interest in nature, improved singing, better expression in reading, improved articulation, more orderly and careful arrangement of material in busy work, and greater manual skill shown especially in writing and drawing. The intellectual characteristics of kindergarten children as compared with others are said to be a greater general activity of mind, quicker comprehension, a more receptive mental attitude, greater logical power, greater concentration, more imagination, greatly increased powers of observation and expression, quicker recognition of likenesses, differences and relations, greater love for the beautiful, and visibly increased originality and creative power. Of their moral characteristics it is said that as compared with others kindergarten children are neater, cleaner, more orderly, more industrious and more persevering. They are also more self-reliant, more painstaking and more self-helpful. They are less self-conscious and more polite. They obey more quickly and are more gentle toward each other. They have a more developed spirit of helpfulness. They are more eager, alert, enthusiastic and responsive. They are interested in a wider range of subjects. They have finer sensibilities, manifest love for and confidence in their teachers, and show special interest in everything pertaining to home and family life.

In regard to the St. Louis kindergartens 13 letters, written by teachers of the first grade, reported the progress of kindergarten children in each of the several districts of the city. Two of the letters were eliminated in condensing the reports, because, while kindly in feeling, they were not precise in statement. Of the remaining 11 letters 9 reported that kindergarten children were proficient in arithmetic, and affirmed the conviction that the training of the kindergarten facilitated progress in learning to write, and was of marked value in learning to read. The other two recognized no difference in these respects between kindergarten children and children who came to school direct from the home. The unanimous verdict was that kindergarten children were superior to others in drawing. All the letters concurred likewise in the statement that kindergarten culture developed the æsthetic sense. The intellectual characteristics specified were accurate observations; correct expression; power to make numerical combinations; familiarity with geometric forms; quick recognition of magnitude and relation; a generally increased perceptive power, and signal ability in illustrating poems and stories. With regard to manners and morals 9 teachers recognized the good influence of the kindergarten. Of the remaining two one found "few causes for complaint," and the other referred merely to a possible good effect upon order and punctuality. The moral characteristics which were said to distinguish kindergarten children were order, cleanliness, courtesy, consideration, kindness, a perceptible development of the ideal of social dependence and "a love for the beautiful in character."

Dr. E. Benj. Andrews, when superintendent of schools in Chicago, wrote: "Our best first grade pupils are from the kindergarten, and the influence of kindergarten teaching is more and more felt in all the grades. Its ethical and social value is equal to its intellectual value"; and principals of schools in that city gave equally favorable testimony. Since the kindergarten system has been more highly developed in Boston, Chicago and St. Louis than in other places, testimony from these cities is of the highest importance; similar results are however, showing themselves in many smaller cities and towns.

Dangers of Kindergarten Education.—In view of the attacks so freely and insistently made upon what is called the "sentimentalism" of the kindergarten, it may be well to call attention to the fact that none of the expert witnesses whose testimony has been quoted seem to have detected its existence. Undoubtedly among kindergartners there are some sentimentalists; but that sentimentalism is inherent in the Froebelian ideal or tolerated in the best training schools for kindergartners may be unhesitatingly denied. There is greater danger of its appearance in private than in public work, because any person calling herself a kindergartner may be accepted as such by ignorant or thoughtless parents. In public kindergartens under competent supervision its persistence is impossible.

It is greatly to be desired that all cities establishing kindergartens in connection with their public schools, should insist upon having a specially qualified supervisor. Without watchful and intelligent guidance the kindergarten tends either to relapse into a mere play school or to become too closely conformed to the primary school. The ideal supervisor stands to the individual kindergartner in a relation similar to that which the latter occupies toward her children. She quickens their intellectual and moral aspiration, deepens in them the complementary impulses of self-culture and child-nurture, points out practical errors and suggests the ways and means of overcoming them. She must thoroughly understand the method of the kindergarten, its psychologic implications and its relationship to education as a whole. She must unite intellectual insight with moral earnestness and practical sagacity. Hence only the most gifted and illuminated kindergartners are adequate to the work of supervision.

Two great dangers assail the kindergarten and threaten to impede its progress toward the realization of Froebel's ideal. The first of these dangers is reversion to instinctive games and traditional toys. In some kindergartens, children are taught to play street games, while it has recently been urged that peg boards, tops, bean bags, kites, dolls, jackstraws, hoops, spool, chalk and wire games and the whole toy world" should be added to the Froebelian instrumentalities. Tendencies such as these indicate a complete failure to comprehend what Froebel has done. He recognized in traditional games the deposit of unconscious reason; preserved what was good and omitted what was crude and coarse in these products of instinct; supplied missing links and presented a series of games wherein each is related to all the others and which, by means of dramatic and graphic representation, poetry and music, win for the ideals they embody a controlling power over the imagination. In like manner, from among traditional toys he selected those which possessed most educative value, ordered them into a related series and suggested a method by which they might be consciously used to interpret the child's experiences and develop his creative power. If this transfiguration of traditional games and toys is valueless, then the kindergarten has no *raison d'être.* But if Froebel has translated the hieroglyphic of instinctive play and found means which, without detriment to the child's spontaneity, influence the growth of character and the trend of thought, then the clamor for street games and promiscuous toys is educational atavism.

The second danger which threatens the integrity of the kindergarten is the substitution of exercises which attempt to wind thought around some arbitrarily chosen centre for those Froebelian exercises whose confessed aim is to assist thought to unwind itself. Too many kindergartners have allowed themselves to be betrayed into selecting some object such as a pine tree or a potato, and making all songs, games, stories and gift exercises revolve around it. Between these so-called cores of interest and the exercises clustered around them there is no valid connection. The clustering like the subject depends wholly upon the caprice of the teacher. Could such exercises succeed in their object the pupils of different teachers would have their thoughts set to revolving around different centres and more than this around arbitrary and contingent centres. That such a procedure directly contradicts Froebel's ideal will be apparent to all who have understood his writings. That it likewise contradicts every true ideal of education will be evident to all who understand that the function of education is to substitute objective and universal for subjective and contingent associations. The discovery of related qualities in nature, the disclosure of their causes and the reduction of these causes to a system is the great work of science. The discovery of the related activities of mind and their genetic evolution is the work of psychology. The portrayal of the universal and divine man latent in each individual is the supreme achievement of literature and art. To lead pupils away from what is capricious, arbitrary and accidental, and thus capacitate them to receive and augment their scientific, æsthetic, literary and psychologic inheritance is the great duty of education. The substitution of arbitrary for necessary cores of thought wherever attempted is, therefore, the parody of education.

Normal Schools.— The future of the kindergarten in the United States is largely dependent upon the work of the normal schools for kindergartners. The friends of the system must, therefore, view with disapprobation and even with dismay the rapid multiplication of schools with low standards of admission and a low conception of the training they should give. Inexperienced students are attracted to such schools, and the result is that the whole country is flooded with so-called kindergartners who are ignorant of the first principles of true education.

In the early days of the Froebelian movement it was believed that in a single year young girls could be prepared to conduct a kindergarten. In most reputable training schools the course has now been extended to cover two years. The requirements for admission into these schools are, generally, graduation from a high school, or an education equivalent thereto. The courses of study include theory of the kindergarten gifts and occupations, study of the Mother Play, practice in songs and games, physical culture, lessons in singing, drawing, modeling and color, lectures on the art of story telling, and more or less observation of the practical work of the kindergarten. Finally, some trainers insist that their normal pupils shall not only observe but assist in actual work with the children. In addition to this specific training, the best normal schools offer courses in science, literature, psychology, and the history of education.

Besides private normal schools and training schools connected with kindergarten associations, kindergarten departments have been established in several great *quasi*-public institutions. Among the most notable of these are the kindergarten department of Pratt institute, Brooklyn, and of Teachers college, Columbia university, and of Workingman's institute, New York. A number of the public normal schools in the United States provide some kind of kindergarten training, the courses varying in length from about two years to six months. These kindergarten departments are found in the normal schools of the following States: New York, Michigan, Pennsylvania, California, Massachusetts, New Jersey, Connecticut, Wisconsin, Illinois, Colorado, Kansas, Rhode Island, Georgia, Nebraska, Ohio, Minnesota.

Kindergartners are admitted to surpass all other teachers as students of educational literature. They are also distinguishing themselves by zealous and persistent attendance upon post-graduate courses in pedagogics, science, literature, history and psychology. Through the efforts of the Chicago kindergarten college post-graduate work of a high order has become a feature of Froebelian activity in that city; in Boston, during successive winters post-graduate classes have been organized in the study of Mother Play, and the pedagogics of the kindergarten; and courses in literature and psychology have also been given. Similar work has been developed in New York, Baltimore, Washington, and other cities.

Maternal Movement.— The power of the kindergarten over the minds of its students arises from the fact that it connects the ideal of self-culture with the ideal of child-nurture. And the true woman responds with whole heart to the appeal to learn all she can, be all she can, and devote all she is and all she knows to the service of childhood. Rooted in maternal impulses it would be strange indeed if the kindergarten did not appeal to mothers. That classes for mothers should come into existence was a predestined phase of the Froebelian movement. Whoever has studied the writings of Froebel knows that the education of mothers was one of the most important features of his endeavor. Practically, however, the work in this direction amounted to very little until a mothers' department was established in that unique institution, the Chicago kindergarten college. This institution has consciously attempted the transformation of a girls' college into a school for motherhood; while giving general culture its supreme aim is to fit women for motherhood, and it gives instruction to mothers as well as to young girls; in a single year over 700 women attended its mothers' department; recently the work of this department has been extended by holding convocations for the discussion of all phases of child-nurture. Radiating from the kindergarten college as its centre the maternal movement is spreading throughout the United States. It is the highest reach of the Froebelian ideal and means nothing less than the attempted regeneration of all human life through the regeneration of the family. In connection with this movement mothers' clubs have been formed, whose work is usually done on three main lines: (1) kindergarten classes for the children; (2) training and study classes for mothers; (3) lecture courses in literature, science, music, etc.

Froebel's supreme claim to our grateful remembrance rests upon the fact that consciously repeating the unconscious process of social evolution he set the little child in front of the great army of advancing humanity. Science affirms that the feebleness of infancy created the family and that from the family have been evolved the higher institutions. In his cry, «Come, let us live for the children,» Froebel utters in articulate speech the ideal whose unconscious impulsion set in motion the drama of human history. The little child was pioneer of the process which created human institutions. We must make him the pioneer of their perfection.

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Susan E. Blow.

Kinemat'ics, a branch of mathematics which treats of the motions of bodies independently of the forces which produce these motions; it is usually treated of in the introductory parts of works on kinetics (popularly termed dynamics).

Kinet'ic Theory of Gases. On any kinetic theory the molecules of a gas are conceived to be in motion in paths long compared with their own size, the average length of path being called the «mean free path.» See MATTER.

Kinetogenesis. The mechanics of evolution (q.v.). This is a term suggested by E. D. Cope, meaning development by motion, or the exercise of parts or organs, and is nearly the equivalent of use (q.v.). The examples given by Cope are the development by use of muscles of any hard parts or bone. He claims that muscular tissue is highly plastic, and since it is directly controlled by nervous or equivalent stimuli, «the effect of the latter in building structure is evident.» Another example, overlooked by late students, is the beautiful study on the mechanical genesis of bone structure published by Wyman in 1857. This anatomist shows that the cancellated structure of the bone (see BONE) in the lumbar vertebræ, the thigh-bone, tibia, astragalus, and os calcis of man is peculiar to him, and has «a definite relation to the erect position which is naturally assumed by man alone.»

The fibres or cancelli of such bones as assist in supporting the weight «are arranged either in the direction of that weight, or in such a manner as to support and brace those cancelli which are in that direction. In a mechanical point of view they may be regarded in nearly all these bones as a series of studs and braces.» Wyman dealing with the individual bones shows in what direction force or weight is applied to them, and the corresponding direction the cancelli assume. On the lumbar vertebræ there is vertical pressure, and the principal bone fibres within are also vertical. On the neck of the thigh bone the weight of the body is applied obliquely to the end of an arm, «within it there is a combination of fibres giving strength with lightness, which forms a frame mechanically adapted for resisting the weight which rests upon it,» and so with the astragalus. «A certain direction of fibres in all these instances co-exists with a certain direction, or certain directions, of the transmission of pressure. From this constant association of structures and function the inference seems unavoidable, that they are means and ends.»

Comparing the bones in question with those of the gorilla and chimpanzee, only «slight traces of the trusswork described in man exist.» As they practically exist in man alone, Wyman maintains that «they relate to the kind of locomotion which he alone of the whole animal series can be said to possess, namely, that of walking erect, and which requires in the passive and resisting organs subservient to it, in order that it may be effected with ease and grace, a nice combination of lightness with strength in the materials. His attitude more than any other, in consequence of the pillars of support being arranged in vertical planes, requires the most effectual means for counteracting shocks."

Cope's contributions to this subject in the way of materials drawn from fossil vertebrates are extensive and weighty. He, and also Ryder, have discussed the molding of the limb-joints as the result of mechanical strains; also the origin of the teeth, through mechanical strains and impacts. Thus the origin of the canine, pseudo-canine and canine-like incisor teeth «is due to the strains sustained by them on account of their position in the jaws at points which are naturally utilized in the seizing of prey, or the fighting of enemies.» For example the greatly increased size of the canine teeth of the walrus is due to the use of these teeth in the breaking of ice, and in climbing from the water upon the edge of the floe ice. It is so, adds Cope, with the straight incisors of the hippopotamus, «use as diggers has straightened them to a horizontal from their primitive vertical direction, a change which is also partially accomplished in the true pigs (*Sus*).»

The molar teeth owe their increased diameters to much more severe direct irritation and impact. The origin of the sectorial or shear-like molar teeth of the cat, lion, and other carnivora is thus explained by Cope: «The specialization of one tooth to the exclusion of others as a sectorial, appears to be due to the following causes: It is to be observed in the first place that when a carnivore devours a carcass, it cuts off masses with its sectorials, using them as shears. In so doing it brings the part to be divided to the angle or canthus of the soft walls of the mouth, which is at the front of the masseter muscle. At this point the greatest amount of force is gained, since the weight is thus brought immediately to the power, which would not be the case were the sectorial situated much in front of the masseter. On the other hand, the sectorial could not be situated farther back, since it would then be inaccessible to a carcass or mass too large to be taken into the mouth.»

The great length and chisel-like incisor teeth of the squirrel and other rodents also illustrate this subject. Their progressive lengthening through exercise has been explained by Ryder, who shows that the mechanical action involving backward pressure is precisely the opposite of that which has occurred to the carnivora, where the pressure has always been forward owing to the development of the canines.

The direct evidence in favor of the kinetogenetic mode of evolution is greatly strengthened by the discovery of Ameghino in the Tertiary beds of the Argentine republic of one-toed ungulates with two splint bones, and with teeth strikingly like those of the horse, though the animal belongs to a quite different order. The similarity or divergence in shape of the parts is due to the action of similar mechanical conditions in two quite unrelated groups. The same results of strains involved in digging are seen in the fore legs of the fossorial edentates, in the mole, as well as in the mole cricket. Thus as Cope concludes, «in biologic evolution, as in ordinary mechanics, identical causes produce identical results.» ALPHEUS S. PACKARD,

Late Professor of Zoology, Brown University.

Kine'tograph, a machine, invented by Thos. A. Edison, for taking pictures of moving objects in their changing positions. By means of peculiar mechanism a series of photographs, about 40 to the second, can be taken. So rapidly does this machine work that every motion of a dancer's feet, every twist or turn of an athlete's wrists and arms are reproduced. The impressions are taken on a long strip of gelatine film with such rapidity and accuracy that not the faintest motion is missed.

Kine'topho'nograph, an electro-photographic apparatus combining the principles of the kinetograph, the vitascope, and the phonograph, invented by Thomas A. Edison. It is a combination of electricity and photography. A man can sit in his own parlor and see reproduced on a screen the forms of the players in an opera produced on a distant stage, and, as he sees their movements, he will hear the sound of their voices as they talk or sing or laugh.

Kine'toscope, an apparatus invented by Thomas A. Edison for exhibiting the pictures taken by the kinetograph. The kinetoscope displays the pictures to the eye, one after another, so rapidly that they all seem like one scene, with the figures moving about as they do in actual life. Also an instrument invented by Perigal, for illustrating the result of the combination of circular movements of different radii in the production of curves.

The Smithsonian Institution, in Washington, has afforded an excellent example of accelerated speed in its use of the kinetoscope in studying the growth of a plant. Kinetoscopic pictures were taken steadily and systematically as the plant grew; a delicate piece of work which required several months before the film was complete, and involved the use of an automatic flash-light and other contrivances in order that the hourly growth of the plant could be observed from first to last. When the film was finished, however, it could be run through the kinetoscope as fast as the operator wished. As a result the plant could be seen, in the compass of a few minutes, actually growing from seed to maturity, each stage of growth being in the same proportion to all others as in the original development of the plant itself.

King, Albert Freeman Africanus, American physician: b. England 18 Jan. 1841. He was graduated in medicine from Columbian University in 1861, and from the University of Pennsylvania in 1865, was appointed a professor in the medical department of Columbian and later in that of the University of Vermont, and held various posts in professional organizations. He became best known as an advocate of the theory of the transmission of malaria by the mosquito, now generally accepted by experts. He published a ‹Manual of Obstetrics› (1882; 8th ed. 1900).

King, Anna Eichberg. See LANE, ANNA EICHBERG KING.

King, Basil. See KING, WILLIAM BASIL.

King, Charles, American journalist, president of Columbia College: b. New York 16 March 1789; d. Frascati, Italy, 27 Sept. 1867. He was the second son of Rufus King (q.v.), and during the residence of his father as American minister at St. James he was sent with his brother to Harrow school. Upon the breaking out of hostilities with Great Britain, King, though a Federalist, deemed it right that the war should be prosecuted to an honorable and successful result; and as a member of the legislature of his native State in 1813, and as a volunteer in the autumn of 1814, he acted upon those sentiments. In 1823 he became associated with Johnston Verplanck in the publication of the ‹New York American,› a conservative newspaper, of much political influence and a high literary character, until 1827, when Verplanck retired and Mr. King continued sole editor. After its publication was discontinued Mr. King was associated in the conduct of the New York ‹Courier and Enquirer› 1845–9, when he was chosen president of Columbia College, which office he occupied until 1864.

King, Charles, American soldier and novelist: b. Albany, N. Y., 12 Oct. 1844. He was graduated from West Point in 1866 and was in active service in the United States army till his resignation in 1879. In the war with Spain he was a brigadier-general of volunteers and later served in the Philippines under Gen. Lawton. In 1901 he became commandant at Orchard Lake Military Academy. He has published a long series of popular novels treating of army and frontier life and people, among the best of which are: ‹The Colonel's Daughter› (1883); ‹Kitty's Conquest› (1884); ‹Captain Close and Sergeant Crœus› (1895); and also ‹Campaigning with Crook› (1890); ‹Trials of a Staff Officer› (1901); and lately, ‹The Medal of Honor› (1904).

King, Clarence, American geologist: b. Newport, R. I., 6 Jan. 1842; d. Phœnix, Ariz., 24 Dec. 1901. He was graduated from the Sheffield Scientific School of Yale University in 1862, in 1863–6 was a member of the California geological survey under the direction of Prof. J. D. Whitney (q.v.), discovered Mounts Whitney and Tyndall, the highest group in California, and with J. T. Gardiner executed the first survey of the Yosemite Valley. In 1866 he originated the plan for a survey of the western Cordilleran region at its widest point. This plan was finally sanctioned by the government and under the auspices of the army engineering department and King's direction, was executed as the «survey of the 40th parallel» and completed in 1872. The survey has been characterized as a «signal contribution to the material of science.» The volume on ‹Systematic Geology› (1878), the first of six constituting the report, was written by King and has been highly esteemed. In 1872 certain swindlers sowed a tract in Arizona broadcast with rough gems; the discovery of valuable diamond fields was announced, and companies were organized for the exploration of the find. The «fields» proved to be within the official limits of the 40th parallel survey, and were thereupon examined by King, who detected and proclaimed the fraud. In 1878 King organized the various surveys then active into the United States Geological Survey under the general direction of the secretary of the interior, and was appointed director of the survey. He resigned in 1881, attained a large practice as a mining expert, and undertook an uncompleted series of experiments to determine the action of the primal constituents of the earth under the conditions assumed as existing at the time of its separation from the sun. Partial results were published by him in Silliman's ‹Journal› (January 1893) in an article on ‹The Age of the Earth.› He wrote also, ‹Mountaineering in the Sierra Nevada› (1871), a description of his explorations, and a work of literary as well as scientific value.

King, Edward, American writer: b. Middlefield, Mass., 31 July 1848; d. Brooklyn, N. Y., 27 March 1896. He lived in Paris 20 years as correspondent of American journals. Among his works were: ‘My Paris, or French Character Sketches’ (1868); ‘Kentucky's Love, or Roughing It Around Paris’ (1872); ‘The Great South’ (1875); ‘The Golden Spike’ (1886); ‘A Venetian Lover’ (1887), a poem; ‘The Gentle Savage’ (1888), a popular novel.

King, Grace Elizabeth, American writer: b. New Orleans 1852. She was educated in New Orleans, contributed much to periodicals, and published in the ‘New Princeton Review’ in 1886–8 Creole sketches which won considerable reputation and constituted the story ‘Monsieur Motte’ (1888). Among her further works are: ‘Tales of Time and Place’ (1888); ‘Earthlings’ (1889); ‘Chevalier Alain de Triton’ (1889); ‘Jean Baptiste Lemoine, Founder of New Orleans’ (1892); ‘Balcony Stories’ (1893); ‘New Orleans: The Place and the People’ (1896); and ‘De Soto and his Men in the Land of Florida’ (1898).

King, Henry Churchill, American theologian: b. Hillsdale, Mich., 18 Sept. 1858. He was graduated from Oberlin in 1879, from the Oberlin Theological Seminary in 1882, studied also at Harvard and Berlin, was associate professor of mathematics at Oberlin in 1884–90, associate professor of philosophy in 1890–1, and professor of philosophy in 1891–7. In 1897 he was appointed professor of theology, and in 1902 president. In 1893 he was a member of the National Educational Association's committee of ten. His works are ‘Outline of Erdmann's History of Philosophy’ (1892); ‘Outline of the Microcosmus of Hermann Lotze’ (1895); ‘The Appeal of the Child’ (1900); and ‘Reconstruction of Theology’ (1901).

King, Horatio, American statesman: b. Paris, Maine, 21 June 1811; d. Washington, D. C., 20 May 1897. He learned the printer's trade and published ‘The Jeffersonian’ in his native town, and subsequently in Portland, 1831–8. The next year he was appointed clerk in the post-office department in Washington; became first assistant postmaster-general in 1854; was postmaster-general January–March 1861; and was the first man in public office to deny the power of a State to withdraw from the Union. He published: ‘An Oration before the Union Literary Society of Washington’ (1841); ‘Sketches of Travel; or Twelve Months in Europe’ (1878).

King, John, American eclectic physician and author: b. near New York city, 1 Jan. 1813; d. North Bend, Ohio, 19 June 1893. Received a liberal education and graduated in medicine at the Reformed Medical College of the City of New York, in 1838, under the celebrated Dr. Wooster Beach. In 1848, he was the first secretary of the National Eclectic Medical Association, and, in 1878, president of that body as reorganized in 1870. From 1849 to 1851 he was professor of materia medica, therapeutics and medical jurisprudence in the Memphis Medical Institute at Memphis, Tenn., from 1851 to 1856 and 1859 to 1890, professor of obstetrics and diseases of women and children in the Eclectic Medical Institute of Cincinnati, Ohio. From 1856 to 1859 he taught obstetrics in the Cincinnati College of Eclectic Medicine and Surgery. Dr. King discovered the resins of podophyllum (podophyllin) and macrotys, and the oleo-resins of capsicum and iris. He wrote: ‘Urological Dictionary,’ ‘American Dispensatory’ (1853); ‘American Obstetrics’ (1855); ‘Women: Their Diseases and Treatment’ (1858); ‘The Microscopist's Companion’ (1859); ‘The American Family Physician’ (1860); ‘Chronic Diseases’ (1866), and the ‘Coming Freeman’ (1886), the last named in behalf of the laboring classes and dedicated to the Knights of Labor. He is regarded as the father of American Materia Medica.

King, John Alsop, American politician: b. New York city 1788; d. 1867. He was the son of Rufus King (q.v.); was educated at Harrow, England, then returned to New York to study law, and was admitted to the bar. In 1812 he served as lieutenant of cavalry, was elected to the State assembly in 1819, and several times re-elected till 1823, when he was elected to the Senate. Though an opponent of Clinton, he strongly favored the building of the Erie Canal. In 1825 he went with his father to England as secretary of the legation, and on his father's return to the United States on account of ill health, he remained as *chargé d'affaires.* In 1838 he was again a member of the New York legislature for several terms; and in 1849 he was elected to Congress as a Whig and there opposed all compromise measures, especially the Fugitive Slave Law. He was one of those active in the founding of the Republican party, presided at the Syracuse convention of 1855; and was a delegate to the Philadelphia convention of 1856. In 1857 he became governor of New York State and in that office gave special attention to educational matters and internal improvements; he declined a renomination in 1860. He was one of the presidential electors in 1860, voting for Lincoln, and in 1861 was a member of the Peace Convention.

King, John Crookshanks, American sculptor: b. Kilwinning, Ayrshire, Scotland, 11 Oct. 1806; d. 18—. He was educated as a practical machinist, and emigrating to the United States in 1829 was employed for several years in Cincinnati and Louisville as superintendent of a factory. In 1834, at the suggestion of Hiram Powers, he made a model in clay of the head of his wife, and the success with which the work was accomplished encouraged him to adopt the profession of a sculptor. From 1837 to 1840 he resided in New Orleans, and modeled a number of busts of public men and made cameo likenesses, but subsequently removed to Boston. He executed several busts of Daniel Webster, also busts of John Quincy Adams, Agassiz, Ralph Waldo Emerson, and other Americans.

King, Rufus, American statesman: b. Scarboro, Maine, 24 March 1755; d. Jamaica, L. I., 29 April 1827. He was graduated from Harvard in 1777 and admitted to the bar in 1778. In 1782 he entered the Massachusetts legislature, and Congress in 1784. He took an active part in convention which framed the Federal Constitution, and removing to New York in 1788 became a Senator from that State the next year, serving 1789–96. He was United States minister to Great Britain 1796–1803, and after some years spent in partial retirement was sent for the third time to the Senate in 1813, and won renown as an orator by the brilliant speech he made on the burning of Washington by the

British. In 1819 he was again elected to the Senate, serving till 1825, when he was appointed the second time minister to the court of St. James. He was the Federalist candidate for the vice-presidency in 1804 and 1808. In collaboration with Hamilton, he wrote the 'Camillus Letters.'

King, Rufus, American journalist and soldier: b. New York 26 Jan. 1814; d. there 13 Oct. 1876. He was graduated from West Point in 1833, entered the engineer corps, resigned from the army in 1836, became assistant engineer of the New York & Erie Railway, and was adjutant-general of New York State 1839–43. He was associate editor of the Albany *Evening Journal,* and in 1841–5 editor of the Albany *Advertiser.* Having then removed to Wisconsin, he was editor of the Milwaukee *Sentinel and Gazette* in 1845–61, and in 1847–8 a member of the State constitutional convention. In May 1861 he was commissioned brigadier-general of Wisconsin volunteers. He commanded the 1st division of the 3d army corps in the department of the Rappahannock in March–August 1862, was a member of the court-martial for the trial of Maj.-Gen. Fitz-John Porter (1862–3), resigned 20 Oct. 1863, and was minister at Rome in 1863–7. In 1867–9 he was deputy customs collector of New York port. He was a son of Charles King (q.v. 1789–1867).

King, Stanton Henry, American sailors' missionary: b. Paynes Bay, Barbados, 1 May 1867. He went to sea at 12 years old and in his books 'Dog Watches at Sea' (1900); and 'A Bunch of Rope Yarns' (1902); he has related many of his personal experiences. He became superintendent of the Sailors' Haven, Charlestown, Boston, Mass., in 1898.

King, Thomas Starr, American Unitarian clergyman and lecturer, generally known as Starr King: b. New York 17 Dec. 1824; d. San Francisco 4 March 1864. He was a clerk in a dry goods store at Charlestown, Mass., in 1836–40, a teacher at Boston and Medford in 1840–2, studied theology with Hosea Ballou at Medford, preached for a time to a Universalist congregation of Boston, and in 1846–8 was pastor of the Universalist Church at Charlestown. In 1848–60 he was pastor of the Hollis Street Unitarian Church of Boston, and during this period gained great popularity as a lyceum lecturer in the northern States. Best-known was his 'Substance and Show': but other familiar subjects were 'Goethe,' 'Sight and Insight,' 'The Laws of Disorder,' 'Socrates.' He became pastor of the First Unitarian Society of San Francisco in 1860; was among the first, by newspaper article and lecture, to call attention to the Yosemite Valley; and when, in the presidential campaign of 1860, the idea of the establishment of California as an independent Pacific republic was discussed, denounced the project from the lecture platform and preserved the State to the Union. During the Civil War he was active in obtaining in California large and necessary funds for the Sanitary Commission. His name was at one time associated with the White Mountains, which he thoroughly explored, and which became known chiefly through his writings, particularly 'The White Hills: Their Legends, Landscape, and Poetry' (1859; new ed. 1887). A memorial to him was set up in Golden Gate Park, San Francisco, Cal., in 1889. King was one of the leading figures of the American lyceum in the most flourishing days of that institution. 'Patriotism, and other Papers' appeared posthumously (1865); as did the sermon 'Christianity and Humanity' (1877), with a memoir by E. P. Whipple, and the collection of lectures, 'Substance and Show' (1877). Consult also: Frothingham, 'A Tribute to Thomas Starr King' (1865).

King, William, American politician, first governor of the State of Maine: b. Scarboro, Maine, 1768; d. Bath, Maine, 17 June 1852. He was, during the greater part of his life, the last 50 years of which were passed in Bath, an active and successful merchant, but is better known by his public services in his native State. At an early period of his career he became a member of the Massachusetts legislature, and in that capacity was distinguished by his efforts in behalf of religious freedom, and of securing to original settlers upon wild lands the benefit of their improvements. He was an early and ardent advocate of the separation of Maine from Massachusetts, and upon the consummation of that act presided over the convention which met in 1819 to frame the constitution of the new State. He was subsequently elected the first governor of Maine, and, after holding office a little more than a year, became one of the United States commissioners for the adjustment of Spanish claims. He also held other offices of importance under the general and State governments, including that of collector of the port of Bath.

King, William Basil, American Episcopal clergyman and novelist: b. Charlottetown, P. E. I., 1857. After taking orders in the Episcopal Church he was for some years rector of St. Luke's Church, Halifax, N. S., and from 1871 to 1899 was rector of Christ Church, Cambridge, Mass. He is the author of 'Griselda' (1899); 'Let Not Man Put Asunder' (1902); etc.

King, William Rufus, American statesman, 13th Vice-President of the United States: b. Sampson County, N. C., 6 April 1786; d. in Dallas County, Ala., 17 April 1853. He entered the University of North Carolina at 12, and was graduated in 1803. He then commenced the study of law and was admitted to the bar in 1806. In 1806 he was elected to the legislature from his native county, and again in 1809. In 1810 he was elected to Congress, and was twice re-elected. In Congress he united himself with Clay, Calhoun, and others, who advocated the war policy of Mr. Madison's administration, and voted for the declaration of war in June 1812. In the spring of 1816 he resigned his seat to become secretary of legation to Naples under William Pinckney. The latter was afterward transferred to St. Petersburg, and was accompanied to that court also by King as secretary. Having removed to Alabama, he was elected in 1819 one of the United States senators from the new State, and was successively re-elected in 1823, 1828, 1834, and 1840. In April 1844, he was appointed minister to France. The proposition for the annexation of Texas was then pending. England was known to be decidedly opposed to the scheme, and there was a general belief that her government was urging France to join in a protest against it. King was an active advocate of the annexation, and upon reaching Paris directed his efforts to prevent this joint protest, in which he was successful. He returned to the United States in November 1846. In 1848 Senator Arthur P. Bagby was sent as minister to Russia, and King was appointed to fill the vacancy thus created. In 1849, the term for which he was appointed having expired, he was elected for a full term of six years. In 1850, on the accession of Vice-President Fillmore to the presidency, King was unanimously elected president of the Senate. In 1852 he was elected Vice-President of the United States, at the time Franklin Pierce was elected President.

King, a person vested with supreme power in a foreign state, territory or nation. According to feudal usages the king was the source from which all command, honor and authority flowed; and he delegated to his followers the power by which they exercise subordinate rule or authority. There is now no very clearly marked distinction between a king and an emperor. A queen-regent, or a princess who has inherited the sovereign power in countries where female succession to the throne is recognized, possesses all the political rights of a king.

King-at-arms, an officer of great antiquity, whose business it is to direct the heralds, preside at their chapters, and have the jurisdiction of armory. There are three kings-at-arms in England, Garter, Clarencieux and Norroy. The first is called the principal king-at-arms, the other two provincial kings-at-arms.

King Charles Spaniel. See DOG; SPANIEL.

King Conch, the great wing-shells of the genus *Strombus,* especially *S. gigas* of the West Indies and *S. pugilis* of Florida. The large helmet-shells (*Cassis*) of the same region are often called «queen conchs.»

King Cotton, a popular name given the cotton plant in the United States. «Cotton is king» was a frequent declaration before the Civil War, when the supremacy of cotton in commerce and politics was strongly asserted by public men, especially in the South.

King-crab. See HORSEFOOT CRAB.

King-crow. See DRONGO.

King-dory, a bird-dealers' name for the Australian parrots of the genus *Aspromictus.*

King Duck, the spectacled eider. See EIDER DUCK.

King George's Sound, an inlet in western Australia; five miles broad; it is an excellent roadstead, and contains two landlocked recesses, Princess Royal and Oyster Harbors. Albany, on Princess Royal Harbor, is a port of call for mail steamers.

King George's War, a war of Great Britain and its American colonies, against France and its Indian allies (1743–8), so named from King George II. See COLONIAL WARS.

King Henry the Fourth, a historical play by Shakespeare in two five-act parts. Part I., published in 1598, stands at the head of all of Shakespeare's historical comedies. Part II. forms a dramatic whole with the preceding. It was published in 1600.

King Henry the Fifth, a historical drama by Shakespeare, first printed in 1600, the materials being derived from Holinshed and an earlier drama play on the same subject.

King Henry the Sixth, a historical drama by Shakespeare in three five-act parts. Of the eight closely-linked Shakespearian historical plays, these three are the last but one. The eight cover nearly all of the 15th century in this order: ‹Richard II.›; ‹Henry IV.,› parts i. and ii.; ‹Henry V.›; ‹Henry VI.› (three parts); and ‹Richard III.›. The three parts of ‹Henry VI.,› like ‹Richard II.,› present a picture of a king too weak-willed to properly defend the dignity of the throne.

King Henry the Eighth, a historical drama by Shakespeare, based on Edward Hall's ‹Union of the Families of Lancaster and York,› Holinshed's ‹Chronicles,› and Fox's ‹Acts and Monuments of the Church.› The action covers a period of sixteen years, from the Field of the Cloth of Gold, in 1520, to the death of Queen Katharine in 1536.

King John, a drama based upon an older play published in 1591. The date of the action is 1200 A.D. John is on the throne of England, but without right; his brother, Richard the Lion-Hearted, had made his nephew Arthur of Bretagne his heir. Arthur, a lad of 14, is the pride of his mother Constance. The maternal affection and the sorrows of this lady form a central feature of the drama. Arthur's father, Geoffrey, has long been dead, but his mother has enlisted in his behalf the kings of Austria and of France. Their forces engage King John's army under the walls of Angiers. While the day is still undecided, peace is made, and a match formed between Lewis, dauphin of France, and John's niece Blanche. The young couple are scarcely married when the pope's legate causes the league to be broken. The armies again clash, and John is victorious, and carries off Prince Arthur to England, where he is confined in a castle and confided to one Hubert. John secretly gives a written warrant to Hubert to put him to death. The scene in which the executioners appear with red-hot irons to put out the boy's eyes, and his innocent prattle with Hubert is one of the most famous and pathetic in all the Shakespearian historical dramas. Hubert relents; but the frightened boy disguises himself as a sailor lad, and leaping down from the walls of the castle, is killed. Many of the powerful lords of England are so infuriated that they join the Dauphin, who has landed to claim England's crown in the name of his wife. King John meets him on the battlefield, but is taken ill, and forced to retire to Swinstead Abbey. He has been poisoned by a monk, and dies in the orchard of the abbey in great agony.

King Lear, by Shakespeare. See LEAR.

King-monkey, a monkey of the African semnopithecine genus *Colobus,* of which there are several species, one of which is the guereza (q.v.).

King-nut, the shag-bark hickory (q.v.).

King Penguin. See PENGUIN.

King Philip's War. See COLONIAL WARS IN AMERICA.

King Rail. See RAIL.

King Salmon or Quinnat, the most important of the several species of salmon found on the Pacific coast of the United States; called also Chinook or Columbia River salmon (*Oncorhynchus tschawytscha*). It is especially abundant in the Columbia and Sacramento rivers, and its great economic importance is due to the fact that it enters the rivers in large numbers in the spring. See Salmon of the Pacific.

King Snake, a large colubrine snake of the southern part of the United States (*Osceola doliata,* of which the northern house-snake is a variety), so called on account of the belief in its power and prowess, especially in overcoming rattlesnakes. It is grayish white, marked by a series of black rings in a manner so variable that many color-varieties have been named. It sometimes reaches a length of ten feet, is extremely muscular and swift, and preys upon frogs, toads and upon snakes, including poisonous ones. Hence this serpent is much respected and rarely killed in the less settled parts of the Southern States. Several other species are known, one of which (*O. coccinea*) is red with black bands, and called the red king snake. These snakes are reproduced by eggs buried in sandy soil or loose dust, like that of a rotting stump. The chain-snakes (q.v.) of the allied genus *Ophiobolus* have an equal right to the name «king snake,» and frequently receive it. Consult: Holbrook, ‘North American Herpetology,’ Vol. III. (142).

King Vulture. See Condor.

King William's War, a war waged by Great Britain and its colonies in America against France and its Indian allies in 1689–1697. See Colonial Wars.

King of the Herrings, a fanciful name applied to various sea-fishes. One so called is the moonfish (*Lampris luna*). Another is the rare deep-sea ribbon-fish (*Trachypterus arcticus*) of the North Atlantic. A species of the same family (*Trachypteridæ*) occurs occasionally on the northwestern American coast, and was called by the Indians about the Straits of Fuca ‘King of the Salmon,’ in reference to their belief that the killing of this fish would be followed by a failure of the salmon supply.

King of the Mackerels, a strange oceanic fish of the genus *Ranzania,* allied to the ocean sunfish (*Mola*), various species of which are superstitiously so called in various parts of the world. One kind (*R. truncata*) is now and then taken in the North Atlantic; and a Hawaiian and Japanese species is *R. makua.* Consult Goode and Bean, ‘Oceanic Ichthyology’ (1895).

King of the Mullets. See Cardinal-fish.

King of the Salmon. See King of the Herrings.

Kingbird, one of the most familiar representatives in the United States of the tyrant flycatchers (*Tyrannidæ*). The typical genus is distinguished by the concealed flame-colored crest, attenuate outer primaries and square tail, and contains many species. The eastern kingbird (*Tyrannus carolinensis*) is found throughout the United States, but rarely in the Southwest or west of the Rocky Mountains; it also enters the British provinces and breeds throughout this range; in winter it migrates into Mexico, Central and South America. It is a plain little bird about eight inches long, nearly black above and quite so on the head, this color there contrasting greatly with the brilliant flame color of the crest, which can be concealed or erected at will; the tail is tipped with white, and the under parts are wholly white. The young lack the highly colored crown. The most distinctive trait of the kingbird is pugnacity, and during the nesting season no bird may come near its home without being attacked and almost invariably routed. Even crows, hawks, and eagles fly before its fearless and vigorous onslaughts. On account of the large gape of the mouth, the spreading bristles at its sides, and the flat, broad bill, the kingbird, in common with related species, is an adept in capturing flying insects, which constitute its almost exclusive food. In some localities it is known as the bee-martin, and has gained a bad reputation as a destroyer of honeybees, but it destroys a thousand noxious insects for every bee it eats. The nest is a bulky structure saddled in a conspicuous position on a limb or fork usually of an apple-tree, and the eggs are usually rosy white, boldly spotted with brown and lilac. Two additional species of kingbirds are found in the West and two in the South. Consult: Wilson, ‘American Ornithology’ (1834); Baird, Brewer and Ridgway, ‘History of North American Birds’ (1874); Coues, ‘Birds of the Northwest (1874).

Kingfish, the name of verious fishes of notable power or superior excellence; especially certain «Spanish mackerels» of the genus *Scomberomorus.* One, the cavalla or «King cero» is a favorite game fish in Florida (see Cero). The kingfish of New York waters (*Menticirrhus saxatilis*) is one of the whitings, of the family *Sciænidæ,* closely allied to the drums (see Whiting). It is a moderately large migratory marine fish, «dusky gray above, sometimes blackish, the back and sides with distinct dark oblique cross-bands running down and forward,» and a V-shaped blotch on each side of the nape. It is also known as «sea-mink,» and is an excellent food-fish, but has become rare, although formerly ascending the Hudson River in schools, in early spring, for 40 miles or so. Other fishes so called are the little roncador (q.v.) of California, and the opah (q.v.). Consult: Jordan and Evermann, ‘American Food and Game Fishes’ (New York, 1902).

Kingfisher, a bird of the family *Alcedinidæ,* characterized by the short, compact body and large head, with a large, straight, acute bill; the somewhat usually short, square tail of twelve rectrices, the short rounded wings having ten primary quills; the short, weak legs and nearly unique cohesion of the middle and outer toes. Two sub-families are commonly recognized, the *Daceloninæ,* or «Kinghunters,» with a broader, depressed, sometimes curved bill and usually insectivorous habits; and the *Alcedinidæ,* or true kingfishers, with a compressed, carinated bill, and usually piscivorous. About twenty genera and 125 species have been described, half of which are confined to the Australian region. About five genera and 50 species are distributed between tropical Africa and Asia, one species alone, the brilliantly colored *Alcedo ispida,* is found in Europe; while all of America has only eight species of *Ceryle,* three of which extend their range into the United States. Of these three, two (*Ceryle* *torquata* and *C. americana*), are really Mexican and Central American, but the third, the belted kingfisher (*C. Alcyon*), is a widely distributed and highly characteristic member of the North American avifauna. Throughout North America, from the shores of the Arctic Ocean to the Gulf of Mexico, and from the Atlantic to the Pacific, is the summer breeding-home of the belted kingfisher, which in winter retreats south of the limit of freezing. The large, crested head, very large bill, and deep blue color, with black and white markings and largely white under parts, give to this bird a very characteristic aspect, which is heightened by its peculiar habits. Each pair selects a hunting-ground somewhere in the vicinity of water, and other pairs seldom intrude upon this preserve. There the kingfisher perches on a tree overhanging the water and watches for the passage of a fish, when it plunges headlong and usually emerges with a small fish held firmly in the beak. As it rises a spasmodic shake dispels the water from its compact oily plumage, and on returning to its perch, the fish is usually tossed into the air and swallowed head first. Sometimes the kingfisher hunts more in the manner of a tern and plunges from a suspended position in mid-air. The only call is a peculiarly loud, harsh, rattling cry. A burrow six to nine feet long, dug horizontally into a bank, serves as a nesting place, in the slightly enlarged end of which the six or eight pure white eggs are laid on a bed of regurgitated fish bones.

The dacelonine kingfishers have very different habits, and might more properly be called king-hunters. They are usually woodland birds, caring little for the neighborhood of water, since their food consists of insects caught mainly on the wing, or else of tree-frogs, lizards and other small reptiles found on the ground or about trees. The jackass kingfisher (q.v.) of Australia is a prominent example. A peculiar group of the Papuan Islands (genus *Tanysiptera*) has long, racket-shaped tail-feathers and other peculiarities of plumage. The small East Indian species of *Ceyx* have only three toes. Those of Africa are inhabitants of deep woods, but when hard pressed for food will resort to streams and pick up small fishes. All these breed in holes in trees and not in earth-burrows.

Consult: Sharpe, ‘Monograph of the Alcedinidæ’; Evans, ‘Birds’ (Cambridge Natural History, Vol. IX.); and American and European ornithologies.

Kinghunter, a kingfisher of the sub-family *Daceloninæ;* specifically the jackass kingfisher (q.v.).

King′lake, Alexander William, English historian: b. Taunton, Somerset, 5 Aug. 1809; d. 2 Jan. 1891. He was educated at Eton and Cambridge, was called to the bar in 1837, but ceased to practise in 1856. He represented Bridgewater in the Liberal interest in Parliament from 1857 to 1868, when Bridgewater was disfranchised. His distinction as a writer rests upon two books: ‘Eothen, or Traces of Travel Brought Home From the East’ (1844); and ‘The Invasion of the Crimea,’ in eight volumes, (1863–87). The former is marked by truth to nature, poetry, humor, and imagination; the latter (which is partly the result of personal observation) is an equally brilliant performance in its own way, almost exhaustive in its details, picturesque and telling in description and narrative, but open to the charge of prejudice in some points, his great dislike of Napoleon III. frequently appearing. Consult: Tuckwell, ‘Alexander William Kinglake’ (1901).

Kinglet, a very small bird of the thrush family dwelling in northern forests and visiting southern Europe and the United States only in winter. These smallest of songsters, hardly more than 4 inches in total length, are olive-green and gray in color, with a half-concealed yellow crest in one of the two species, the gold-crest (*Regulus Satrapa*), and a flame-colored one in the other (*R. calendula*), called ruby-crown. These tiny birds go about in small lively flocks, and have no hesitation in attacking a crow, jay or hawk with the spiteful fury that long ago won them the name «kinglet» among European peasants. Both, especially the ruby-crown, sing sweetly in the spring before going to some mountain-top or northern forest to make their cup-like nests in some evergreen tree. See GOLD-CREST.

King's Bench, Court of. See COURT.

Kings, Books of, I. and II., canonical books of the Old Testament, forming one book in the Hebrew canon. In the Septuagint version there are various omissions, additions, transpositions, and glosses, which do not in general appear to rest on any authentic authority, and sometimes bear evident traces of later invention. Besides their internal unity the books of Kings are closely connected with those which precede them in the canon, I. and II. Samuel, and even Judges and Ruth, so that some authorities suppose the whole of these books to be a single compilation. Taking the books of Kings alone there is internal evidence throughout that their compilation was subsequent to the destruction of the Jewish monarchy, and in the later chapters much to corroborate the Jewish tradition that Jeremiah, with whose book of prophecies they present many points of agreement, was the compiler. By whomsoever they were compiled, these books, as well as Judges, Ruth and Samuel, are evidently taken from a series of contemporary authorities, being, as shown by citation, the official annals as well as the prophetical writers of the successive periods. These authorities are often followed so literally that when a comment is introduced it is uncertain whether it is that of the original writer or of the compiler; thus the expression which frequently occurs in reference to memorials of occurrences that they remain to this day sometimes implies the existence of the monarchy, the temple, or something else known not to exist in the time of the compiler. The books of Kings thus contain authentic accounts of contemporary history during the whole period of the Jewish monarchy. They begin with the close of the reign of King David, and the history is carried down consecutively to a period subsequent to the capture of Jerusalem and the destruction of the temple, embracing, according to the received chronology, a period of upward of 400 years (1015–588 B.C.), and including the history of both the kingdoms of Judah and Israel. The facts recorded in regard to the foreign relations of these kingdoms from the conquest of Rehoboam by Shishak, king of Egypt, to the captivity in Babylon, have been remarkably confirmed by modern discoveries. The outline of events recorded in Kings is also frequently supplemented by much fuller details in the prophetic books, particularly Isaiah and Jeremiah. The text of the books of Kings is not considered by critics to be very pure. The chronology is in a very unsatisfactory state, being difficult to reconcile with other authorities, and in many passages inconsistent with itself. The books of Kings differ from the Chronicles in comprising the history of the separate kingdoms of Israel and Judah, while the Chronicles are occupied almost exclusively with that of Judah. It is also to be observed that the Kings contain much fuller notices of the contemporary prophets, while the Chronicles are more full in describing the temple worship and the ceremonials of the Levitical law. This may, perhaps, be regarded as confirming the hypothesis which ascribes the authorship of the former to Jeremiah the prophet, while the reputed author of the Chronicles was Ezra the priest.

King's Chapel, a religious edifice in Tremont Street, Boston, Mass., built in 1745 on the site of an older church. During the War of the Revolution it was for a time forsaken by its loyalist congregation. In the burial ground adjoining which has been in use since 1630, many of the early Puritans, including Gov. Winthrop, are interred.

King's College, a college of Cambridge University, England, founded by Henry VI. in 1441, as the College of Saint Nicholas, with Eton College as a preparatory school. Exemption from the jurisdiction of the Archbishop of Canterbury, the Bishop of Ely, and even of the University in matters scholastic, were some of its unusual privileges, and until 1857 members of King's College could take a degree without passing the University examinations, a course which did not conduce to a high standard of scholarship. In its roll of celebrated alumni are Archbishop Sumner, Bishop Pearson, Richard Croke, the Greek scholar, the first Sir William Temple, Sir Robert Walpole, and Lord Stratford de Redcliffe. The college had in 1902 a provost, 46 fellows, 48 scholars, 120 undergraduates. The college chapel is the finest in the world in size, form and decoration. It contains some of the best glass and wood carving examples in England.

King's College, London, a college established by private subscription and incorporated in 1829, its constitution being amended by an act of Parliament in 1882. The buildings are adjacent to those of Somerset House. It was established for the purpose of providing an education in accordance with the principles of the Established Church. Education is imparted in the departments of theology, general literature and science, applied sciences and engineering, and medicine. The department of general literature and science is intended to prepare students for the universities, for the army, and the Indian and home civil service; and there are also special classes for civil service candidates. There is a department for women. The college possesses a library and a museum, the latter containing Babbage's calculating machine, and King George the Third's collection of philosophical instruments and mechanical models. It is now a constituent college of London University. Among its celebrated scholars are Professors Thorold Rogers and Cayley, Sir James Fitzjames Stephen, Dean Farrer, Dante Gabriel Rossetti and his brother William.

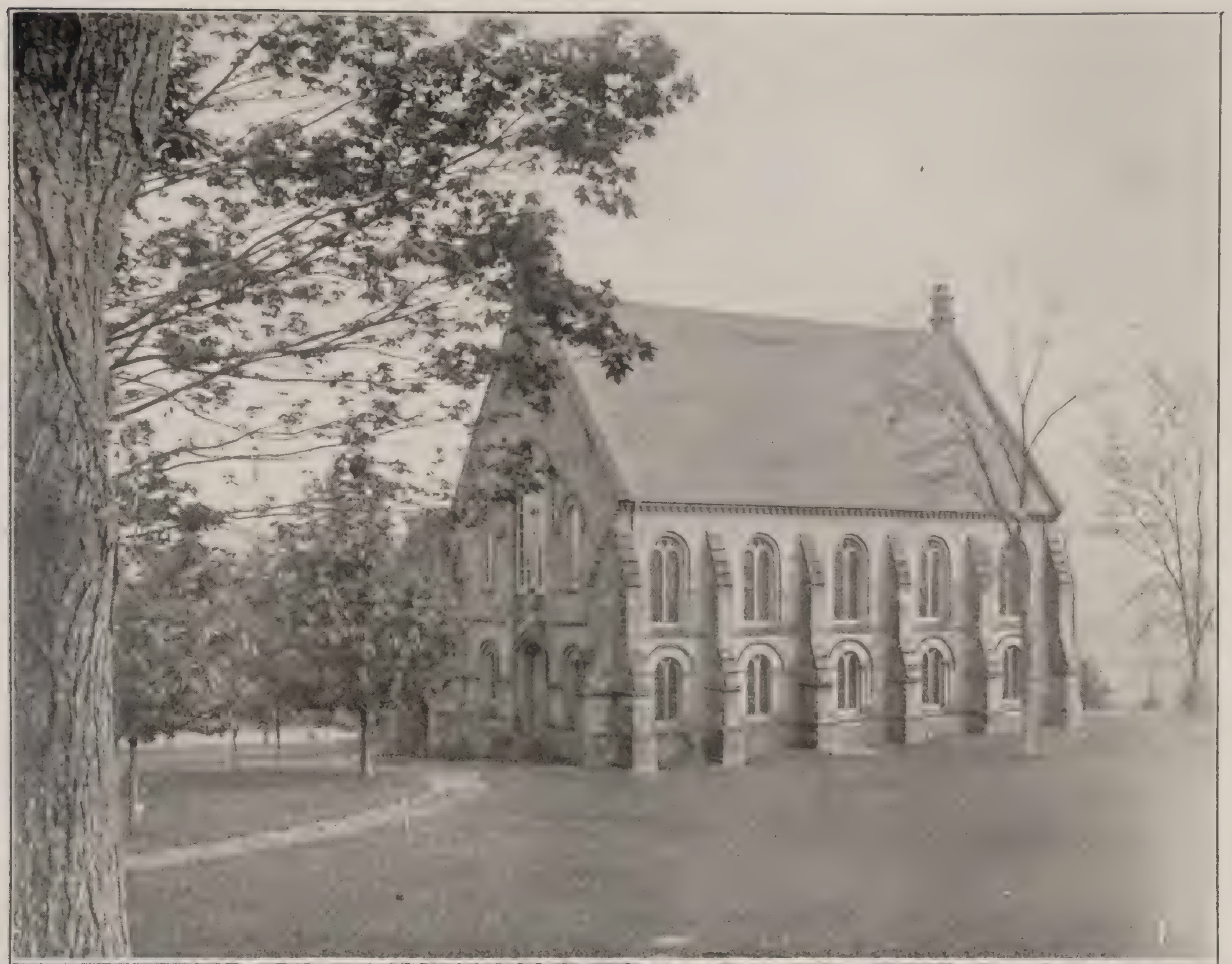
King's College, Windsor, is the oldest university in what is now the Dominion of Canada, and, with the exception of the French foundation of Laval (q.v.) at Quebec, is the oldest college. Its establishment was the work of British Loyalists, chiefly from the State of New York, after the close of the War of the Revolution. Of these about 18,000 settled in the Nova Scotia Peninsula. As early as 8 March 1783 a meeting of Loyalists was held in New York, and «A Plan of Religious and Literary Institution for the Province of Nova Scotia» was drawn up and forwarded to the colonial secretary; and when Dr. Charles Inglis, who had formerly been rector of Trinity Church, New York, was consecrated first bishop of Nova Scotia in 1787, one of his first cares was to carry the scheme into effect. First, a grant was obtained from the Provincial Legislature for an academy at Windsor. This academy (now known as the Collegiate School) was opened 1 Nov. 1788, and the following year an Act was passed for «the permanent establishment and effectual support of a college at Windsor,» and the sum of £400 sterling per annum granted toward its maintenance. Under this Act King's College was opened in 1790 in temporary quarters, and the erection of a building of wood was begun the following year.

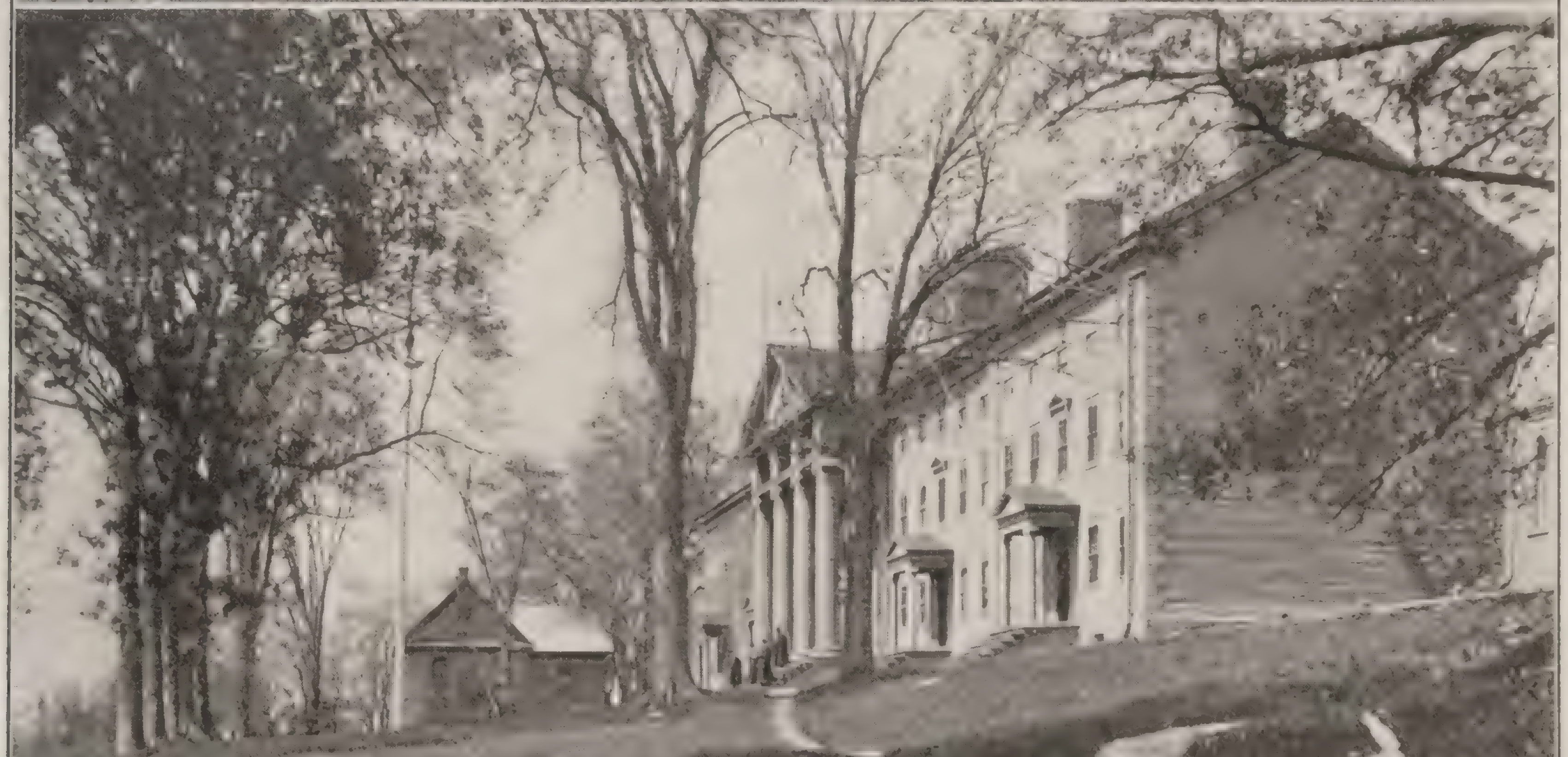
The first president of the college was Rev. William Cochran, a graduate of Trinity College, Dublin, who had been professor of Greek and Latin in King's (now Columbia) College, New York, but who, on account of his Loyalist sympathies, resigned and came to Nova Scotia in 1788.

A royal charter, giving to King's College full university powers, was granted by George III. in 1802, and was accompanied by an imperial grant of £1,000 a year, which was continued until 1834. The board of governors under this charter was a political body, consisting of the lieutenant-governor, the bishop, and six members of the government. The task of framing statutes for the college was entrusted to a committee of three, two of whom were uncompromising Tories, and by their rigid adherence to the Oxford model in the matter of religious tests inflicted a lasting injury upon the college and almost effected its ruin. The requirement was made that all students, on matriculation, must subscribe to the Thirty-nine Articles. To this the bishop strenuously objected, and sent his protest to the archbishop of Canterbury, who was, under the charter, patron of the college. The archbishop compromised by withdrawing the test at matriculation, but requiring it of all those who were admitted to degrees. Instead of at once publishing this amendment, the governors kept the matter quiet, and Lord Dalhousie, who became governor of the province in 1816, seems not to have heard of it until after he had arranged for the establishment of another institution (Dalhousie College) (q.v.) in Halifax.

Although the religious tests were finally removed in 1829, in spite of repeated attempts to secularize it and amalgamate it with Dalhousie College, Halifax, King's College still retained its connection with the Church of Eng-

KING'S COLLEGE, WINDSOR, N. S.





1. Convocation Hall. 2. King's College.

land, and indeed the requirement that the president should be a clergyman was only abolished in 1902. Of the three King's Colleges established at Windsor, N. S., Fredericton, N. B., and Toronto, it is the only one which has maintained its original status, the others having relinquished their charters and become secularized.

In 1846 a meeting of alumni of the College was held, and it was determined to form an association for furthering the interests of the College. Accordingly a provincial act incorporating «The Alumni of King's College, Windsor,» was obtained in 1847, and six years later another act abolished the old political board of governors and constituted a new board, the members of which were, for the most part, to be elected by the alumni. The provincial grant of £400 was discontinued in 1849, and for some years the smaller grant of $1,000 a year was continued, but this ceased in 1881, and since that time the College has been thrown upon its own resources. The progress of the College was rapid under the new régime. The number of students increased. A beautiful stone convocation hall and library was erected in 1861 and a chapel in 1877.

The library of the college, which owes its inception to John Inglis, who went to England in 1802 to collect books, contains some of the most valuable bibliographical treasures in Canada. There are no less than 18 volumes from the famous Aldine Press including the Aristotle of 1495–8. Then there are 20 volumes from the Elzevir Press and 16 from that of Stephens of Paris. One of the treasures is a copy of the Coberger Bible of 1475, of which there is perhaps not another copy in America. Among the valuable books of a later date may be mentioned the Boydell edition of Shakespeare and Milton, and a presentation copy of the Marquis of Buckingham's 'Homer.'

The present teaching staff of the college consists of a president, who is also professor of English literature, history and economics, two divinity professors, one of classics, one of chemistry and geology, one of mathematics and physics, one of engineering, and one of modern languages. Degrees are given in arts, divinity, engineering, and science, and a school of law, established at Saint John, N. B., in connection with the University of King's College, in 1892, is doing good work. The Engineering School, which is the oldest in Nova Scotia, is now (1904) being removed to the Sydneys to take advantage of the splendid plant in operation in the Cape Breton metropolis. F. W. VROOM,

Registrar of the College.

Kings' Daughters and Sons, International Order of the, an organization of men, women and children of all religious denominations, whose object is to minister to the sick and needy wherever found, and to do good to all with whom they come in contact. The original circle (of women) was formed in New York in 1886, and its members are found in almost every State in the Union. There are also branches in several foreign countries. The badge is a small silver Maltese cross, generally suspended by a purple ribbon and bearing the initials «I. H. N.» (In His name). The society publishes a weekly paper, 'The Silver Cross.' The membership in 1903 was over 500,000.

King's (or **Queen's**) **Evidence,** the British equivalent of State's evidence. See INFORMER.

King's Evil. See SCROFULA.

King's Mountain, N. C., a village in York County, 80 miles northeast of Columbia. In the vicinity is a high hill where a battle took place 7 Oct. 1780, between the Americans, under Levier, Shelby, Campbell and William, and the British, under Ferguson. The latter were defeated with a loss of 456 killed and wounded, among whom was the commander, and 648 taken prisoners after an hour's fighting. Ferguson, shouting to his men: «Crush the damned rebels to the earth,» prepared for one final charge, and fell at the head of his regulars pierced by seven bullets, dying, according to tradition, by the hand of Col. Williams, who was also slain. His men, disheartened by his fall, surrendered. The Americans lost only 20 men killed, although a large number were wounded. After the battle 10 of the prisoners notorious for their crimes were hanged, having first been regularly tried and condemned by their captors. This was one of the most brilliant victories of the war, and exercised an important influence in precipitating the downfall of British power in the South. The 75th anniversary of the battle was commemorated by a celebration on the ground.

Kings'ford, William, Canadian historian: b. London, England, 12 Dec. 1819; d. Ottawa, Ont., 29 Sept. 1898. He entered the army and came to Canada in an English regiment in 1841. He then took up surveying and engineering, and was at various times employed upon the construction of the Hudson River, Panama, Grand Trunk, and Canadian Pacific railways. He made his home in Canada and published 'The History, Structure, and Statistics of Plank Roads in the United States and Canada' (1851); 'The Canals: Their History and Cost' (1865); and 'The History of Canada' (1880), a well-known work; etc.

Kingsley, kĭngz'lĭ, **Charles,** English clergyman, novelist, and poet: b. Holne Vicarage, near Dartmouth, Devonshire, 12 June 1819; d. Eversley, Hampshire, 23 Jan. 1875. He was a pupil of Derwent Coleridge (q.v.) from whose care he passed to King's College, London, and thence to Magdalen College, Cambridge, where he was graduated with high honors in 1842. Soon after graduation he took orders in the Established Church and obtained the curacy of Eversley, and became its rector in 1844. This living he retained till his death, but he also held in succession two canonries, one in the cathedral of Chester 1869–73, and one in the chapter of Westminster from 1873 till his death. From 1860 to 1869 he was professor of modern history at Cambridge. Early in his career as a clergyman of the Church of England he associated himself with F. D. Maurice, Julius Hare, and others, both in their religious views and in their social aims. With them he considered it the peculiar duty of the Church to improve the condition of the working-classes, not only by inspiring them with Christian feeling and Christian principle, but also by encouraging and aiding them in bettering their material position. With the latter object he was a strong advocate of co-operative association. His first literary works of importance, 'Alton Locke, Tailor and Poet' (1850), and 'Yeast, a Problem' (1851), gave expression to his sentiments on social questions, and both of them, but especially the first, made a great impression when they appeared. The principal of his later novels are ‹Hypatia› (1853), ‹Westward Ho!› (1855), perhaps the most popular of his stories, and ‹Hereward the Wake,› ‹Last of the English› (1866). Other works of his are ‹Glaucus, or The Wonders of the Shore›; ‹Town Geology›; ‹The Roman and the Teuton,› historical lectures; ‹The Water Babies,› a fairy-tale of science; and ‹At Last,› a visit to the West Indies. He was also the author of numerous sermons, lectures, and essays, and of various poems, the chief of which are ‹The Saint's Tragedy,› and ‹Andromeda,› the latter one of the most successful experiments in English hexameter. Consult: ‹Letters and Memories of Charles Kingsley,› by his wife (1877).

Kingsley, Elbridge, American artist and engraver: b. Carthage, Ohio, 17 Sept. 1842. He was graduated at Hopkins Academy, Hadley, Mass., and proceeded to New York where he studied art at Cooper Union. He began engraving for the Century Company in 1878, and started the School of Painter Engraving in 1880 with original work. He is one of the artists who have been instrumental in raising the school of American engraving to the high rank in the art world which it now enjoys.

Kingsley, Florence Morse, American novelist: b. Medina, Ohio, 14 July 1859. She was educated at Wellesley College and was married in 1882 to Charles R. Kingsley. She has published ‹Titus: a Comrade of the Cross› (1894); ‹Stephen› (1896); ‹Paul› (1897); ‹Prisoners of the Sea› (1897); ‹The Cross Triumphant› (1899); ‹The Transfiguration of Miss Philura› (1901); ‹Through a Needle's Eye› (1902); ‹Wings and Fetters› (1902).

Kingsley, Henry, English novelist, brother of C. Kingsley (q.v.): b. Barnack, Northamptonshire, 1830; d. 24 May 1876. After being educated at King's College, London, and Worcester College, Oxford, he went to Australia, where he spent five years, returning to England in 1858. He was editor of the *Daily Review,* Edinburgh, 1870–1, was its war correspondent during the Franco-Prussian War, and as such was present at the battle of Sedan. In 1859 he published ‹Recollections of Geoffrey Hamlyn,› a vigorous novel of Australian life, and this was succeeded by ‹Ravenshoe› (1861); and ‹The Hillyars and the Burtons› (1865).

Kingsley, John Sterling, American zoologist: b. Cincinnatus, N. Y., 7 April 1854. He was graduated from Williams College in 1875, was professor of zoology at the University of Indiana 1887–9; and at the University of Nebraska 1889–91, and has filled a similar position at Tufts College from 1892. He edited ‹The American Naturalist› (1886–96) and has published ‹Elements of Comparative Zoology›; ‹Vertebrate Zoology›; ‹Popular Natural History› (1890).

Kings'mill Group. See Gilbert Islands.

Kingston, kĭng'stón, **William Henry Giles,** English novelist: b. London 28 Feb. 1814; d. Willesden, Middlesex, 5 Aug. 1880. His youth was spent in Oporto, Portugal, and having aided in arranging a commercial treaty between England and Portugal he was knighted by the Queen of Portugal in 1842. He wrote almost though not quite exclusively for boys, producing 130 stories in 30 years; mostly of sea voyage and adventure, which were very popular.

Kingston, Canada, city, port of entry, capital of Frontenac County, in the Province of Ontario. Situated at the mouth of the Cataraqui River and at the outflow of the Saint Lawrence from Lake Ontario. At Kingston the Rideau Canal from the Ottawa River at Ottawa City, connects with the Saint Lawrence River and the system of the Great Lakes.

It is on the main line of the Grand Trunk Railway, between Montreal and Toronto, and is connected with the Canadian Pacific Railway, east, west and north, by means of the Kingston and Pembroke Railway. During the season of navigation, the Richelieu and Ontario and other lines of steamers connect it with Montreal and other points on the Saint Lawrence River, and with Rochester, Toronto, Bay of Quinte and intermediate points, in the West. Kingston is midway between Montreal and Toronto, being 170 miles to the west of the former, and 163 miles to the east of the latter.

The harbor, sheltered from Lake Ontario by Amherst, Simcoe and Wolfe islands, is considered one of the best on the lake. The fortifications of Kingston are third in importance in Canada, those of Quebec and Halifax taking precedence.

In July 1673, the site of Kingston was first visited by Frontenac, the French governor of Canada, accompanied by La Salle. There the Indians were assembled for a conference, and during his stay the governor erected a fort built of wood and surrounded by palisades. Thus originated Fort Frontenac at Cataraqui, the first fort on the lower lakes west of Montreal. In 1675, La Salle obtained from Louis XIV. a grant of Fort Frontenac and the seigniory of Cataraqui, with the adjoining islands, and two years later he partially completed a new stone fort replacing the wooden one. The fort and the mainland subsequently reverted to the French Crown, but a large part of Wolfe Island is still held by titles originally derived from La Salle. Owing to Indian incursions Fort Frontenac was abandoned and partly destroyed in 1689. In 1695, however, during Frontenac's second term as governor, the fort was rebuilt, and, until the time of the English conquest, was maintained as one of the chief French centres of authority, communication and trade for the West. From there, in 1756, Montcalm launched his successful attack upon the British post of Oswego. But in 1758 Bradstreet captured and partly destroyed Fort Frontenac.

After the British conquest of Canada, Cataraqui was practically deserted until the arrival of the Loyalist refugees during the Revolutionary War. When Carleton Island was ceded to the United States by the treaty of 1783, Cataraqui was again occupied by the British government as a military and naval station; and in 1784 it was made the centre of the Loyalist settlements in the West, the place being renamed Kingston in honor of George III. Kingston was the chief naval and military post in Upper Canada during the War of 1812–15. A new fort was constructed on Point Henry, in 1815–16, which was rebuilt in its present form in

KINGSTON, CANADA

1. Military College and City

2. The Fort

1832–6, the advance battery being added in 1842. The four martello towers which, with the fort on Point Frederick, complete the present fortifications of the city, were built between 1846 and 1848. After the convention of 1817, by which the United States and Great Britain agreed not to maintain naval establishments upon the Great Lakes, the naval depot at Kingston was given up.

Kingston was for many years the most important commercial and shipping centre in Upper Canada. There the first mill was built in 1784, the first regular newspaper established in 1810; in the neighborhood the first steamboat was built in 1816, and others soon followed.

In 1838 Kingston received the charter of a city, though still called a town. In 1841, on the reunion of the Provinces of Upper and Lower Canada, it was selected by Lord Sydenham as the capital of the new Province of Canada. In 1844 the capital was transferred to Montreal. From Kingston have come many of the leading statesmen of the Canadian Dominion, such as Sir John Macdonald, Sir Oliver Mowat, Sir Richard Cartwright, Sir Archibald Campbell and Sir George Kirkpatrick.

The city contains three large grain elevators and is an important point for the transshipment of grain coming down from the western lakes. Some of the chief manufactures of the city are locomotives, cotton, hosiery, leather, flour and cereals.

The leading educational institutions are Queen's University (q.v.), with which is affiliated the Kingston School of Mines; the Royal Military College, the Dairy School, Regiopolis College, the Kingston Business College and the Collegiate Institute. The city has a General Hospital, the Hotel Dieu Hospital, an Orphans' Home and House of Providence, while just outside the city limits are the Provincial Penitentiary and Rockwood Hospital for the Insane. The Anglican and Roman Catholic cathedrals, and the city, county and university buildings are handsome stone edifices, adding to the attractions of the city. A bronze statue of Sir John A. Macdonald stands at the main entrance to the city park, while the Sir George A. Kirkpatrick memorial fountain faces the park in front of the county buildings. Pop. (1901) 18,043.

ADAM SHORTT,
Queen's University, Kingston.

Kingston, Jamaica, the capital of the island. See JAMAICA.

Kingston, N. Y., city, county-seat of Ulster County; on the Hudson River, and on the West Shore, the Wallkill Valley, and the Ulster & Delaware R.R.'s; and is connected by ferry with the main line of the New York Central & Hudson River railroad on the east side of the Hudson; about 100 miles north of the city of New York and 55 miles south of Albany. The Wallkill River and Rondout Creek enter the Hudson at Kingston. The first settlement was made here in 1652 by the Dutch. They named the place Esopus. In 1661 they were granted a charter, but as a dependency of Fort Orange (now Albany), the place was called Wilturick. The British obtained possession in 1664 and in 1669 they changed the name to Kingston. On 19 Feb. 1777 the first State convention of the State of New York adjourned from Fishkill to Kingston, and the first State Constitution was proclaimed in front of the court-house, on 22 April 1777. On 9 September of the same year, Chief Justice Jay opened in Kingston the first State court. The State legislature met here in September of the same year, but was dispersed by the approach of the British, who entered the place on 7 October and destroyed nearly the whole town by fire. It was rebuilt, and was incorporated as a village in 1805 and chartered as a city in 1872. The city now comprises the former villages of Kingston, Rondout, and Wilbur. The chief manufactures are bricks, motor-trucks, and Rosendale cement. It is the commercial centre for a large extent of country, and has an extensive trade in farm products, coal, cement, lime, lumber, grain, brick, and bluestone. It has the Kingston and Ulster academies, a business college, Our Lady of Victory's Sanatorium, libraries, an armory, a city-hall, court-house, and several fine churches. The bridge owned by the West Shore Railroad is about 150 feet above tidewater. The "Senate House," the first home of the New York legislature, contains a collection of relics connected with the early settlement of the country. Kingston Point Park, about 50 acres in extent, and on the Hudson, is being made more attractive each year. The large steamers now land at this park. The government of the city is vested in a mayor, who holds office two years, and a council. The executive appoints the subordinate officials, subject to approval by the council, except the city judge and the recorder, who are elected by the people. Pop. (1890) 21,261; (1900) 24,535.

Kingston, Pa., borough in Luzerne County, on the Susquehanna River, opposite Wilkes-Barre; on the Lehigh Valley and the Delaware & Lackawanna R.R.'s. Here is the seat of the Wyoming Methodist Seminary. The principal industry is coal mining. The repair shops of the Lackawanna Railroad are located here. Kingston was incorporated as a borough in 1858. In the near vicinity in 1778 occurred the famous Wyoming Massacre. Pop. (1890) 2,381; (1900) 3,846.

Kinkajou, kĭng'kạ-joo. See POTTO.

Kinney, kĭn'ĭ, **Coates,** American writer: b. Kinney's Corners, N. Y., 24 Nov. 1826. He studied law, was admitted to the bar in 1856 and subsequently edited several Ohio journals. He served in the Federal army during the Civil War, being mustered out in 1865 with brevet rank of lieutenant colonel, and sat in the Ohio Senate, 1881–2. He has published ‹Keuka› (1855); ‹Lyrics› (1888); ‹Mists of Fire and Some Eclogues› (1899), but is best known by the familiar lyric ‹Rain Upon the Roof.›

Kino, kē'nō, a kind of gum which exudes from certain trees when an incision is made, and is dried without artificial heat. The East Indian or Malabar kino comes from a leguminous tree (*Pterocarpus marsupium*); Bengal or Palas kino from *Butea frondosa;* and Australian or Botany Bay kino from *Eucalyptus rostrata*; West Indian from a third plant (*Coccoloba uvifera*). It consists of dark red angular fragments, rarely larger than a pea, and easily splitting into still smaller pieces. It is very soluble in spirits of wine, and in general behavior closely resembles catechu, and yields by similar treatment the same products. In medicine it is an astringent and tonic.

Kinsol'ving, George Herbert, American Protestant Episcopal bishop: b. Bedford County, Va., 28 April 1849. He was graduated from the Theological Seminary at Alexandria, Va., and was ordained to the priesthood in 1875. He was successively rector of churches in Baltimore, Cincinnati, and Philadelphia, and in 1892 was consecrated bishop of Texas.

Kin'ston, N. C., town, county-seat of Lenoir County; on the Neuse River, and on the Atlantic & North Carolina and the Atlantic Coast Line R.R.'s; about 78 miles southeast of Raleigh and about 60 miles from Pamlico Sound. It is situated in a fertile agricultural region in which tobacco and cotton are the chief productive crops. Kinston is an important trade centre and contains a number of large warehouses. Its chief industrial establishments are stemmeries, packing houses, cotton-mills, machine-shops, foundry, wagon works, turpentine distillery, box and barrel factories, shingle-mills, and knitting mills. It is the seat of the Rhodes Military Institute. The city owns the electric light plant. Pop. (1890) 1,726; (1900) 4,106.

Kinston, Battle of. On 1 March 1865 Gen. Cox, with three divisions of infantry, pushed forward from Newbern, N. C., toward Goldsboro to open communication with Gen. Sherman, who was marching northward from Savannah, and on the 7th two of his divisions were at Wise's Forks, near Southwest Creek, a tributary of the Neuse River, with one division three miles in rear. A brigade was advanced to a cross-road about midway between the main line and the creek. Gen. Hoke, with his Confederate division, crossed the creek on the night and early morning of the 7th and 8th, flanked, surprised, and routed the advance brigade, taking over 900 prisoners and, pressing on, fell upon the left of Cox's line, but was repulsed. He renewed the attack and was again repulsed. On the 9th there was sharp skirmishing and the Confederates made repeated efforts to turn Cox's right, which were foiled. On the morning of the 10th Hoke and D. H. Hill made vigorous and successive attacks first upon the left and then on the right of Cox's line, but were repulsed, and Gen. Bragg, who was in supreme command, made no further effort, retreated across Neuse River during the night, burning all bridges behind him, left a small guard at Kinston and, with the rest of his command, hastened through Goldsboro to join J. E. Johnston, who was concentrating everything available to oppose Sherman. Gen. Schofield joined Cox with troops from Wilmington, and reached Goldsboro on the 21st, Sherman joining him two days later. The Union loss at Kinston was 65 killed, 319 wounded, and 930 missing; the Confederate loss is not known. D. H. Hill reports a loss in five brigades of 118 killed and wounded and 16 missing. Schofield estimated the entire Confederate loss at 1,500, which is probably excessive. Consult: ‹Official Records,› Vol. XLVII.; Cox, ‹The March to the Sea,› and ‹Military Reminiscences of the Civil War,› Vol. II.

E. A. Carman.

Kintyre, kĭn-tīr', a peninsula of Scotland, between the Firth of Clyde and the Atlantic, forming the division of Argyleshire. It is 40 miles long from the Isthmus of Tarbet to the Mull of Cantyre, and has an average breadth of about 7 miles.

Kin'zie, John, American pioneer: b. Quebec, Canada, 1763; d. Chicago, Ill., 6 Jan. 1828. His name was originally McKenzie. For a time he was a jeweler in Quebec, but later became a trader in the western United States, and in 1804 established a post on the site of the present Chicago, of which he was the earliest white settler. He also set up stations on the Illinois, Kankakee, and Rock rivers.

Kiosk', a Turkish word meaning pavilion. It has a tent-shaped roof, open on all sides and is supported by pillars, round the foot of which is a balustrade. It is built of wood, roofed with straw or similar materials, and is chiefly erected to afford a free prospect in the shade, but it also serves to embellish a rural or garden view. This kind of pavilion has been introduced from the Turks and Persians into the English, French, and German gardens.

Kioto, kē-ō'tō, or **Kyoto,** one of the great cities of Japan, and for over 1,000 years the capital; situated on a flat plain about 26 miles inland from Osaka. A high range of hills to the east separates this plain from Lake Biwa, and on these some of the finest temples connected with the city are built. The city is rectangular in form, the longer streets running north and south parallel to the Kamo River, which flows along the base of the ridge. At the north end are situated in an enclosure the plain wooden buildings where the emperors of Japan dwelt so long in seclusion. The Honganji temples of the Monto sect of Buddhists, fine structures of their kind and the centre of the Buddhist faith in Japan, rise at the south end of the city. The streets, though narrow, are clean and attractive, and the whole city has an air of refinement. The singing girls of Kioto are noted for their graceful dances. The pottery, porcelain, crapes, velvets, and brocades of Kioto are highly esteemed; its embroideries, enamels, and inlaid bronze-works are marvels of skilful handicraft. The capital was not removed from Kioto until 1868, when the Mikado and his court took up residence at Tokio (Yeddo). Pop. (1900) 353,139.

Kiowa, kī'o-wạ (properly käī-gwŭ), a considerable Indian tribe now in Oklahoma, whose language forms a distinct stock, who have resisted with unusual virility the physical decay so common among the tribes, and whose pictograph calendar from about 1830 is of scientific interest. In dress and dwellings they are civilized, but otherwise tenacious of their old customs; of which the most prominent were the sun dance, and devotion to a stone image called the Taimé, a sort of guardian deity. They had a military order of six degrees, and were organized in six bands; one of which, inaccurately called the Kiowa-Apache (by themselves «Nadiishañ-dina»), is an Athapascan tribe immemorially confederated with them. First living (according to their and other tribes' traditions) in the Montana Rockies along the head waters of the Missouri and Columbia, they followed the retreating buffalo herds southward along the plains, allying themselves with the Crows and assailed by the Cheyenne and Sioux; halted for a while successively in the Black Hills and along the Platte and Arkansas; at first warring with the Comanches, but since 1790 in confederacy with them, and finally making peace with the Cheyennes and Arapahoes. They became one of the most formidable scourges of the plains, harrying the frontiers of the United States and Mexico. The treaty of Medicine Lodge, Kan., in 1867, enforced (after their disobedience) by Custer's troops during the next winter, placed them, with the Comanches, Cheyennes, and Arapahoes, upon reservations in Oklahoma; they broke loose in 1874, and Mackenzie was obliged to kill their horses and deport their leaders and chief men to Florida. Thenceforth they remained on the reservation. This was thrown open to settlement in 1901, and they accepted American citizenship. Their number, about 1,100, is not very much less than at any time for a century. ‘Mooney's Calendar History of the Kiowa Indians’; ‘17th Report Bureau of American Ethnology’ 1898.

Kip, William Ingraham, American Protestant Episcopal bishop: b. New York 3 Oct. 1811; d. San Francisco, Cal., 7 April 1893. He was graduated at Yale College in 1831, entered the General Theological Seminary of the Episcopal Church in New York, and was ordained deacon in 1835. In 1838 he was called to the rectorship of St. Peter's Church, Albany, N. Y., which position he retained until his consecration in 1853 as missionary bishop of California. He published several religious treatises, including ‘The Lenten Feast’ (1843); ‘The Double Witness of the Church’ (1844); etc.; and also ‘Early Jesuit Missions in North America’ (1846); ‘Early Conflicts of Christianity’ (1850); ‘The Catacombs of Rome’ (1864); ‘Olden Times in New York’ (1872); ‘Early Days of My Episcopate’ (1892).

Kipling, Rudyard, English novelist and poet: b. Bombay, India, 30 Dec. 1865. His father, John Lockwood Kipling, known as the author of ‘Beast and Man in India,’ was at that time a professor of sculpture in the school of art at Bombay. The novelist's mother, Alice Macdonald, a woman of beauty and talent, was a daughter of a Methodist preacher at Endon, in Staffordshire. The boy was named, it is said, from Rudyard Lake in Staffordshire, where his parents first met. Taught to read by his mother, he was taken to England, at the age of five, and placed, with a younger sister, in the care of a relative at Southsea, a suburb of Portsmouth, where he remained for seven years, subject, it has been inferred from the opening chapter of ‘The Light That Failed,’ to narrow and irksome discipline. In 1878, he was sent to the United Service College of Westward Ho, near Bideford, in Devonshire. It was a school managed by civil and military officers for young men who intended to enter the Indian service. The rough life passed there is described in ‘Stalky and Co.’ (1899), wherein Kipling, who edited for two years the *College Chronicle,* figures as Beetle, the clever versemaker. In 1882 Kipling went out to India and obtained, by the aid of his father, a position on the editorial staff of the Lahore *Civil and Military Gazette.* After five years of this, he became assistant editor of the *Pioneer* at Allahabad, a position which he held until 1889. While on these papers he gained his wide and intimate knowledge of Indian life and affairs at first hand. The newspaper office of his time, he has said, attracted «every conceivable sort of person» from respectable army-officers and missionaries down to inventors of «unbreakable swords» and «every dissolute ruffian that ever tramped the Grand Trunk Road.» Out of these motley people, what they told him, and what he saw and divined of them, he built up his tales. By 1886, when appeared ‘Departmental Ditties and Other Verses’ in a buff paper wrapper, he was known to a large circle of readers in India by short-stories, local verse-satires, and parodies, which he was contributing to his own and other newspapers. Then came 1888, the *annus mirabilis.* In that year Kipling published seven volumes of stories: ‘Plain Tales from the Hills’; ‘Soldiers Three’; ‘The Story of the Gadsbys’; ‘In Black and White’; ‘Under the Deodars’; ‘The Phantom Rickshaw and Other Tales’; and ‘Wee Willie Winkie and Other Child Stories.’ In 1889, he made a tour of the world, with his stories and manuscripts, hoping especially to find a publisher in the United States. In this aim he was immediately disappointed. His severe strictures on America, contributed to the *Pioneer,* were afterwards published in New York, and are now included in his works as a part of ‘From Sea to Sea.’ After a hard struggle, recognition in the western world came to him in 1890, while he was staying in London. To this and the next year belong ‘The Courting of Dinah Shadd and Other Stories’; ‘The City of Dreadful Night and Other Sketches’; ‘Life's Handicap’; and ‘The Light that Failed.’ While in London, Kipling met Mr. Wolcott Balestier, an American author, with whom he collaborated on ‘The Naulahka.’ In 1892, he married his friend's sister, Caroline Starr Balestier, and settled near the Balestier estate at Brattleboro, Vermont, eventually building on the hillside a long, low bungalow, called the Naulahka. There he wrote many of his best poems and stories. For verse may be cited some of the ‘Ballads and Barrack Room Ballads’ (1892-93) and ‘The Seven Seas’ (1896); and for fiction, ‘Many Inventions’ (1893), ‘The Jungle Books’ (1894-95), and ‘Captains Courageous’ (1897). Leaving Vermont in 1896, Kipling went out to South Africa in 1898, and paid a brief visit to New York in 1899, where he barely escaped death from pneumonia. He had already made his home in a little English village near Brighton, in Sussex. To this later period belong ‘The Day's Work’ (1898); ‘Kim’ (1901); ‘Just-So Stories’ (1902); ‘The Five Nations’ (1903), a volume of verse; ‘Traffics and Discoveries’ (1904), and ‘Puck of Pook's Hill’ (1906).

Kipling has been one of the most striking figures in English literature since he first came to his own in 1890. It is now a commonplace to say that he revealed India to the western world, not after the romantic manner of Scott's dealing with Scotland, but in a wonderfully direct and realistic way. Of rare perceptive powers, he sees the import of things and is able to convey it to his reader exactly. Perhaps there was no set plan about it, but his early tales comprehended nearly every phase of the English government in India so far as it came under his eyes. In them jostle the English soldier, the English civilian, and the native man and woman. He kept most closely to Punjaub, which he best knew; to its sweltering heat under which the mercury climbs slowly to the top of the glass and the printing-presses grow red hot; to its drenching rains, fever, and cholera, in other seasons; its blinding sand storms, and the picnics and intrigues they interfere with; the immense perspective of a star-lit heaven; the filth and superstition of the natives; the hap-hazard process of law-making; villages invaded and blotted out by the jungle; and barrack room yarns in which Tommy Atkins tells of his practical jokes, adventures and death grapples on the battle-field with giant Afghans.

The conditions under which he first worked demanded great concentration of incident and style. Engaged to sort telegrams and clippings or to write editorials for his newspaper, he had little time for developing his stories at length. They were dashed off rapidly from first impressions and made to fit into the scant space that was left for them. Merely the sketch or the outline was given in short jerky sentences, and the salient points in character were suggested by the epithet that comes only under the intense pressure of the moment. No other story-teller was ever able to put so much as Kipling into so little space. When more at his ease, he developed a type of his own running from twenty-five to fifty pages. Taken all in all, considering matter and treatment, the best story Kipling ever wrote is ‘The Man Who Would be King.’ What happens to one or the other when the Englishman involves himself with the affairs of the Hindoo woman is told in ‘Without Benefit of Clergy,’ and ‘Beyond the Pale.’ For the uncanny and ghastly may stand ‘At the Pit's Mouth’ and ‘The Gates of a Hundred Sorrows,’ and for ludicrous extravaganza ‘My Lord the Elephant’ and ‘The Incarnation of Krishna Mulvaney.’ Among superb battle pieces are ‘The Taking of Lungtungpen,’ ‘The Lost Legion,’ ‘With the Main Guard,’ and ‘Drums of the Fore and Aft.’ In the ‘Jungle Books’ Kipling gave fresh life and meaning to the ancient beast-fables of India.

Trained from the beginning in the short story, Kipling seems unable to break from its limitations. ‘The Light that Failed,’ and ‘Captains Courageous’ are most readable, but in neither case was the theme thoroughly grasped or the treatment adequate. ‘Kim’ is not so much a novel as a short story long drawn out. But within the province of the short story Kipling may be classed with Stevenson. A tendency to obscure symbolism, apparent now and then in his early work, has grown upon him, to the harm, it would seem, of his art. ‘They,’ for example, beautiful as it is, was difficult to understand, and some of the other stories in ‘Traffics and Discoveries’ were clearly an attempt to transfer to prose the dramatic monologue of Browning. Combined with this endeavor is also a fondness for coincidences, which, though cleverly managed, are unnecessary and unconvincing. The romancing of machinery in ‘.007,’ and ‘The Ship that Found Herself,’ so striking and novel at the time of their appearance, have since ceased to interest. Much of Kipling's later work has, however, its own grace and beauty. ‘An Habitation Enforced’ is certainly a fine story, and ‘Puck of Pook's Hill’ is a notable experiment in English folk-lore and legend.

It should be remembered that Kipling was a verse-maker before he wrote tales. As early as 1881 appeared for private circulation his ‘School Boy Lyrics.’ ‘The Departmental Ditties’ were humorous and satirical jingles, which were originally thrown off without effort to fill in the blank spaces of his newspaper when other copy was wanting. His first great success was with ‘Barrack Room Ballads,’ mostly in the Anglo-Indian dialect. They are not narrative ballads of the traditional type; they are rather songs with choruses and refrains, easily lending themselves to memory. In their kind there is nothing better than ‘Tommy,’ ‘Danny Deever,’ ‘Fuzzy-Wuzzy,’ ‘Soldier, Soldier,’ and ‘Mandalay,’ wherein «the very refuse of language» is made poetical. Kipling's theme has broadened with time until it has come to include the imperialistic aspirations of his race. No poems of the present generation are better known than ‘The Recessional’ (1897), composed for Queen Victoria's jubilee, and ‘The White Man's Burden’ (1899), an appeal to the spirit of imperialism in the United States.

Bibliography.—Among the collected editions of Kipling's works in verse and prose are the ‘Outward Bound’ and the ‘Swastika.’ ‘A Kipling Primer,’ by F. L. Knowles (Boston 1899) contains a brief biography, and a bibliography to date. Richard Le Gallienne's ‘Rudyard Kipling’ (London and New York 1900) is the most complete estimate. Consult also: ‘Rudyard Kipling, the Man and His Work’ (London 1899) by G. F. Monkshood (the pen-name of W. J. Clarke). WILBUR L. CROSS,

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Kip'per, a kippered herring, that is one preserved by smoking or pickling. Anciently in Scotland the word signified a salmon taken after the spawning season, and split, salted, and dried, because of its inutility when fresh.

Kiral'fy, Imre, organizer and manager of spectacular exhibitions: b. Budapest, Hungary, 1 Jan. 1845. He commenced the composition of music at the age of 12; introduced many grand spectacular compositions in the United States 1869-94. His many productions include ‘Venice’; ‘Paris’ (1902); ‘Columbus’; ‘Nero’; ‘India’; ‘America’ (1893); ‘Our Naval Victories’ (1868); ‘Women of All Nations’ (1900); ‘China, or the Relief of the Legations’ (1901). Some of these tableaux and panoramas have had a success unexampled in the history of such undertakings.

Kirby, kėr'bĭ, **William,** Canadian author; b. Kingston-upon-Hull, England, 13 Oct. 1817. He removed to Canada in 1832, but was educated in Cincinnati, Ohio. In 1839 he removed to Niagara, Ont., where he was editor and publisher of the ‘Mail’ for 20 years, and from 1871 to 1895 collector of customs there. He published ‘U. E., a Tale of Upper Canada,’ a poem

1860); ‘Le Chien d’Or,’ a novel (1877); ‘Pontiac’ (1887); ‘Annals of Niagara’ (1896); etc.

Kirchbach, Wolfgang, vōlf'gäng kĭrн'bäн, German critic and poet: b. London, England, 18 Sept. 1857. He was the son of a German artist and studied in Dresden and Leipsic. Settling in the former city in 1888 he was editor of the ‘Magazin für Litteratur des In und Auslandes,’ but from 1896 has lived in Berlin. Among his works may be cited: ‘Märchen’ (1879); ‘Salvator Rosa,’ a romance (1880); ‘Gedichte’ (1883); ‘Das Leben auf der Waltz’ (1892); ‘Die letzten Menschen,’ a drama (1892).

Kirghiz, kĭr-gēz', **Kirghis,** or **Kirghiz-Kazaks,** a widely-spread nomadic people of Asia, of Turkish-Tartar race, who inhabit the steppes that extend from the lower Volga and the Caspian Sea in the west to the Altai and Thian-Shan Mountains in the east, and from the Sea of Aral in the south to the Tobol on the north. The term Kirghiz, though applied by Europeans to the whole of these peoples, properly belongs only to the Kara-Kirghiz (Black Kirghiz, called also Burúts or Pruts). Those to whom Europeans give the name Kirghiz are called by the Asiatics Kazaks. The Kirghiz-Kazaks speak the Turkish dialect of the Uzbeks. In their physical type they belong to the Mongolian race. They profess the Mohammedan faith, though they do not practise polygamy. They are below the general average of European stature, and are remarkably healthy and vigorous. Their food is chiefly mutton and horse-flesh, with koumiss or fermented mare's milk, from which they extract an intoxicating spirit. Their dwellings consist of a hemispherical tent, the frame of which is of boughs, the covering of felt. Their manufactures are exclusively domestic, and consist of woolen cloths, felt, carpets, hair-ropes, leather, metal ornaments for horse-trappings, knives, etc. They carry on a trade by barter with the Chinese and Russians, exchanging sheep, horses, camels, cattle, wool, skins, etc., for tea, cutlery, silks, and other manufactured goods. A considerable portion of the Kirghiz dwell in Chinese territory, for the most part in Turkestan, but the greater number of them are nominally under Russian dominion. Of these European Russia contains 150,000.

Kirk, kėrk, **Edward Norris,** American Congregational clergyman: b. New York 14 Aug. 1802; d. Boston 27 March 1874. He was graduated at Princeton (then the College of New Jersey), in 1820, studied law in New York, was graduated from the Princeton Theological Seminary in 1824, was agent for the Board of Foreign Missions in the Southern States, was ordained in 1827, in 1828–37 was pastor of the Fourth Presbyterian Church of Albany, N. Y., and there established with N. S. S. Beman a school of theology. From 1842 until his resignation in 1871 he was pastor of the Mount Vernon Congregational Church of Boston. In 1856 at the request of the American and Foreign Christian Union he inaugurated regular worship for American Protestants in Paris. He was president of the American Missionary Association, and published ‘Sermons’ (1840; 1860); ‘Lectures on Christ's Parables’ (1856); and other writings.

Kirk, Ellen Warner Olney, American novelist: b. Southington, Conn. 6 Nov. 1842. She was educated in Stratford, Conn., and was married to John Foster Kirk (q.v.) in 1879. Her novels have been popular, and among them are: ‘Lost in Idleness’ (1877); ‘A Midsummer Madness’ (1884); ‘The Story of Margaret Kent’ (1886); ‘Sons and Daughters’ (1887); ‘A Daughter of Eve’ (1889); ‘Walford’ (1890); ‘The Story of Laurence Garthe’ (1895); ‘Dorothy Deane’ (1899).

Kirk, John Foster, American historian: b. Frederickton, N. B., 22 March 1824. He removed to the United States in 1842 and settled in Boston, where he was for 11 years secretary to the historian Prescott, whose complete works he has edited. In 1870 he removed to Philadelphia, where he was editor of ‘Lippincott's Magazine’ till 1886; and lecturer on history in the University of Pennsylvania, 1885–8. He is the author of ‘History of Charles the Bold’ (1863–8); and editor of the ‘Supplement’ to ‘Allibone's Dictionary of Authors’ (1891).

Kirk'bride, Thomas Story, American physician: b. near Morrisville, Bucks County, Pa., 31 July 1809; d. Philadelphia 16 Dec. 1883. He received the degree of M.D. from the University of Pennsylvania in 1832, and was appointed resident physician of the Friends' lunatic asylum at Frankford, Pa. A year later he was elected resident physician of the Pennsylvania hospital, in which he continued two years, when he began general practice in Philadelphia. In January 1841 he became superintendent of the Pennsylvania Hospital for the Insane, then first opened, and continued in that office till his death. He published ‘Rules and Regulations of the Pennsylvania Hospital for the Insane’ (1850), which has been a text-book and guide in the regulations of new hospitals; and a work ‘On the Construction, Organization, and General Management of Hospitals for the Insane’ (1854, enlarged 1880). In 1853 he proposed the erection of a new hospital, and the separation of the sexes in two distinct buildings, and was the first superintendent in the United States to carry such an arrangement into effect.

Kirk'dale Cave, in Yorkshire, England, 28 miles west of Scarborough, is famous for the numerous remains of Tertiary mammals. It was discovered in 1821, in the cutting back of an oolitic limestone rock in which it is situated. Its greatest length is 245 feet. The fossil bones are contained in a deposit of mud that lies on the floor of the cave. The remains of the following animals have been discovered: hyena, tiger, bear, wolf, weasel, elephant, rhinoceros, hippopotamus, horse, ox, deer, hare, rabbit, water-rat, raven, pigeon, lark, and duck.

Kirke, Sir **David,** English adventurer: b. Dieppe, France, 1596; d. Ferryland, Newfoundland, 1656. The «merchant adventurers» of London were at the beginning of his life a powerful body of associated privateers, and his father, Gervase Kirke, a dealer in French wine, who had left France to escape from the perils of the religious wars, joined the adventurers and projected with Sir William Alexander a plan for capturing New France and colonizing Nova Scotia. They obtained letters of marque and a monopoly of the fur trade, and David Kirke sailed in 1627 as commodore of three privateers, his brothers, Lewis and Thomas, being each in command of one. Off Quebec, they captured 20

French ships with cargoes and passengers. In 1629 he captured another vessel and compelled Champlain to surrender Quebec. In the meantime peace had been made with France, the captured territory was restored, but Kirke was knighted for his services. He seemed doomed to disappointed ambition to the end, for Cromwell's council revoked, after the execution of Charles I., the grant of all Newfoundland made to Kirke by the king, although the adventurer eventually recovered some portion of the lands thus confiscated.

Kirk'land, Caroline Matilda Stansbury, American author: b. New York 12 Jan. 1801; d. there 6 April 1864. In 1827 she married William Kirkland, a professor in Hamilton College, Clinton, N. Y., removing with him to Michigan in 1839. She lived for a few years a pioneer life and her experiences furnished the basis of her earlier books published under the pseudonym, «Mary Clavers.» These include: ‘A New Home; Who'll Follow?’ her best work (1839); ‘Forest Life’ (1844); and ‘Western Clearings’ (1846). In 1842 she made her home in New York, where she established a boarding school for girls and contributed frequently to periodicals. Among her later works are: ‘The Helping Hand’ (1853); ‘Memoirs of Washington’ (1857); ‘The Destiny of Our Country’ (1864).

Kirk'land, James Hampton, American educator: b. Spartanburg, S. C., 9 Sept. 1859. He was graduated from Wofford College (Spartanburg, S. C.) in 1877, was assistant professor of Latin and Greek there in 1881–2, and professor of Latin and German in 1882–3. After European study (1883–6), he was professor of Latin in Vanderbilt University (Nashville, Tenn.) in 1886–93, and in 1893 became chancellor and professor of Latin language and literature. He wrote several monographs, and published a ‘Study of the Anglo-Saxon Poem called by Grein «Die Höllenfahrt Christi»’ (1885), and an edition of the ‘Satires and Epistles of Horace’ (1893).

Kirkland, John Thornton, American Unitarian clergyman and college president: b. Little Falls, N. Y., 1770; d. Boston 26 April 1840. He was the son of Samuel Kirkland (q.v.), was graduated at Harvard College in 1789, and ordained pastor of the Congregational (Unitarian) Church in Summer Street, Boston, in 1794, where he remained till elected president of Harvard College in 1810. He held this office until 1828. His ‘Life of Fisher Ames’ (1809) is perhaps the most valuable of the several biographies of which he was the author, and his ‘Eulogy of General Washington’ was much admired. He exerted a very great influence during his life, by the force of his intellect and character, and during his presidency the college flourished, both in its internal condition and in its external relations.

Kirkland, Joseph, American novelist: b. Geneva, N. Y., 7 Jan. 1830; d. Chicago 1894. He was a son of Caroline Kirkland (q.v.) and made his home in Illinois after 1856. During the Civil War he served in the Federal army, attaining the rank of major, and after engaging in coal mining for a time, practised law in Chicago. He published: ‘Zury, the Meanest Man in Spring County’ (1887), a faithful story of the beginning of pioneer life in Illinois; ‘The McVeys’ (1888); ‘The Captain of Company K’ appeared in 1891; ‘The Chicago Massacre of 1812’ (1893); ‘The Story of Chicago’ (1892–4).

Kirkland, Samuel, American missionary to the Indians: b. Norwich, Conn., 1741; d. 1808. He was graduated at Princeton 1765. He had previously visited the Senecas, for the purpose of studying their language. In 1766 he was ordained, and sent by the Congregational Church to preach to the Indians. After living among the Senecas for a year and a half he went to the Oneidas, whom he considered to be the highest type of the Iroquois. During the Revolution he persuaded the Oneidas and Tuscaroras, who were bent on taking one side or other, to join the Americans, instead of the British. He saw considerable war service as military chaplain, especially with General Sullivan on the Susquehanna, in 1779. In 1793 he founded the Hamilton Oneida Academy for the education of Indian boys. This is now known as Hamilton College. In 1894 the Indians made complaints concerning his administration, and he published a vindication, which with his letters and journals, furnishes a unique picture of life among the Iroquois. Consult: Lothrop, ‘Life of Samuel Kirkland’ (1848).

Kirk'man, Marshall Monroe, American railway official: b. Illinois 10 July 1842. He entered the railway service of the Chicago & Northwestern line in 1856, held various posts in different departments, was comptroller in 1881–9, and in 1889 became second vice-president. His chief works are: ‘The Science of Railways’ (1894); ‘The Classical Portfolio of Primitive Carriers’ (1896); ‘The Air Brake’ (1901); ‘Building and Repairing Railways’ (1901); ‘The Romance of Gilbert Holmes’ (1900).

Kirkpat'rick, Sir **George Airey,** Canadian statesman: b. Kingston, Ontario, 13 Sept. 1841. He was graduated with honors at Trinity College, Dublin, in 1861, studied law and was called to the bar in 1865. He succeeded his father as representative of Frontenac in the Dominion Parliament and sat from 1870 to 1891, when he was made lieutenant-governor of Ontario. He retired from this office in 1897.

Kirksville, kėrks'vĭl, Mo., city and county-seat of Adair County, on the Omaha, K. C. & E., and the Wabash R.R.'s; 204 miles northwest of Saint Louis. It was first settled in 1840, and under a charter of 1893 is governed by a mayor and city council elected biennially. There is a normal school here, court-house, public library and numerous churches. It lies in the centre of an extensive agricultural district and has manufactures of iron, wagons, carriages, etc. Pop. (1890) 3,510; (1900) 5,960.

Kir'kus, William, American Episcopal clergyman: b. Yorkshire, England, 9 May 1830; d. Brooklyn, N. Y., 10 July 1907. After 16 years spent in the Congregational ministry in London he came to this country and entered the Episcopal ministry in 1871. He was many years rector of St. Michael and All Angels Church, Baltimore. He published; ‘Christianity, Theoretical and Practical’ (1854); ‘Miscellaneous Essays, Critical and Theological’ (1863); ‘Orthodoxy, Scripture and Reason’ (1865); ‘Religion: a Revelation and a Rule of Life’ (1886).

Kirkwood, kėrk'wŭd, **Daniel,** American educator: b. Bladensburg, Md., 27 Sept. 1814;

d. Riverside, Cal., 11 June 1895. In 1851 he became professor of mathematics in Delaware College, of which he was president in 1854–6; and in 1856–86 was professor of mathematics in Indiana University, save for the interval 1865–7, when he was professor of mathematics and astronomy in Washington and Jefferson College. He contributed largely to scientific journals, and published the volumes: ‘Meteoric Astronomy’ (1867); ‘Comets and Meteors’ (1873); and ‘The Asteroids or Minor Planets between Mars and Jupiter’ (1887).

Kirkwood, Samuel Jordan, American statesman: b. Harford County, Md., 20 Dec. 1813; d. Iowa City, Iowa, 1 Sept. 1894. Having removed to Richland County, Ohio, in 1835, he studied law, was admitted to the bar in 1843, in 1845–9 was prosecuting attorney of the county, and in 1850–1 a member of the State Constitutional convention. In 1855 he established himself in milling and farming in Iowa, the next year was a member of the State senate, and in 1860–4 Republican governor of Iowa. During the Civil War he levied 48 regiments of volunteers and equipped them at $500,000 less than the usual cost. He was United States Senator in 1865–7 (completing the unexpired term of James Harlan, resigned), was again elected governor of Iowa in 1875, in 1877–81 was a member of the Senate, and from 5 March 1881 to 6 April 1882, when he resigned, was secretary of the interior in Garfield's cabinet. He then withdrew from political life.

Kir′mess. See Kermess.

Kirtland, kėrt′lạnd, **Jared Potter,** American physician and educator: b. Wallingford, Conn., 10 Nov. 1793; d. Cleveland, Ohio, 10 Dec. 1877. He studied in the medical department of the University of Pennsylvania and was graduated from that of Yale in 1815; practised at Wallingford (1815–18) and Durham (1818–23), Conn., from 1823 at Poland, Ohio; in 1829–32 and 1834–5 was a member of the Ohio legislature; and was professor of the theory and practice of medicine in the Ohio Medical College (Cincinnati) in 1837–42. In 1843 he assisted in founding the medical department of the Western Reserve University, where he was professor of the theory and practice of medicine in 1843–64. He assisted in founding and became president (1845) of the Cincinnati Academy of Sciences, from 1865 the Kirtland Society of Natural History.

Kiser, Samuel Ellsworth, American journalist: b. Shippensville, Pa., 2 Feb. 1862. He engaged in journalism as a reporter, in 1896 contributed special sketches to the Cleveland *Leader,* and is now (1903) on the editorial staff of the Chicago *Record-Herald.* He is the author of ‘Budd Wilkins at the Show and Other Verses’ (1898); ‘Georgie’ (1890); ‘Love Sonnets of an Office Boy’ (1902).

Kishineff, kēsh-ẹ-nĕf′, Russia, the capital of the government of Bessarabia, 86 miles northwest of Odessa, on the Byk, an affluent of the Dniester. It is a bishop's see, is well laid out on a picturesque site, and among its educational institutions are a seminary for priests, two gymnasia, a public library, and botanic garden. The grapevine and tobacco are cultivated in the vicinity; it has extensive manufactures of woollens; and a considerable commerce with the East. Kishineff arose around the monastery of Kishnosaref in the 15th century. During the 18th century it was subjected to attacks from the Turks and in 1812 was annexed by Russia. It came into world-wide prominence in 1903 owing to a shocking massacre of Jews on the Russian Easter and succeeding days. Pop. (1897) 108,796, consisting of Russians, Moldavians, Jews, Bulgarians, Wallachians and Tartars.

Kishon, kī′shȯn, the biblical name of a river in Palestine. It is called El-Mukatta by the modern Arabs. Here Elijah slaughtered the priests of Baal, and Deborah and Barak defeated Sisera. The French and Turks fought a battle on its banks in 1799.

Kiss, an affectionate salute by contact of the lips. This is one of the most natural expressions of human affection, although often objected to now on sanitary grounds. The child expresses its love by a kiss, and men in all stages of refinement do the same. The word in Hebrew for ‘kissing’ is the usual expression to signify adoration; and the Latin *adoratio* literally means touching with the mouth. With some nations, as the Germans and French, it is customary for men to kiss each other after a long absence, etc. Kissing the hand of the sovereign forms part of the ceremonial of some European courts. Kissing the foot is a common oriental sign of respect. The later Roman emperors, whose court ceremonial was mixed with so many servile customs, first introduced this practice into the West. The popes of the Roman Catholic Church have required it as a sign of respect from the secular power since the 8th century. Pope Constantine I. first had his foot kissed by the Emperor Justinian II. on his entry into Constantinople in 710. Valentine I., about 827, required every one to kiss his foot; and from that time this mark of reverence appears to have been expected by all popes. When this ceremony takes place the pope wears a slipper with a cross, which is kissed. In recent times non-Catholics have not been obliged to kiss the pope's foot, but merely to bend the knee slightly. Even Roman Catholic princes sometimes perform only the genuflexion. When the pope is elected he is placed on the altar, and the cardinals, first of all, perform the adoration. Each approaches the newly-elected pope and kisses his foot, then his knee, and is then embraced by the pope, and saluted on the cheek.

Kissimmee′, Fla., city and county-seat of Osceola County, on Tohopekaliga Lake; on the Florida Midland and the Plant system, 18 miles south of Orlando. It has extensive fruit and vegetable interests and is well known as a hunting and fishing resort. The headquarters of the cattle raising industry of the State are here. Pop. (1890) 1,080; (1900) 1,132.

Kissing-bug. See Cone-nose.

Kis′singen, a celebrated watering-place in Bavaria, on the Saale, 30 miles north of Würzburg. It is surrounded by walls flanked with towers, and has a magnificent bathing establishment. The springs, five in number, and all saline, contain a large quantity of carbonic acid gas, are used both internally and as baths, and are considered efficacious in gout and affections of the stomach and chest. Besides 10,000 visitors annually attracted by the baths, about 500,000 bottles of water are annually exported. Pop. (1895), 4,306; (1900), 4,757.

Kist'na, a river of India, which separates the Deccan from southern India. It rises among the Western Ghâts, in the province of Bijapur, 42 miles from the Malabar coast, passes through Haidarabad, where it receives the Bhema on its left, and the Tungabudra on its right bank, both flowing, like it, from the Western Ghâts. Previous to the junction it is commonly called the Krishna, a name which is frequently given to the whole river. The united river falls into the Bay of Bengal. Its course is estimated at 700 miles. The Kistna is, perhaps, richer in gems than any other river of India. In the dry season diamonds, cat's-eyes, onyxes, and chalcedonies are said to be found, as well as a minute portion of gold.

Kit-Cat Club, a club formed in London about 1688, originally for convivial purposes, but which soon assumed a political character, having in the reign of Queen Anne become the resort of Marlborough, Walpole, Addison, Steele, and other leading Whigs. Its name was derived from that of Christopher Cat, who supplied the club with mutton-pies. The portraits (about three-quarters length) of the members were painted by Sir Godfrey Kneller, and hence a portrait of this length is called a «kit-cat.» The club was dissolved about 1720.

Kit-fox, or **Swift-fox,** a small fox (*Vulpes velox*) found in the central and northwestern parts of the United States, and especially common in the upper Columbia River region. It is about 20 inches long, with a broad, short face, and has the soles of the feet densely hairy. In summer its fur is of a brownish gray color, tinged with orange on the flanks and white below; in winter it becomes much paler. It is especially noted for its activity, and for the deep burrows which it digs, and in which its young are born and nurtured. It feeds mainly on ground squirrels and small birds.

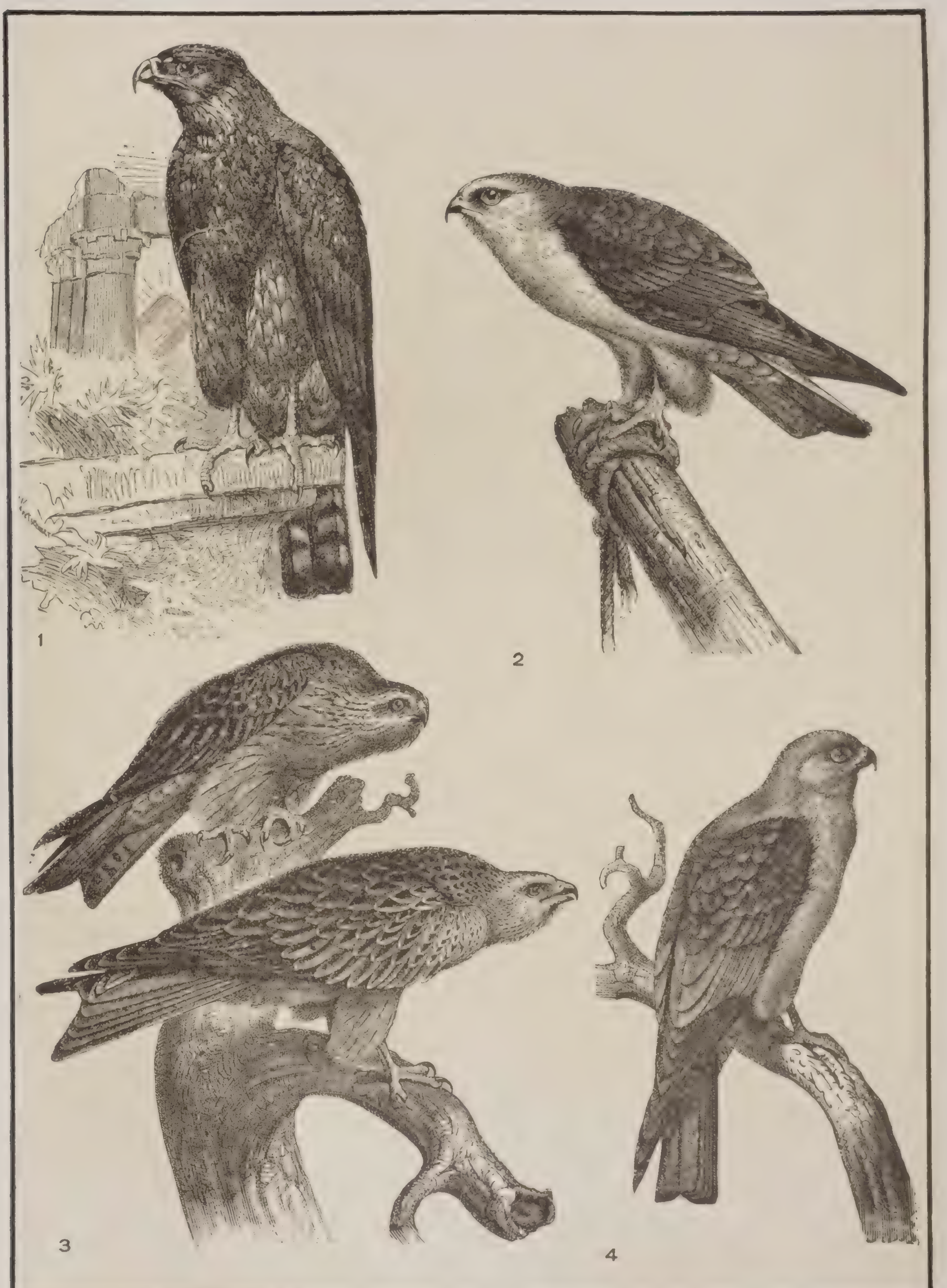
Kitchen Cabinet, a popular name applied to certain intimate political friends of President Andrew Jackson, who were supposed to have more influence over his actions than his official advisers. They were: General Duff Green, editor of the *United States Telegraph* at Washington, the confidential organ of the administration; Major William B. Lewis, of Nashville, Tenn., second auditor of the treasury; Isaac Hill, editor of the *New Hampshire Patriot,* and Amos Kendall (q.v.) of Kentucky. He was leader of the kitchen cabinet; worked for the Jackson «second choice» movement in Kentucky; and received the office of fourth auditor of the treasury. He was a man of exceeding ability, but of low moral perceptions, and, as a politician, was the incarnation of the worst evils of the American system. Harriet Martineau wrote of him, «I was fortunate enough once to catch a glimpse of the invisible Amos Kendall, one of the most remarkable men in America. He is supposed to be the moving spring of the whole administration.»

Kitchen-middens, or **Kjökkenmöddings,** mounds of shells, bones, charcoal, and refuse, remaining upon the site of prehistoric settlements along the coasts of seas, lakes, and rivers in many parts of the world. The exploration of them has brought to light many relics of the Palæolithic and Neolithic men who formed them, and contributed greatly to the knowledge of prehistoric archæology. Extensive deposits of this kind occur in various parts of the United States, where they are known as shell-heaps (q.v.); and their formation is going on wherever savage conditions still exist.

Kitchener, kĭch'ĕ-nėr, **Horatio Herbert,** 1st Viscount Kitchener of Khartum, English general: b. near Ballylongford, County Kerry, Ireland, 22 Sept. 1850. He was educated at the Royal Military Academy, Woolwich, and entered the Royal Engineers as a lieutenant in 1871, having already seen some active service on the French side in the Franco-Prussian war. In 1874–8 he was engaged on the survey of Palestine under the auspices of the Palestine Exploration Fund Committee, and in 1878–82, except for a short period as vice-consul in Anatolia, carried out a survey of Cyprus. In 1882 he was appointed to a cavalry command in Egypt, served in the Nile expedition of 1884–5, and for his services was made a brevet lieutenant-colonel and received the Khedive's star and the second class Medjidie. He was governor of Suakin 1886–8, and distinguished himself in the latter year by the bravery and skill with which he led the Egyptian troops against Osman Digna at Handoub. In 1889 he was in command of mounted troops on the Sudan frontier, and for his bravery, was created a Companion of the Bath. From 1888 till 1892 he was adjutant-general and second in command of the Egyptian army, and in 1892 became Sirdar. He commanded the Anglo-Egyptian force which recovered Dongola for Egypt in 1896, and his services were rewarded by promotion to the rank of major-general. He was also made K.C.B. and awarded the first-class Osmanieh order. He utterly destroyed the power of the Khalifa by the battle of Omdurman on 2 Sept. 1898, and for this crowning triumph was raised to the peerage (1898) as Baron Kitchener of Khartum and of Aspall, in the county of Suffolk, receiving also the formal thanks of Parliament and a grant of £30,000. He was appointed governor-general and commander-in-chief of the Egyptian Sudan in 1899, but resigned this post and that of Sirdar of the Egyptian army in the latter part of the same year, in order to accompany Lord Roberts to South Africa as chief of his staff in the war with the Boers. When Lord Roberts left South Africa to become commander-in-chief at home, Kitchener succeeded him as commander-in-chief of the forces in South Africa, and carried on the war to its successful conclusion with the acceptance of peace conditions by the Boers on 31 May 1902. He was now created viscount and appointed commander-in-chief in India in the same year. Consult: Steevens, ‹With Kitchener to Khartum› (1898).

Kitch'in, George William, English historian and clergyman: b. Hadleigh, Suffolk, 7 Dec. 1827. He was educated at Oxford, took orders in the English Church, and was prominent as tutor and lecturer at the university for many years. He became dean of Winchester in 1883 and in 1894 was translated to the deanery of Durham. He is widely known by his ‹History of France,› a standard work (1873–7); but has also published ‹Winchester› in the ‹Historic Towns› series (1890); ‹Life of Harold

KITES.



1. Black-winged Kite.
2. Egyptian Kite.
3. Black Kite and Common Kite.
4. Mississippi Kite.

Browne, Bishop of Winchester' (1895); 'Life of Pope Pius II.' (1881); etc.

Kitch'iner, William, English physician and author: b. London 1775; d. there 1827. He inherited a handsome fortune, was educated at Eton, obtained the degree of M.D. from Glasgow, and settled in London. He treated eating and drinking as the only serious business of life; and having caught the attention of the public by singularity of conduct, proceeded to promulgate, under the title of 'The Cook's Oracle,' the laws of the culinary art, professedly founded on his own practice. Besides his 'Cook's Oracle' (or 'Apicius Redivivus'), Kitchener wrote 'Practical Observations on Telescopes,' etc. (1815); 'Peptic Precepts' (1821); 'Art of Invigorating and Prolonging Life' (1822); 'Brief Memoir of Charles Dibdin' (1823); 'The Economy of the Eyes' (on spectacles, telescopes, etc., 1824-5); 'Traveler's Oracle' (1827); etc.

Kite, a small or medium sized bird of prey, of the falconine subfamily *Milvinæ,* distinguished from the other hawks by the more or less forked tail, long, pointed wings, absence of facial ruff, generally weak build and certain skeletal peculiarities. Four species occur in the United States, their proper homes being southward and in the interior; but owing to their great powers of flight they occasionally stray to other parts or rarely cross the ocean to Europe. The swallow-tailed kite (*Elanoides forficatus*) is a beautiful bird, with all the grace, figure, and capacity for flight of a gigantic swallow, and is especially prone to wander widely from its home in the lower Mississippi Valley. The remaining three are the white-tailed kite (*Elanus leucurus*), the Mississippi kite (*Ictinia mississippiensis*), and the everglade kite (*Rostrhamus sociabilis*). The last is common in Florida and southward, and has the habits of a marsh-hawk. All of the kites feed largely upon insects and small reptiles, but capture weak birds and mammals also. They nest in trees and bushes. In common with other small hawks the kites have the habit of pausing during flight suspended in mid air, in imitation of which the common paper toy is said to have been constructed and named. When falconry was in vogue in Europe the native species of kite served as the quarry in the most highly developed branch of that sport. The group is more familiar in the warm parts of the Old World than in America.

Kite, a common aerial toy in the form of two crossed sticks covered with paper, and balanced with a tail of string, on which are tied bits of cloth or paper. Kites were first employed in aid of science in 1749, by Dr. Alexander Wilson and Thomas Mellville, of Scotland, who by means of a thermometer attached to a kite were able to take temperatures above the earth's surface. Franklin's experiments with electricity by means of a kite and key are familiar to everyone. Among the men who have given much thought and labor to improve kite making are W. A. Eddy, S. P. Langley, Octave Chanute, Lawrence Hargrave, J. B. Millet, J. W. Davis, C. F. Lamson, H. D. Wise, Captain Baden-Powell, and others The first improvement was to make a tailless kite, and this was perfected by Mr. Eddy. (See AERODROME; FLYING MACHINE.)

In 1895 Captain Baden-Powell, of England, weighing 150 pounds, was enabled to hoist himself 100 feet in the air by a tandem of five kites. Mr. Hargrave, with three kites, raised a total weight of 208 pounds to the height of 16 feet, as far as he cared to go. Lieutenant Wise, in 1897, with four kites, rose to 42 feet, the entire weight raised being 229 pounds. Mr. Eddy has done much to develop tandem kite flying. In 1897 he made a tandem of nine Eddy-Malay kites on a cord two miles long, with an elevation of 5,595 feet, the same being kept up for 15 hours. At Blue Hill Observatory, near Boston, this height was exceeded, the tandem of seven Malay and two Hargrave kites, with an area of 170 feet, rising 8,740 feet above Blue Hill, or 9,375 feet above sea-level. It took three miles of piano-wire and the work of three men for 12 hours to accomplish this feat. Piano wire has been found preferable to cord, having greater tensile strength and presenting less surface to the wind.

In the United States weather bureau para-kites are used for the purpose of recording the velocity of the wind, and the humidity and temperature at high altitudes, by the meteorograph. These can be obtained at a single observation and several hours before the effects are known in the lower atmosphere. Photographs have been taken by means of a camera fastened on the frame of a kite and operated by a cord, and Mr. Eddy has an arrangement of eight cameras strapped together in which all the shutters can be opened at once, and by this means a complete view of the horizon can be taken. Inventors of flying and soaring machines have made extensive use of kites in planning the construction of their various contrivances.

The first permanent station for kite flying in Europe, and the first in the world established under governmental auspices, is that at Viborg, in the extreme northern part of Denmark, the governments of Denmark, Sweden and France co-operating in the scheme. The most important building at the station is a tower 33 feet high, mounted on circular rails, so that it can be rotated easily, and left open on one side. No matter from which direction the wind blows, the tower is turned with this gap to leeward. Thus the operator can sit within, where the windlasses are, and watch his kites. The latter, of course, naturally take their lines down the wind. There are two windlasses, controlled by electric motors, one being held in reserve for immediate use in case the wire on the other breaks while in service.

Kites in War. Scientific kite flying has become a part of military tactics among European nations. Since kites have been modified and improved, their use has been continually extended, until now they are employed for quite a number of purposes, such as for signaling to a long distance or for locating the position of a camp; for obtaining a photograph of hostile country or of an enemy's fort by suspending a camera from the kite line and operating it by electric wire or clockwork; for making meteorological observations with self-recording instruments, and for lifting men for making reconnoissances. Kites offer great advantages over captive balloons in that they are more easily transported, are less expensive, and can be used in a strong wind.

Kit′son, Henry Hudson, American sculptor: b. Huddersfield, England, 1865. At Paris, he studied at the Ecole des Beaux Arts, under Bounaissieux. He was awarded three gold medals, by the Massachusetts Charitable Mechanics' Association; a gold medal of honor by the American Art Association of New York. He received a medal at the Universal Exposition, Paris, 1889, as well as that in 1900.

Kittan′ning, Pa., borough and county-seat of Armstrong County, on the Allegheny River and the Allegheny Valley railroad, 43 miles north of Pittsburg. There is natural gas here and coal and iron ore are found in large quantities in the neighborhood. It has extensive iron and steel mills, foundries, lumber and flour-mills, potteries, brick and clay works, and other industries. Pop. (1890) 3,090; (1900) 4,000.

Kittatinny (kit′ạ-tĭn-ĭ) **Mountains,** a range which extends from Ulster County south and southwest, through the northwestern part of New Jersey and into Pennsylvania. The names by which the range is generally known are in New York, the Shawangunk, in New Jersey, the Kittatinny, and in Pennsylvania the Blue Mountains. The range varies in height from 500 to 1,800 feet. The mountains belong to the Appalachians, and form the eastern ridge of the main part of the system.

Kittery, kĭt′ē-rĭ, Maine, town in York County, on the Piscataqua River and the Boston & Maine railroad; 4 miles from the Atlantic Ocean, opposite Portsmouth, N. H. The United States Naval Station and Ship-building Yards are located here on Corifincutal Island, but are known as the Portsmouth Navy Yard. The town is one of the oldest in New England. It was settled in 1624 and incorporated in 1647. It was the birthplace and former home of Sir William Pepperell. There are numerous hotels and churches here, public schools and the Rice Public Library containing 5,000 volumes. Pop. (1890) 2,864; (1900) 2,872.

Kittim, or **Chittim,** a term of Biblical origin for the inhabitants of the island of Cyprus, derived from the important town of Kition or Cition, the modern Lanarca. The «isles of Kittim» are mentioned in Jeremiah ii. 10, and Ezekiel xxvii. 6.

Kit′tiwake. See GULLS.

Kit′to, John, English Bible student: b. Plymouth, England, 4 Dec. 1804; d. Cannstadt, near Stuttgart, Germany, 25 November 1854. He was the son of a mason at Plymouth, and after obtaining a very scanty education began to assist his father, but met with a fall which deprived him of the sense of hearing. Sent to the workhouse he was presently apprenticed to a shoemaker, who used him so cruelly that the magistrates canceled his indentures. He therefore returned to the workhouse, and there, notwithstanding his physical defect, turned his talents to such account that in 1825 he published 'Essays and Letters,' which attracted no little attention. Shortly afterward he went abroad in the suite of the British envoy at the Persian court, and from 1829–33 acquired that familiar acquaintance with the East which he afterward employed in his writing. He founded and edited the 'Journal of Sacred Literature' (1848–53), and although a layman of the English Church received in 1844 the degree of D.D. from Giessen. He published 'The Pictorial Bible' (1835–8); 'Pictorial History of Palestine' (1841); 'Gallery of Scripture Engravings' (1841–3); 'Cyclopædia of Biblical Literature' (edited 1843–5); 'The Lost Senses: Deafness and Blindness' (1845); 'Physical Geography of the Holy Land' (1848); 'Daily Bible Illustrations: Morning Readings' (1849–51); 'Evening Readings'; etc. In his latter years he enjoyed a pension of £100 a year from the crown.

Kit′ton, Frederic George, English author and artist. After receiving his education at a private school in Norwich, he was put under the training of W. L. Thomas, managing director of the 'Graphic,' and became an expert draftsman and wood engraver. In 1882 he added literature to his profession of book illustration. Among his delightful appreciations of artists, illustrators and authors of his time may be mentioned 'Phiz (Hablot Knight Browne)' a memoir (1882); 'John Leech, Artist and Humorist' (1883); 'Charles Dickens by Pen and Pencil' (1890); 'Dickens and his Illustrators' (1898).

Kitt's, Saint. See CHRISTOPHER, SAINT.

Kittul, kĭ-tool, or **Kittool.** See FIBRE.

Kiushiu, kyoo′syoo′, or **Kyushu,** Japan, one of five large islands of the empire; area 13,788 square miles. It contains nine provinces but for administrative purposes is divided into seven *Ken* or prefectures. The island is mountainous and volcanic. The principal harbor is the treaty port, Nagasaki, but in 1889 five special ports of export were opened. Pop. 6,637,551.

Kiwi-kiwi, kē′wĭ-kē′wĭ. See APTERYX.

Kizil-Irmak, kiz′ĭl-ĭr-mäk′ (the Turkish for Red River) a river known to the ancients as the Halys, the principal river of Asia Minor. Rising in the east of the peninsula, it flows in a circuitous route for over 500 miles, and enters the Black Sea near Sinope.

Klamath, klä-măt, a name applied to several tribes of American Indians formerly living along the Klamath River in Oregon and California, but now settled on a reservation at Klamath Lake. Their present lands were given them by treaty in 1864, the reservation containing 1,360 square miles. The Klamaths who now number about 800 are fairly civilized and are expert stock-raisers.

Klamath Lake, a small lake in Klamath County, Oregon, at the base of the Cascade Range. It is 44 miles long by 6 to 14 miles wide. It consists of two considerable bodies of water, connected by a narrow strait less than two miles wide. Klamath River is the outlet, and issues from the south end, or Lower Klamath Lake, and flows thence into California.

Klapka, klŏp′kŏ, **Gyorgy** (GEORGE), Hungarian general: b. Temesvar 7 April 1820; d. Budapest 17 May 1892. He entered the Austrian army in 1838 and rose to high rank, but in 1848, at the beginning of the revolution, joined the Hungarians and distinguished himself in nearly all the battles with the Austrians; in more than one the misfortune of the day was decided by the troops under his command. His most noted exploit was his defense of Komorn, which he continued to hold for some weeks after all the rest of Hungary had submitted.

He lived in exile till the amnesty of 1867 permitted him to return home, and then became a member of the Hungarian Diet. He published ‘The National War in Hungary and Transylvania’ (1851), one of the best works on the subject; ‘The War in the East’ (1855); ‘Memoirs’ (1869); ‘Recollections’ (1887).

Kléber, Jean Baptiste, zhŏṅ bäp-tēst klā-bãr, French general: b. Strasburg 9 March 1753; d. Cairo, Egypt, 14 June 1800. He first studied architecture in Paris, then entered the military school at Munich; and having joined the Revolutionary army was appointed brigadier-general and sent to La Vendée. He afterward commanded the left wing of the army of Jourdan, directed both the passage of the Rhine at Düsseldorf and the subsequent retreat; defeated the Prince of Würtemberg, and subsequently Prince Charles. Bonaparte entrusted the command of the army in Egypt to Kléber, who, deeming resistance useless, concluded the convention of El Arish with the British, by which the French were to be conveyed home with arms and baggage. This being disowned by the English government, Kléber determined upon the resubjugation of the country, in which he was successfully engaged when he was assassinated.

Klein, klīn, **Bruno Oscar,** American composer and pianist: b. Osnabrück, Germany, 6 June 1858. He was graduated from the Gymnasium Carolinium in his native town and studied music at the Royal Music School at Munich. He came to the United States in 1878 and has since made his home in New York, where he is professor of music at the Convent of the Sacred Heart. He has published many songs and motets, a large number of compositions for the piano, and various other works. In 1895 his grand opera, ‘Kenilworth,’ was produced at Hamburg.

Klein, Felix, German mathematician: b. Düsseldorf 25 April 1849. He was educated at Bonn, became Plücker's assistant in the physical institute in 1866, was appointed lecturer at Göttingen in 1871, professor at Erlangen in 1872, and held chairs from 1875 in the Technical High-school of Munich, from 1880 at Leipsic, and from 1886 at Göttingen. In 1893 he represented Göttingen at the World's Columbian Exposition at Chicago. He exercised large influence on American mathematics, having taught many instructors in institutions in this country. Among his works are ‘Ueber Riemanns Theorie der algebräischen Funktionen’ (1882); ‘Vorlesungen über das Ikosaëder und die Auflösung der Gleichungen vom fünften Grad’ (1884); ‘Einleitung in die höhere Geometrie’ (1893), and ‘Evanston Colloquium’ (1893).

Kleist, Heinrich Bernt Wilhelm von, hīn'rĭʜ bĕrnt vĭl'hĕlm fōn klīst, German dramatist: b. Frankfort-on-the-Oder 18 Oct. 1777; d. Wannansee, near Potsdam, 21 Nov. 1811. He entered the army in 1795, but left it in 1799 to study at Frankfort and Berlin, and later engaged in journalism in Dresden and Berlin. His first drama, ‘Die Familie Schroffenstein,’ was published in 1803, and was followed by ‘Amphitryon’ (1807); ‘Penthisilea,’ a tragedy (1808); ‘Kätchen von Heinbronn’ (1810); ‘Der zerbrochene Krug’ (The Broken Jug) (1811). A volume of ‘Tales’ appeared (1810–11); and posthumously, ‘The Battle of Hermann,’ and ‘Der Prinz Von Homburg.’ He exhibits some of the worst faults of the Romantic school, to which he belongs, but nevertheless his best plays, such as ‘The Prince of Homburg’ and ‘The Broken Pitcher’ possess sufficient vigor and fidelity to life to make them popular even at the present day. The best of his tales is ‘Michael Kohlhaas,’ a story of Brandenburg in the Middle Ages. He failed to gain recognition and shot himself, after first shooting a woman whom he loved, and who like him was weary of life. His works did not receive notice till after his death, when they were made known by Tieck.

Klephtes, klĕfts (Greek, «thieves»), Greek bandits who kept themselves free in the mountains, and carried on a perpetual war against Turkish rule, considering everything belonging to a Turk a lawful prize. During the war of independence these Klephtes furnished the Greeks with some of their best soldiers and leaders. Whole tribes, as the Suliotes and Chimariots in Epirus, and the Sphakiots in Crete, are to be numbered among them.

Kleptoma'nia (from Greek *κλέπτειν*, steal, and *μανια*, madness), a mania for stealing, a propensity often regarded as being irresistible and involving a kind of moral insanity. It is frequently pleaded in law courts as an excuse for theft, although the act constitutes a legal offense. See INSANITY.

Klinger, Max, German painter, etcher and sculptor: b. Leipsic 18 Feb. 1857. He was a pupil of Gussow at Karlsruhe and later at Berlin; studied also at the Berlin Academy; was active at Rome in 1888–92; and from 1893 in Leipsic. He was at first chiefly an etcher (1879–86), perhaps the best of his work in this sort being the ‘Brahms-Phantasien’ (1894), deriving their subjects from various music of that composer. Then he directed his attention to painting in oils, and executed heroic canvases of ‘The Crucifixion’ and ‘Christ on Olympus.’ One of the best of his plastic works is his polychromatic statue of Beethoven (Leipsic Museum), in which onyx, bronze, and differently colored marbles are combined. He published ‘Malerei und Zeichnung’ (3d ed. 1899).

Klip'springer, a small, robust antelope (*Oreotragus saltator*), about equal in size to the chamois, and resembling it in habits, found in the mountainous districts of South Africa. It is yellowish-gray, and the hair is long, and makes a rough fur. The flesh of the klipspringer is particularly esteemed; the hair is also valued for stuffing saddles; and it has therefore become rare in localities where it was once common. The pinnacles and precipices in which it delights make hunting it with dogs impossible, but to get within rifle shot of it is not difficult. Many interesting habits are given by writers on South African zoology and natural history.

Kloet, a volcano on the island of Java. Although among the smaller of the numerous volcanoes there, it came prominently into notice on account of its eruption in May 1901, in connection with which, besides its destructive effects, there were peculiar atmospheric phenomena.

Klon'dike, The, a famous gold-bearing stream which enters the Yukon, the principal river of the Northwest Territory, Canada, 45 miles below the mouth of Sixty Mile Creek. In recent years the term Klondike is applied to the region surrounding the river and its tributaries, which lies between Alaska and the British possessions. As early as 1862 gold was discovered in Alaska, but no special notice was taken of it; 13 years later gold was found at the head of the Stikine River. In 1880, Juneau, a Frenchman, with a companion started out from Sitka and traveling north discovered gold in a creek which they named Gold Creek, and at the mouth of this creek founded a town first called Harrisburg and later Juneau and which soon became the centre of mining supplies and a considerable fur trade. In 1886 a rich find was reported on Stewart River, in the Yukon district, and the following year an expedition was sent out by the Canadian government, headed by George M. Dawson, which explored the Upper Yukon and reported the existence of an abundance of gold. The difficulties and hardships to be encountered in reaching the location were so great that but a few hundred miners attempted to seek their fortunes there. These, however, persevered and established Circle City on the Alaska side of the boundary and by 1892 were taking out an annual total of about $300,000.

It was not till 1897 that the wonderful riches of the Klondike region were made known through George McCormick, who went from Illinois to Alaska in 1890 and there married an Indian squaw. In 1897 he located at the mouth of the Klondike River for the purpose of salmon fishing, but this not proving profitable that season he in company with some Indians moved up the river till they came to Bonanza Creek, which they began to explore for gold. They found large quantities of paying dust and located an extensive claim. Going to the Indian village from which they came for supplies, the news of their find quickly spread, other claims were forsaken, some of the prosperous towns were deserted and miners from every direction poured into the newly found gold fields. Joseph Ladue, an old prospector and well-known miner, was one of the first to explore the country, and his statements gave an impetus to the steadily increasing stream of gold hunters.

Clarence Berry, a miner, returned to Juneau in the fall of 1897 on his way home to San Francisco with $130,000 in dust which had been thawed and sluiced out of 30 box lengths of soil in a few weeks' time. And this is but one of many similar experiences, which aroused the wildest excitement all over the United States, with which the Californian «gold fever» of 1849 stands no comparison. All through the fall and winter of 1897 the mad rush for the Klondike region continued. The almost unknown towns of Juneau, Dyea and Skaguay sprang into sudden prominence and rapidly added to their population, while Dawson City in which the first hut was built in September 1896, six months later had 500 houses, and in 1901 had grown to a prosperous city with handsome residences, hotels, banks, schools, churches and many modern improvements.

The Klondike is not far from the arctic regions, and for seven months of the year intense cold prevails, varied by furious snow storms which begin in September and occur at intervals till May. By 20 October ice is formed over all the rivers. The ground for the better part of the year is frozen to the depth of from 3 to 10 feet, and the only way to get at the gold is to thaw the earth by building a fire and afterward break up the soil with a pick. When the warmer weather comes this is washed in running water which carries away the dirt and pebbles, leaving the gold at the bottom of the pan or sieve. Many nuggets of fine gold have been found varying in value from a few dollars up to a hundred. The amount of gold dust and nuggets taken out of the Klondike region within two months after the discovery was $5,000,000, and up to the close of 1902 the entire output was estimated at $30,000,000. See ALASKA.

Klopsch, klŏpsh, **Louis,** American journalist and philanthropist: b. Germany 26 March 1852. As proprietor of the New York ‹Christian Herald› he has instituted several extensive international charities. Since 1892 he has raised through his paper and distributed for the relief of human suffering over $2,000,000. In 1892, during the Russian famine, he was received by the present Czar Nicholas II., and in 1898 President McKinley appointed him one of the commissioners to relieve the reconcentrados of Cuba. In 1900 he visited the famine fields of India; in 1901 Li Hung Chang by cable interested him in behalf of the starving people of Shensi, and in 1903 he visited the famine districts of the north of Europe, where he had audiences with the King and Queen of Sweden, Queen Alexandra of England, the Empress of Russia, and the King of Denmark. Since 1900 he is supporting and educating 5,400 famine orphans in India.

Klopstock, Friedrich Gottlieb, frēd'rĭн gōt'lēb klop'stok, German poet: b. Quedlinburg, Prussia, 2 July 1724; d. Hamburg 14 March 1803. He is widely famous as the author of the sacred epic, ‹The Messiah,› the first three cantos of which were published in 1748. They excited general attention, and in consequence Klopstock was invited to Copenhagen by the minister Bernstorff, and offered a small pension. In 1764 he wrote his drama ‹Hermanns Schlacht› (Battle of Arminius), and in 1771 left Copenhagen for Hamburg, under the character of Danish secretary of legation and counsellor of the margraviate of Baden. In Hamburg he finished his ‹Messiah› (1773). He also wrote ‹Die Gelehrtenrepublik› (The Scholar's Republic) (1744), his chief work in prose; ‹Geistliche Lieder› (1758); ‹Oden› (1771); and several dramas, in addition to the one already named. His reputation was greater in his own day than has since been the case, but he is admitted to have done great service to German literature in assisting to free it from foreign, especially French influence. Consult: Lyon, ‹Ueber Klopstocks Verhältniss zu Goethe› (1879); Lappenberg, ‹Briefe von und an Klopstock› (1867).

Klotz, klōts, or **Clotz, Matthias,** Tyrolese violin-maker: b. about 1640; d. about 1696. He was a pupil of Jakob Stainer at Abson near Innsbruck, there established himself, and made violins much in Stainer's manner, so that only the less metallic tone of Klotz's instruments offers a distinguishing feature. His violins range in date from 1675 to 1696.

Knapp, năp, **William Ireland,** American educator: b. New York 10 March 1835. He was graduated from Colgate University, Hamilton, N. Y., and was professor of modern languages there, 1860–5. He held similar positions at Vassar College 1865–7; Yale 1879–92; and the University of Chicago 1892–5. He has since lived in Europe and has published ‘Life of George Borrow’ (1883); and several Spanish and French text-books; and has edited several Spanish authors as well as Borrow's ‘Lavengro,’ and ‘Romany Rye’ (1900).

Knap′sack, a bag or case of leather or strong cloth, used by soldiers, tourists, and other travelers for carrying light personal baggage. Knapsacks are made in various styles, and are usually strapped to the back.

Knap′weed. See CENTAUREA.

Knaus, Ludwig, lood′vĭg knows, German painter: b. Wiesbaden 5 Oct. 1829. From 1845 to 1852 he studied art at Düsseldorf under Sohn and Schadow, but soon shook himself free from their influence and started on a path of his own. He chose scenes from country life and in 1850 painted ‘The Country Dance’; ‘The Players,’ now in the gallery at Düsseldorf, a replica being in the gallery of Leipsic. His early pictures in this style were received with favor, although characterized by the dark, dull coloring of the Düsseldorf school. In 1852 he went to Paris, and resided there for eight years, which were fruitful in many well-known pictures of his early style, ‘The Golden Wedding’ (1858); ‘The Baptism’ (1859); and ‘Starting for the Dance.’ Returning to Düsseldorf in 1866, he remained there for eight years, during which period he produced the pictures on which his reputation as a genre painter is chiefly founded. Amongst these is ‘The Child's Party’ (1869), in the Berlin National Gallery; ‘Funeral in a Hessian Village’ (1871); ‘The Goose-Girl’ (1872). These works are distinguished by naturalness and naïveté, by delicate humor, mastery of detail, lifelike coloring and vivid expression. After his appointment to the direction of a studio in the Art Academy at Berlin he reached his latest manner, which was formed largely by his study of the Dutch school, from which he acquired his final skill as a colorist. His pictures, however, no longer showed the naïveté, the directness of his earlier productions; which were replaced by thoughtfulness and a striving after the didactic or admonitory. The most remarkable paintings of this period are ‘The Holy Family’ (1876); ‘Tavern Scene — Bad Ways’ (1876); ‘The Refractory Model’ (1877); etc. He has also painted many portraits combining the picturesqueness of genre with lifelike expression. Among his miscellaneous works are his designs in Watteau style for room decorations, his lead pencil sketches and aquarelles. Very many of his works have been reproduced by photography or engraving.

Kneeland, nē′land, **Samuel,** American naturalist: b. Boston, Mass., 1 Aug. 1821; d. Hamburg, Germany, 27 Sept. 1888. He was graduated from Harvard in 1840, practised medicine in Boston 1845–50, and was an army surgeon during the Civil War. In 1866 he became professor of zoology and physiology in the Massachusetts Institute of Technology. He was a member of numerous scientific societies, and in addition to editing ‘The Annual of Scientific Discovery’ (1886–9), a translation of ‘Andry's Diseases of the Heart’ (1847), and Smith's ‘History of the Human Species,’ wrote ‘Science and Mechanism’ (1854); ‘The Wonders of the Yosemite Valley and of California’ (1871); ‘An American in Iceland’ (1876).

Kneipp, knīp, **Sebastian,** German clergyman: b. Stefansried, Bavaria, 17 May 1821; d. Worishofen, Swabia, 17 June 1897. He studied theology at Dillingen and Munich, became a Roman Catholic priest in 1852, and pastor at Worishofen in 1881. He became known for the «Kneipp cure,» which he advocated for years. This method was based on water, fresh air, sunshine, and a scheme of regular activity, and included walking barefoot in dew-moistened grass and on snow. Kneipp wrote: ‘Meine Wasserkur’ (1887; Eng. trans. 1891); ‘Mein Testament’ (1894); ‘Vorträge in Wörishofen’ (1894–8); and other works.

Kneisel, nī′zĕl or knī′zĕl, **Franz,** German-American musician: b. Rumania 1865. He was a pupil in violin-method of Grün and Hellmesberger, became concert-master of the orchestra at the Hofburg Theatre of Vienna, of Bilse's orchestra at Berlin, and later of the Boston Symphony Orchestra. He appeared prominently with the Symphony as solo violinist, and organized under his leadership the Kneisel quartette for chamber-music, in which he played the first violin part. This quartette, all of whom were also members of the Symphony, withdrew from the latter in 1903 to undertake an extensive tour.

Kneller, nĕl′ėr, SIR **Godfrey,** originally GOTTFRIED KNILLER, Anglo-German portrait painter: b. Lübeck 8 Aug. 1646; d. Twickenham, England, 19 Oct. 1723. He studied under Bol and Rembrandt at Amsterdam. He visited Italy in 1672, and painted several historical pieces and portraits both at Rome and Venice. On his return he visited England, in 1675, and was introduced to Charles II., by whom he was much patronized. He was equally favored by James II. and William III., for the latter of whom he painted the «beauties» at Hampton Court, and several of the portraits in the Gallery of Admirals. He also painted the portrait of the Czar Peter for the same sovereign, who in 1691 knighted him, and made him gentleman of the privy chamber. Queen Anne continued him in the same office, and George I., in 1715, made him a baronet. He continued to practise his art to an advanced age. He left money and instructions for a splendid monument to himself in Westminster Abbey, erected by Rysbrack in 1729, which bears an epitaph by Pope. His coloring is true and harmonious, and his drawing correct, but he displays a great want of imagination in his pictures, the attitudes, action, and drapery being insipid, unvarying, and ungraceful. Many of the portraits bearing his name were only partly painted by himself, the less important portions being done by assistants.

Kniazhnin, Jakov Borisovich, Russian littérateur and dramatic author: b. Pskov 3 Oct. 1743; d. 14 Jan. 1791. He was educated in the University of Saint Petersburg, entered the army, where however he stayed only a short time, and for a number of years was connected with the civil service. In 1783 he became a member of the Russian Academy at Saint Petersburg. Of his tragedies the majority are but imitations of French plays, containing with the exception of one or two nothing original. His comedies are replete with bright passages and full of spirit. The tragedies most worthy of mention are: ‹Didon› (1769); ‹Vladimir i Iaropolh› (1779); ‹Vladisan› (1786); ‹Roslav› (1784); ‹Vadim Novgorodskiï› (1789). The two last were patriotic plays, some of the passages of the ‹Vadim› being of such a character as to alarm Catharine II. and cause its suppression, but it was published in 1793, two years after the death of the author. Of his comedies the most noteworthy are: ‹Khvastum›; ‹Chudakhi›; and the light opera ‹Neschastie ot Karety.› A complete edition of his works, in four volumes, was published in 1787, several subsequent editions being published in two volumes in 1847–8.

Knickerbocker, nĭk'ėr-bŏk-ėr, **Herman,** American lawyer and legislator: b. Albany, N. Y., 27 July 1782; d. Williamsburg, N. Y., 30 Jan. 1855. He studied law at Albany, N. Y., was admitted to the bar in 1803, and entered practice in Albany. In 1809–11 he was a Federalist representative from New York in the 11th Congress, in 1816 was elected to the New York State assembly from Rensselaer County, and for some time also held the office of county judge. He became a Democrat during Jackson's administration. Through his hospitality he was known as «Prince Knickerbocker.»

Knickerbocker's History of New York, a celebrated work written by Washington Irving (q.v.). It gives picturesque description of the early burgomasters, the patroon Killian Van Rensselaer, Stoffel Brinkerhoff, William Kieft, called «William the Testy,» Antony Van Corlear the trumpeter, Peter Stuyvesant with his silver leg, and a complement of Indians, Dutch, and Yankee settlers. «Before the appearance of my work,» says Irving, «the popular traditions of our city were unrecorded; the peculiar and racy customs and usages derived from our Dutch progenitors were unnoticed or regarded with indifference, or adverted to with a sneer.»

Knigge, Adolphus Francis Frederic Louis, BARON DE, German author: b. Brendenbeck, near Hanover, 16 Oct. 1752; d. Bremen 6 May 1796. In 1769 he went to the University of Göttingen, where he studied law, later became assessor at Cassel, in 1777 was made a chamberlain at Weimar, and finally in 1791, after leading a very unsettled life, became a resident of Bremen. Here he joined the Illuminati and later became implicated in the disputes relating to that secret order. Of his writings by far the most important is his ‹Ueber den Umgang mit Menschen› (On Intercourse with Men), which contains much good advice and a collection of upright methods of living so as to get the greatest joy and happiness at the same time being useful. Of his other works those most read were: ‹Der Roman meines Lebens› (1781–7); and ‹Die Reise nach Braunschweig› (1792).

Knight, nīt, **Charles,** English editor and publisher: b. Windsor 19 March 1791; d. Addlestone 9 May 1873. He succeeded his father as a bookseller in Windsor, and for several years edited a Windsor newspaper. Having removed to London in 1823, he established ‹Knight's Quarterly Magazine,› in 1827 undertook the superintendence of the publications of the Useful Knowledge Society, for which he superintended and published the ‹Library of Entertaining Knowledge›; the ‹Penny Magazine› and the ‹Penny Cyclopædia,› afterward remodeled as the ‹English Cyclopædia›; etc. Other publications of his were the ‹Pictorial Bible,› the ‹Pictorial Prayer-book,› ‹Pictorial Shakespeare,› and many others. The Shakespeare was edited by Knight himself, and has, both for its text and notes, taken a high place among editions of the great dramatist. The most important of his own writings, the ‹Popular History of England,› appeared 1854–61. His autobiography, ‹Passages of a Working Life During Half a Century,› was issued 1863–5.

Knight, Daniel Ridgeway, American painter: b. Philadelphia, Pa., 1850. He has been a pupil of Gleyre and a student at the Ecole des Beaux Arts, at Paris (1872), and four years later was in the studio of Meissonier, from whom he learned many of the secrets of brilliant technique. He has received honors from Paris, Munich, and Antwerp for his exhibited works, and has also been awarded medals in his own country. He is a painter, rather French than American, and he has idealized the French peasantry in more than one of his refined and delicately designed pictures, among which we may mention as especially characteristic of his charming qualities ‹The Veteran› (1870); ‹The Old Beau› (1873); ‹Washerwoman› (1875); ‹Harvest Scene› (1877); and ‹Sans Dot› (1883).

Knight, Edward Frederick, English journalist and author: b. 23 April 1852. He was graduated from Cambridge and in 1891 became a member of the staff of the London *Times* as a correspondent, being with the armies in the Sudan campaign of 1896, and in Greece in 1897. He has written: ‹Albania and Montenegro›; ‹The Cruise of the Falcon›; ‹The Threatening Eye›; ‹Sailing›: ‹The Falcon on the Baltic›; ‹The Cruise of the Alerte›; ‹Save Me from My Friends›; ‹Madagascar in War Time›; ‹Rhodesia of To-day›; etc.

Knight, Edward Henry, American mechanical expert: b. London, England, 1 June 1824; d. Bellefontaine, Ohio, 22 Jan. 1883. After studying both surgery and steel engraving he came to this country in 1845 and settling in Cincinnati was a patent attorney for several years. In 1863 he entered the civil service in Washington, D. C., where he prepared the annual reports of the Patent Office and established the ‹Official Gazette of the United States Patent Office› in 1871. He served on the international juries of world's fairs at Philadelphia (1876), Paris (1878), Atlanta (1881), and was made a chevalier of the Legion of Honor in 1878. He published ‹The American Mechanical Dictionary› (1872–6); ‹The New Mechanical Dictionary› (1876–80).

Knight, Richard Payne, English numismatist and archæologist: b. Wormsley Grange, near Ludlow, Herefordshire, 1750; d. London 24 April 1824. Having been bequeathed a fortune, he traveled extensively, wherever he went, and especially in Italy, where he went in 1767, 1777, and 1785, making a specialty of collecting ancient coins, bronzes, gems, drawings, and other antiques. From 1780 to 1806 he was a member of Parliament, and for 10 years, 1814–24, served as one of the trustees of the British Museum, to which, upon his death, he left his magnificent archæological collection. His works, which were numerous, included: ‹An Account of the Remains of the Worship of Priapus lately existing at Isernia in the Kingdom of Naples› (1786); ‹Analytical Essay on the Greek Alphabet› (1791); ‹An Inquiry into the Symbolic Language of Ancient Art and Mythology›; ‹Principles of Taste› (1805); etc. He also published several volumes of poems and an edition of Homer (1816).

Knight, Sarah Kemble, American author: b. Boston 19 April 1666; d. near Norwalk, Conn., 25 Dec. 1727. In 1706–13 she conducted at Boston a school in which Samuel Mather and Benjamin Franklin were at one time pupils. By New England custom she was styled «Madam» Knight as a token of respect. Her ‹Journal Kept on a Journey from Boston to New York in the Year 1704› (1825) is a diary record evidently compiled from daily notes made on the way. It is valuable for its account of customs and manners and its descriptions of the settlements, being at the same time interesting for its original orthography and interspersed rhymes.

Knight, Thomas Andrew, English horticulturist: b. Wormsley Grange, near London, Herefordshire, 10 Oct. 1758; d. London 11 May 1838. After graduating from Baliol College, Oxford, he took up the study of horticulture. He first brought himself before the public in 1795 by the publication of the results of his researches into the propagation of fruit-trees and the diseases prevalent among them. Beside the papers, 46 in number, which he contributed to the ‹Transactions› of the Royal Society, he wrote: ‹A Treatise on the Culture of the Apple and the Pear› (1797); ‹Pomona Herefordiensis, or Natural History of the Old Cider and Perry Fruits of the County of Hereford› (1809). His ‹Physiological and Horticultural Papers› were published in 1841 together with a biographical sketch of his life.

Knight, William Angus, Scottish philosopher and author: b. Mordington, Scotland, 22 Feb. 1836. He was educated at the University of Edinburgh and since 1876 has been professor of moral philosophy at the University of St. Andrews. He is widely known as a student of Wordsworth, whose works he has edited in 12 volumes (1896–7). Among his own writings may be cited ‹Studies in Philosophy and Literature› (1879); ‹Essays in Philosophy, Old and New› (1890); ‹The English Lake District as Interpreted in the Poems of Wordsworth› (1878–91); ‹Through the Wordsworth Country› (1892); ‹Varia› (1901); ‹Some 19th Century Scotsmen› (1902).

Knights of Columbus. The Knights of Columbus is a fraternal and beneficial order exclusively for Catholics, instituted in New Haven, Conn., 2 Feb. 1882, and incorporated under the laws of the State of Connecticut 29 March 1882. While the primary object of the founders was to provide insurance for its members at nominal rates, the scope of the order expanded with its growth, and the social strength of the order is now as pronounced as was its object of insurance during the first 10 years of its existence.

Rev. M. J. McGivney, then curate of Saint Mary's Church, New Haven, was the moving spirit in bringing the order into existence, and in his efforts he was assisted by the following, named as incorporators in the charter granted by the State of Connecticut: M. C. O'Connor, M.D., James T. Mullen, John T. Kerrigan, William M. Geary, C. T. Driscoll.

From Connecticut the order spread into Rhode Island, Massachusetts, New York, and New Hampshire. After its introduction into Massachusetts its growth became phenomenal, and each succeeding year since 1892 has witnessed marked accretions to its membership and to its financial strength.

The Knights of Columbus issue insurance policies for $1,000, $2,000, and $3,000 to desirable risks between the ages of 18 and 60. The rate of each member increases once in five years, until the age of 60 is reached, when the member pays a level rate for the rest of his life, this level premium being based upon his age at initiation.

The Knights of Columbus operate in every State and Territory of the United States, and also in the provinces of Quebec, Ontario, Prince Edward Island, and New Brunswick. On 9 Jan. 1904 a charter was granted for an associate council in Manila, P. I. The total membership on 1 Jan. 1905 was 127,206, comprising 43,537 insured and 83,669 associate members. There are 33 State councils and 940 subordinate councils.

The total net assets of the society on 1 Jan. 1905 were $1,290,196.31, and of this amount $1,239,137.89 are deposited in the mortuary reserve fund, for the protection of outstanding insurance contracts. The per capita surplus is $28.56.

The order aims to develop a practical Catholicity among its members, and its four degrees serve to impress upon candidates the nature and sacredness of their obligations to Church and state. In 1904 the Knights of Columbus presented $50,000 to the Catholic University in Washington for a chair of American history.

Rev. M. J. McGivney,
Middletown, Conn.

Knights and Ladies of Honor, a fraternal beneficiary society founded in the United States in 1877. In 1902 it reported a membership of 63,000; benefits disbursed since organization, $19,000,000. The benefits disbursed in 1902 amounted to $1,173,000. The society has a Supreme Protector, 16 grand lodges, and 1,160 sublodges.

Knights of the Golden Circle, a secret organization in the United States, established a few years before the Civil War, and formed with the object of destroying the Republic and setting up a great Southern empire with negro slavery as its cornerstone, and also with the purpose of controlling the great commercial interests of cotton, sugar, and tobacco. With its centre at Havana, Cuba, the «Golden Circle» intended to embrace in the territory of the new government a radius of 1,200 miles, and to include parts of Central America. The organization was never fully consummated, although thousands of persons joined in the movement and many lodges or councils were instituted.

Knights of the Golden Eagle, a secret society founded in the United States in 1873. It had in 1903, 15 grand castles, 800 sub-castles.

and 75,597 members. The benefits disbursed during 1902 amounted to $231,794.

Knights of Honor, a fraternal benevolent society founded in the United States in 1873. Its membership in 1902 was reported at 62,173; benefits disbursed since organization, $71,231,447, and during 1902 the amount was $3,074,649. It has a supreme dictator, 36 grand lodges, and 1,918 subordinate lodges.

Knights Hospitallers. See HOSPITALLERS.

Knights of Labor, an American labor organization which originated among the garment-cutters of Philadelphia in 1869. It was founded by 10 members of the trade under the leadership of Uriah Stevens (q.v.), as a secret society, with a rather elaborate ritual. It grew slowly at first; though workingmen of all trades were admitted, it was not until 1872 that the second local assembly was formed, but in that year 27 locals were organized, all in Philadelphia; the first local organized outside that city was that of the gold-beaters of New York. In its first organization politicians, physicians, lawyers, and liquor-dealers were excluded from membership; the two latter classes are still excluded. The first general assembly was held at Reading, Pa., in 1878, where seven States were represented. At this meeting a declaration of principles was adopted which remains substantially the same: the purpose was declared to be the «organizing, educating, and directing of the power of the industrial masses,» in order to «make industrial and moral worth, and not wealth, the true standard of national and individual greatness,» and to «secure to the workers the full enjoyment of the wealth they create.» To secure these aims, the organization demanded certain legislative remedies, including the referendum, the establishment of a bureau of labor statistics, abrogation of class laws, prohibition of the employment of children under the age of 15, abolition of the contract system on public works, and of the convict-labor system, and reforms in the financial and land laws; and in the industrial field it proposed to «establish co-operative institutions which will tend to supersede the wage-system,» to secure both sexes equal rights, and gradually to reduce the hours of labor to 8 per day. In 1881 all secrecy was abolished, and in 1882 a revised constitution adopted, in accordance with which the organization consists of local assemblies, of not less than 10 members, of whom three fourths must be wage-earners or farmers; district assemblies, formed by not less than five locals, and the general assembly, which meets annually for the election of officers and the transaction of business. The executive officers are a general master workman, general worthy foreman, general secretary-treasurer, and general executive board. The constitution provides also for the support of strikes approved by the executive board after all attempts at conciliation have failed. The organization grew rapidly after this time, till in 1886 delegates at the general assembly represented over 300,000; at that time, however, dissensions began which resulted in a split and the formation of the American Federation of Labor (q.v.). Though the organization remained powerful for several years, its numbers began to decrease, and in 1903 it reported only 40,000, and its influence gradually declined. In 1890 ‹The Journal of United Labor› was established; later the name was changed to ‹Journal of the Knights of Labor,› and it is the official journal of the organization.

The Knights differ radically from the trades unions in the basis of their organization; their ideal is to organize labor without distinction of trade, and to harmonize individual and trade interests with the interest of the whole; though locals may be organized on trade lines, no autonomy of trades is allowed. This and the fact that the general executive board tried to exercise a too centralized authority were among the chief causes of dissatisfaction. Strikes were at one time condemned by the general assembly (1880), but later the organization took part in a number of strikes and also made use of the boycott; violence has been at all times condemned. Consult: Mac Neill, ‹The Labor Movement; the Problem of To-day›; Powderly, ‹Thirty Years of Labor›; Wright, ‹Historical Sketch of the Knights of Labor› (in ‹Quarterly Journal of Economics,› Vol. I., p. 137).

Knights of the Maccabees of the World, a fraternal beneficiary association having its general offices at Port Huron, Mich. An association bearing this name was first organized in the city of London, Canada, in the year 1878, by W. D. McLaughlan and several other gentlemen of that city. The Association grew rapidly, and its tents, as its local lodges were called, sprung up all over the Canadian provinces and in many of the States of the American Union.

The Association takes its name from the Maccabees, a chivalrous and religious people whose history is given in the apochryphal writings of the Old Testament. The leading character in this history was Judas Maccabeus, a valiant soldier and one of the foremost generals of the period in which he lived. During the wars in which the Maccabees were engaged and in which he was their leader he required that a portion of the fruits of all their victories should be set aside for the benefit of the widows and orphans of those who had fallen in battle.

It was this particular practice and characteristic that probably suggested to Mr. McLaughlan and his co-laborers the name for their new society, because the purpose of this society, as set forth in their laws, was to unite fraternally all white male persons of sound bodily health and good moral character, between the ages of 18 and 70 years of age, and to provide for such members benefits in case of disability, and to the beneficiaries of such members benefits in case of their death.

The main purpose of this Association is to provide social and fraternal intercourse for its members, and benefits in the way of insurance to the families of deceased members. It does not now provide for the payment of other than temporary disability benefits in case of sickness or accident, and death benefits as above stated.

It has distributed about twenty-three millions of dollars among its disabled members and the beneficiaries of its deceased members. Its rates of contribution are based upon the Fraternal Congress Mortality Table and 4 per cent.

Its death benefits are provided under two plans, one, the «whole life» plan, in which its rates of contribution are uniform throughout the continuance of membership; the other, the «term» plan, under which the rate of contribution continues until the member reaches the age of 65, when it changes and becomes uniform for the balance of life at $3 per month per $1,000. Careful medical examination is required of all benefit members. Its accumulated funds 1 May 1905 amount to about $4,250,000. Its work is conducted on the lodge system under ritualistic ceremony. Its form of government is thoroughly representative, every member having a voice in the conduct of its affairs, making of its laws, the election of its officers, and the fixing of their compensation.

In 1904, the name of the Association was changed to «The Knights of the Maccabees of the World.» The general meeting of the law-making body (the Supreme Tent) is held once in three years, at which the members are represented through delegates chosen from subordinate tents, conventions, and great camps. In the interim between the meetings of its governing body its affairs are administered by a board of seven trustees, consisting of the supreme commander and six others elected by the Supreme Tent. The board of trustees has the general custody and management of the funds of the Association; under its direction all investments are made, the laws of the Association requiring that all investments shall be made in government, State, and municipal bonds.

Knights of the Modern Maccabees, a fraternal beneficiary society. The order derives its name from the ancient Maccabees, a chivalrous and religious race, whose history is portrayed in the first and second books of the «Maccabees,» apocryphal writings of the Old Testament, dating back to 175 B.C. The exact meaning of the name «Maccabees» is veiled in obscurity, but by some is held to be derived from a Hebrew term signifying «a hammer.» The ancient Maccabees were in the habit of putting aside a goodly portion of the «spoils» of victory for the benefit of the widows and orphans of those soldiers who had fallen in battle. Hence the conception of the «Modern Maccabees» as outlined in the objects of the order: «To unite fraternally all white male persons of sound bodily health and good moral character, who are socially acceptable, between the ages of 18 and 70 years of age, and to provide for life and disability benefits to those between the ages of 18 and 51 years,» The name «Maccabees» was first applied in modern times to a society organized in London, Ontario, in 1878, which in 1881 became defunct. The plans of the organization proved to be crude and unbusiness-like, as the rate of assessments was fixed at 10 cents for all ages, and no medical examination was required. As the deaths came in at a rapid rate, those members who had been trained along careful business lines soon realized that the Order could not long exist with such loose methods, and hence an effort was made to change the laws and plans of the society. It was reorganized and incorporated under a special act of the Michigan legislature on 11 June 1881, which date has always been observed as the anniversary of the birth of the organization. This order, up to the year 1902, confined its membership to the State of Michigan, when the Great Camp, the governing body, voted to extend its jurisdiction, and it is now operating successfully in 28 States and Territories. Its present membership is approximately 130,000, 115,000 of whom reside in Michigan, while its ladies' auxiliary body, known as the Ladies of the Modern Maccabees, has about 90,000 members. The Great Camp meets biennially at such place as it may have determined at the previous session. No one but a regularly elected delegate is allowed to vote, no officer of the association being accorded this privilege. Delegates are chosen by county conventions of tents or local bodies, on the basis of 1 for each 300 members. In case the governing body should pass any law that would appear to be objectionable to the members, upon a petition of 5 per cent of the tents the matter must be submitted to a vote of the members in the local organizations, and if it fails of approval there it becomes inoperative. It is claimed that this is the only organization of this character that has its provision in its laws. There is no profit accruing to any one connected with the order, outside of the salaries which the members vote to pay the officers. The plan of collecting assessments is upon the current cost basis, no reserve fund being deemed necessary.

Knights of Malta, Ancient and Illustrious Order of, a secret society founded in Jerusalem, Turkey, and in the United States in 1889. There are now 5 grand commanderies, 233 subcommanderies, and 27,000 members. In 1902 benefits to the amount of $40,000 were disbursed.

Knights of Pythias, a brotherhood organized to disseminate the principles of friendship, charity, and benevolence. The order was founded at Washington, D. C., 19 Feb. 1864, by Justus Henry Rathbone and four associates. An official declaration affirms that «toleration in religion, obedience to law, and loyalty to government» are its three cardinal tenets. The theme upon which the entire fabric of the society rests is the story of Damon and Pythias,— friendship even unto death being a paramount doctrine. The order at present is confined. in its jurisdiction, to the continent of North America; efforts earlier in its history to include the world as its field of action having proved futile. The name chosen, Knights of Pythias, rather than the more historically accurate designation of «Knights of Damon,» was probably due to dramatic license, the reasons for which, like that of poetry, are obscure.

Origin.— The first drama of Damon and Pythias was a comedy, written 1571 A.D. The next effort of record was produced by John Banim,— the Irish poet,— associated with Richard Talor Sheil, who took the liberty of transposing the characters, making Pythias the hostage instead of Damon. This play was a tragedy and was first performed at Covent Garden, London, England, 28 May 1821. It was from the dramatic version of the story of Damon and Pythias that the founder of the order drew his inspiration, and it is the source from which has flowed the great Pythian river,— changing even the name of the society. The introduction, by the Irish poet, of the «fair Calanthe,» the *affiancé* of Pythias, suggests an auxiliary order in which woman might labor with the Knights of Pythias, but no official recognition has ever been accorded to a branch admitting women to membership.

Founder.— Justus Henry Rathbone was born in Deerfield, Oneida County, N. Y., 29 Oct. 1839. He fitted for college at Utica, and became an *alumnus* of Madison University. His father, Justus Hull Rathbone, was a prominent attorney at Utica, N. Y., and his mother came of the famous Dwight family of New England. The original ritual was written during the autumn, winter, and spring of 1858–9, while Mr. Rathbone was a teacher in Michigan. He lived to see the order of the Knights of Pythias firmly established in all its branches,— with a membership of over 300,000. He died 9 Dec. 1889. On 27 July 1898, at Utica, N. Y., a monument raised to his memory was unveiled with imposing ceremonies. This memorial was erected by the order, from the proceeds of a 10-cents-per-capita voluntary contribution.

History.— On 15 Feb. 1864, in Washington, D. C., five clerks of the government met to organize the new order. Their names were: Justus Henry Rathbone, Robert Allen Champion, William Henry Burnett, and his brother, David L. Burnett, and Edward Sullivan Kimball, M.D. Four of these, including Rathbone, were members of the Arion Glee Club of Washington, organized in 1863. Rathbone and Champion were affiliated with the Improved Order of Red Men, the other three did not belong to a civic society. The first enactment recited that «This association shall not be a copy, or imitation, of any existing order, but that it shall be instituted independently, and be intensely American.» The obligation administered was not altogether «in form,» but proved sufficient. The ritual was then read by its author. «This work,» said a survivor, «embodied practically all the tenets of the order of the Knights of Pythias, as now exemplified, although the arrangement was afterward changed somewhat, and its principal features were elaborated.» The four eager auditors heard the dramatic possibilities which have made the society popular, wherever introduced, and parted to meet four evenings later, in a room in F Street, between 9th and 10th, N. W. Each agreed to invite other clerks to be present, it being Rathbone's suggestion that the membership be restricted to this class of employees in the governmental departments. One J. T. K. Plant was to be especially invited, because he belonged to several organizations, and was familiar with their methods and regulations. «Washington Lodge, No. 1, was organized in Temperance Hall, Friday evening, 19 Feb. 1864,» so run the minutes. The number of members is not stated; but, at the close of the year, these had increased to 52. The «founder» was elected worthy chancellor, with associate officers: Vice chancellor, venerable patriarch, worthy scribe, assistant scribe, banker, assistant banker, worthy guide, inside steward, and four choral knights. Evidently the resolution, adopted on the 15th, had not yet gone into effect. The grand lodge of the District of Columbia, was formed 8 April 1864, with J. T. K. Plant as grand chancellor. The other grand officers followed the titles adopted by the subordinate lodge. Franklin Lodge No. 2 was organized at Washington Navy Yard 12 April 1864, and others followed in rapid succession. Then the order waned, until, 1 Aug. 1865, Franklin No. 2 was the only lodge in existence; and it was an acting grand, as well as a subordinate lodge. When the year 1865 closed, the membership in No. 2 was nearly 60 there was a treasury of $200, and the «sole survivor» was in a prosperous condition, notwithstanding a loss of $255.55 through its «banker.» On 1 May 1866 the grand lodge was reorganized, and the order spread to other jurisdictions. When the supreme lodge was constituted, 15 May 1868, the grand lodges of the District of Columbia, Pennsylvania, New Jersey, Maryland, and Delaware were represented. Through many trials, beset at times with disloyalty within and litigation without, from this beginning sprang the great order of the Knights of Pythias.

Government.— This is representative, and threefold, like the society's tenets. It is divided into three departments, namely: Legislative, executive, and judicial. These are regulated by statutes based upon constitutional provisions. In these particulars, and, in its methods of administration, the order has differentiated itself from others of its class. The government is vested in a supreme lodge, the source of all authority in the order; in State and provincial grand lodges, possessing subordinate authority over 10 or more lodges; in subordinate lodges, which create the membership by the acceptance of petitioners, and conferring upon them the ranks of «page,» «esquire,» and «knight.» The supreme lodge was incorporated 5 Aug. 1870, under an Act of Congress approved the previous 5th of May, and many of the grand and subordinate lodges are, also, corporations. The order has, in addition to its three ranks, or degrees, an «endowment» rank, the insurance feature; and a «uniform» rank, the military division,— affiliation with which is voluntary, and predicated on regularity and good standing in the lodge. The titles borne by officers naturally follow the ritualistic structure. In the supreme body, with the prefix «supreme,» these are, a chancellor, vice chancellor, prelate, keeper of records and seal, master of exchequer, master at arms, inner and outer guards. The endowment branch is managed by a board of control, the president of which is a supreme officer; and the uniform rank is commanded by a major-general, who is, also, an elective official. Prefix «grand,» and the first eight become the names of officers of grand lodges. With one or two ritualistic variations, the officers of a lodge bear the same titles, excepting the prefix. Representatives are accorded the honor of «grand» or «supreme» in consonance with the name of the body in which they are elected to take seats. The executives are, respectively, the supreme and grand chancellors, and the chancellor commanders of subordinates. The judiciary consists of tribunes nominated by the executives and confirmed by the legislative bodies. Collectively these constitute the courts of last resort in the supreme lodge, and in grand lodges. Trials in subordinate lodges are conducted by committees. This judicial system has attained the dignity of a settled jurisprudence, the decrees of which are often recognized in actions brought in the civil courts.

Uniform Rank.— The organization of the display branch dates from 1878. The «rank» sprang at once into popularity, and the notable parade at Cincinnati in 1888 served to induce the supreme body to perfect its rules and regulations. Before that year creditable appearances had been made, but then trained soldiers, properly officered, were in line. Since that time the Pythian army has been a regular feature of all assemblages. «Not only this,» says the major-general, commanding, «but the uniform rank has been most cordially welcomed by those outside of the order, and business and professional men, in our towns and cities, take pride in their local companies; while, in military circles, it has been hailed as a worthy addition to the military organizations of this continent.» The ritual is emphatically patriotic; and the offer made to the United States government by this army of disciplined troops, for service in the Spanish-American war, is worthy of note. The powers of this branch are delegated to a supreme assembly,— with a representation in the aforesaid governing bodies,— and the organization follows the lines of the United States army, the «uniformed knights» using the government tactics.

Nomenclature.— Within the recesses of «castle halls,» the terminology of the ages represented by the terms «page,» «esquire,» and «knight,» govern the speech of those assembled. The jurisdictions of supreme and the grand lodges are called «domains,» and all assemblies of the Knights of Pythias, «conventions.» Members address one another as «brother knight.» Documents are dated by the Pythian era, beginning with 1864. To find it, subtract 1863 from the common era. For example · 1903 — 1863 = 40.

Statistics.— The reports for 1903 show 562,327 members, gathered in 6,992 subordinate lodges, governed by 54 grand lodges, and a supreme lodge. The total annual receipts are $7,130,074.32; expenditures for relief, $1,470,129.71; cash on hand, $2,558,039.74; aggregate of lodge assets, $11,109,913.57.

Bibliography.— Carnahan, ‘Pythian Knighthood, its History and Literature’; Van Valkenburg, ‘Jewels of Pythian Knighthood’; ‘Constitutions of the Supreme Lodge Knights of Pythias.’

H. L. Stillson,
Grand Tribune, Vermont.

Knights of the Round Table, the knights of King Arthur, according to some accounts 12 in number, famed for their valor, who sat at a round table in token of their perfect equality. Other versions of the legend give their number as 50 or more. The most famous of them are Lancelot, Tristram, Galahad, and Gawayne. See Arthur; Arthurian Legends; Grail, The Holy.

Knights of St. John and Malta, a secret society founded 1883. It has a grand encampment, 68 subordinate encampments and 3,227 members. Since organization the society has disbursed $551,000 in benefits; and during 1902, the amount was $65,000.

Knights Templars. See Masonic Fraternity, The.

Knightstown, Ind., town in Henry County, on the Blue River, and on the Cleveland, C., C. & St. L., and the Pittsburg, C. & St. L. R.R.'s, 34 miles east of Indianapolis. Near the town are the State Soldiers and Sailors' Orphans' Home. The town has excellent water power, natural gas, flour-mills, torpedo works and other industries, and owns the electric light and waterworks plants. Pop. (1890) 1,867; (1900) 1,942.

Knipe, Joseph Farmer, American soldier: b. Mount Joy, Lancaster County, Pa., 30 Nov. 1823; d. Harrisburg, Pa., 18 Aug. 1901. In 1842 entered the United States army, and served in the Dorr Rebellion in Rhode Island, and subsequently in the Mexican War. At the outbreak of the Civil War he entered the volunteer service and was commissioned colonel of the 46th Pennsylvania regiment in August 1861. In May 1862 he was made a brigadier-general for gallant conduct, and after the War was postmaster at Harrisburg, 1866–9.

Knit'ting, an industrial and ornamental art allied to weaving, but of much later origin. It does not appear to be more than three or four centuries old, and seems to have been first used in the manufacture of stockings. It consists in forming a series of loops with a single thread, through which another row of loops is passed, and so on consecutively. In hand-knitting, steel-wires are used to form the loops on. For manufacturing purposes hand-knitting has been entirely superseded by machinery (see Knitting-machine), which is constantly receiving new improvements. Hand-knitting, however, still forms an agreeable domestic occupation, and also furnishes many women in some parts of the world with means of subsistence.

Knitting-machine. Of the many kinds of knitting-machines in use, one of the best known has a bed-plate with a vertically projecting and grooved needle-guiding cylinder or bed, and which is secured to a table or other suitable support. On the bed-plate is a loose ring with a thread-guide for conducting the thread to the needles, and about the needle-cylinder is a revolving cylinder with an annular groove interrupted by a cam-portion and provided with adjustable cams, which govern the downward motion of the needles, and consequently the length of the loops, and raise the needles; two of these latter cams being needed for reversing the machine for knitting a heel or a flat web. The cam-cylinder is moved by a bevel-gear connected to a driving-crank, and when moved continuously in one direction knits a circular web; and this web may be narrowed as desired, to fashion the leg, by removing needles, and placing their loops on adjacent needles. One needle receives the thread within its hook, and is subsequently moved by the cam-cylinder so as to form the thread so taken into a loop. When the heel is to be formed some of the needles are drawn up, their loops thus being retained and the number of needles left in action corresponds with the width of the heel to be formed. The cam-cylinder is now to be reciprocated in opposite directions, and in order to keep the thread-guide in advance of the descending needles sufficiently far, so that the thread will be caught, pins are inserted in the bed-plate to engage the heel of the thread-carrier and stop it just before the cam-cylinder is stopped.

Knolles, nōlz, or **Knowlles, Richard,** English historian: b. probably Cold Ashby, Northamptonshire, about 1550; d. Sandwich, Kent, 1610. He was graduated at the University of Oxford in 1565, and became master of the grammar school of Sandwich. He wrote a ‘General History of the Turks’ (1603), the style of which is highly commended by Johnson, Hallam, and other critics. An improved edition, with continuations, by Sir Paul Rycaut, was published (1687–1700).

Knortz, nôrtz, **Karl,** American miscellaneous writer: b. Garbenheim, near Wetzlar, 28

Aug. 1841. He was educated at Heidelberg University and came to the United States in 1863. He taught in Detroit, Oshkosh, and Cincinnati, 1864–74, edited a German daily in Indianapolis for some years, and since 1892 has been superintendent of German schools in Evansville, Ind. Among his numerous works are: 'Tales and Legends of the North-American Indians' (1871); 'American Sketches' (1876); 'Longfellow' (1879); 'From the Wigwam' (1880); 'Indian Legends'; 'Pictures of American Life' (1884); 'History of American Literature,' in German (1891); 'Individuality' (1897); 'Child Study' (1899). He has very materially assisted in making American authors known in Germany.

Knot, a snipe (*Tringa canuta*) known in its migrations throughout the world, but breeding only in the extreme north, where its pale-green, spotted eggs have been found in only one instance. It appears in small flocks along all shores, and is a favorite with gunners under the names robin-snipe and gray snipe. Its plumage is a mingling of black and white suffused with a reddish tint on the under parts. The book-names refer to its habit of seeking its food just at the edge of the surface, where King Canute is fabled to have seated himself in defiance of the tide.

Knot, a term synonymous for a nautical mile. The log-line is divided by knots (or otherwise) into sections $\frac{1}{120}$ of a geographical mile in length, hence the number of sections run out in half a minute (the 120th of an hour) indicates the number of knots or geographical miles per hour at which the ship is going. The rate at which a vessel sails, or can sail, is usually given in knots per hour, the Admiralty knot or measured mile being 6,080 feet. It is longer than an ordinary statute mile by about one mile in seven; or the nautical mile of 6,080 feet = 1.151 statute mile.

Knot, Black. See FUNGI.

Knot-fungus. See FUNGI.

Knot-grass. See GRASSES.

Knot-root. See LABIATÆ.

Knots. See KNOTTING AND SPLICING.

Knott, nŏt, **James Proctor,** American legislator and legal scholar: b. near Lebanon, Marion County, Ky., 29 Aug. 1830. He studied law in 1846–51, was admitted to the Missouri bar in 1851, and entered practice at Memphis, Scotland County. In 1858 he was elected to the Missouri legislature, in 1859 was appointed to the office of attorney-general of Missouri to fill a vacancy and in 1860 was elected to that post. Having refused, at the beginning of the Civil War, to take an oath of allegiance which he considered too severe, he was for a time imprisoned in the St. Louis arsenal. In 1862 he removed to Kentucky, where he established himself as a practitioner at Lebanon; and in 1867–71 and 1875–83 served in Congress as Democratic representative from the 4th Kentucky district. He was long chairman of the House committee on the judiciary. In the 41st Congress he made his well-known speech on Duluth, ridiculing the pretensions of the lake town, and gaining a national reputation as a humorist. He was governor of Kentucky in 1883–7, a delegate to the Kentucky constitutional convention in 1891, professor of civics and economics in Centre College (Danville, Ky.) in 1892–4, and from 1894 professor of law and dean of the law faculty of Central University.

Knotting and Splicing, the fastening or tying of ropes or cords. There are hundreds of varieties of knots, most of which are used only on shipboard. Generally the requirements of a useful knot may be stated to be that it should neither «slip» nor «jam,» that, while it holds without danger of slipping while the strain is on it, when slackened it should be easily untied again. The simplest knot is the common one tied on the end of a thread or cord to prevent it slipping. By passing a loop instead of the end of the cord the common slip-knot is formed; and a useful fixed loop is got by tying a simple knot, or the «figure of 8 knot» on the loop of a cord. One of the simplest and most useful running knots for a small cord is made by means of two simple knots. The most secure method of fastening a line to, say, a bucket is the standing bowline; and a running bowline is formed by passing the end through the loop thus making a running loop. Out of the score or so of methods of fastening a boat's painter the one which will be found most useful is the well-known two half-hitches. The timber hitch is useful for attaching a line to a spar or a stone, and the clove hitch is invaluable for many purposes. It is very simple and cannot slip. A simple method of fastening a rope to a hook is the blackwall hitch, where the strain on the main rope jams the end so tightly against the hook that it cannot slip. There are many methods for shortening a rope temporarily, one of them being the sheepshank.

Of the methods for uniting the ends of two cords the simplest and one of the most secure is the common reef knot, which must be carefully distinguished from the «granny,» which will jam if it does not slip; the reef knot will do neither. For very small cords or thread the best knot is the weaver's. The fisherman's knot is a very useful one for anglers, and is formed by a simple knot in each cord being slipped over the other; when drawn taut it is very secure, and it is easily separated by pulling the short ends. A useful method of uniting large ropes is to tie a simple knot on the end of one rope and interlace the end of the other, and draw taut. This tie may also be made with the figure of 8 knot. For very large ropes the carrick bend is the simplest and most secure. The bowline bend is formed by looping two bowline knots into each other. For attaching a small line to a thick rope the becket hitch is very useful.

«Splicing» is the process employed to join two ropes when it is not advisable to use a knot. The three chief varieties of the splice are the short splice, the long splice, and the eye splice. The short splice is made by unlaying the ends of two ropes for a short distance and fitting them closely together; then, by the help of a marlinspike, the ends are laced over and under the strands of the opposite rope. When each strand has been passed through once, half of it is cut away and the remainder passed through again; half of the remainder being also cut away, it is passed a third time, and, when all the strands are so treated, they are hauled taut and cut close. This reducing the thickness of the strands tapers off the splice. The long splice is employed when the rope is used to run through a block, as it does not thicken it. The ends of the two ropes are unlaid for a much longer distance than for the short splice, and similarly placed together. Then one strand is taken and further unwound for a considerable distance, and its vacant place filled up with the corresponding strand of the other rope, and the ends fastened as in the short splice. Other two of the strands are similarly spliced in the opposite direction, and the remaining two fastened at the original joining place. The eye splice is, as the term implies, used to form an eye, or round a dead eye.

To prevent a rope fraying at the ends a variety of methods are employed, the simplest being to serve or whip the end with small cord.

Knout, nowt, or noot, the official instrument of punishment formerly used in Russia, made in various forms, but usually being a whip of leather thongs artificially hardened, twisted with wire, etc. One hundred strokes were considered equivalent to a sentence of death, as the victim seldom survived.

Knowledge, Theory of. See EPISTEMOLOGY.

Knowles, nōlz, **Frederic Lawrence,** American writer: b. Lawrence, Mass., 8 Sept. 1869; d. Roxbury, Mass., 20 Sept. 1905. He was graduated from Wesleyan University in 1894 and was literary adviser of the Boston publishing firm of Dana, Estes & Co. Beside editing 'Cap and Gown' (1897); 'Golden Treasury of American Lyrics' (1897); 'A Year Book of Famous Lyrics' (1901); he was the author of 'Practical Hints for Young Writers, Readers and Book Buyers' (1897); 'A Kipling Primer' (1900); 'On Life's Stairway,' verse (1900).

Knowles, G. Sheridan, English painter: b. Manchester 25 Nov. 1863. He was educated at private schools and studied art at Manchester and London, working at the Royal Academy Schools from 1884 to 1888. From that date he has actively pursued painting as a profession and has exhibited in the Royal Academy every year. His pictures are popular and romantic genre, and many of them have been engraved. His principal works are: 'The Last Minstrel' (1889); 'The Return from the War' (1892); 'The Wounded Knight' (1895); 'Glasgerion' (1897); 'The Flight of Huguenots from France' (1900).

Knowles, James, English architect and editor: b. 1831. He was educated as an architect and among professional works of his are Tennyson's Surrey home, Aldworth; several churches in Clapham, and the fountain in Leicester Square, London. He originated the Metaphysical Society in 1869, edited the 'Contemporary Review,' 1870–7, and founded the 'Nineteenth Century,' of which he is the editor and proprietor.

Knowles, James Sheridan, Irish dramatist and actor: b. Cork, Ireland, 21 May 1784; d. Torquay, Devonshire, 30 Nov. 1862. He went upon the stage in 1806, but meeting with small success, taught elocution in Belfast and Glasgow. His tragedy of 'Caius Gracchus' was performed at Belfast in 1815 with success, and from this time he had a prosperous career. In 1845 he retired from the stage from scruples of conscience, and in 1852 became a Baptist preacher and published several theological works. In 1849 he received a pension of £200 a year from Government. Among his principal works are the dramas: 'Caius Gracchus' (1815); 'William Tell' (1825); 'Virginius' (1829); 'The Hunchback' (1832); 'The Wife of Mantua' (1833); 'The Love-chase' (1837); 'Love' (1839). In 1847 and 1849 he published two novels, 'Fortescue' and 'George Lovell.'

Knowles, Lucius James, American inventor: b. Hardwick, Mass., 2 July 1819; d. Washington, D. C., 25 Feb. 1884. He became a clerk in a shop at Shrewsbury, Mass., turned his attention to inventing, devised the Knowles safety steam-boiler feed-regulator, and constructed and operated several models of steam-engines. In 1843 he invented a machine for the spooling of thread, and this machine he manufactured at New Worcester in 1843–5. He then built spinning-machines for the manufacture of four- and six-cord thread, and manufactured cotton thread and warps at Spencer and Warren, Mass. (1847–53), and woolen goods at Warren (1853–9). Subsequently he manufactured a safety boiler-feeder, a steam pump, and a tape loom, under his own patents. He was elected to the lower house of the Massachusetts legislature in 1862 and 1865, and in 1869 became State senator.

Knowlton, nōl'tȯn, **Frank Hall,** American botanist: b. Brandon, Vt., 2 Sept. 1860. He was graduated from Middlebury College, Vt., in 1884, was assistant palæontologist on the United States Geological Survey 1889–1900 and palæontologist from the last named date. Among his scientific monographs are: 'Fossil Wood and Lignite of the Potomac Formation' (1889); 'Fossil Flora of Alaska' (1894); 'Catalogue of the Cretaceous and Tertiary Plants of North America' (1896).

Knowlton, Helen Mary, American artist and author: b. Littleton, Mass., 16 Aug. 1832. She studied art under William M. Hunt (q.v.) and Duverneck and has for 30 years taught art in Boston. Beside compiling Hunt's 'Talks on Art,' she has written 'Hints to Pupils in Drawing and Painting' (1879); 'Life of William Morris Hunt' (1899).

Knowlton, Thomas, American soldier: b. West Boxford, Mass., 30 Nov. 1740; d. battle of Harlem Plains, N. Y., 16 Sept. 1776. A farmer at Ashford, Conn., at the beginning of the Revolution, he was elected captain of a militia company organized after Lexington, and with 200 other Connecticut troops was sent to Charlestown. His detachment, ununiformed farmers with shot-guns, fought at Bunker Hill. On 8 Jan. 1776 he made a successful invasion of Charlestown, and subsequently became lieutenant-colonel of a regiment of Connecticut rangers. He was killed while leading his command, at the battle of Harlem Heights, and was highly praised by Washington in general orders.

Know-nothing Movement, The, a secret political association organized in the United States for the purpose of obtaining the repeal of the naturalization law, and of the law which permitted others than native Americans to hold office. It started in 1852 and existed two or three years. The principles of the Know-nothing party were embodied in the following propositions (at New York, 1855): (1) The Americans shall rule America. (2) The union of these States. (3) No North, no South, no East, no West. (4) The United States of America — as they are — one and inseparable. (5) No sectarian interferences in our legislation or in the administration of American law. (6) Hostility to the assumption of the Pope, through the bishops, 'etc., in a republic sanctified by Protestant blood. (7) Thorough reform in the naturalization laws. (8) Free and liberal educational institutions for all sects and classes, with the Bible, God's holy word, as a universal text-book. A society was formed in 1855 in opposition to the above, called Know-somethings. Both bodies were absorbed into the two parties, Democrats and Republicans, at the presidential election in 1856.

The Know-nothing organization was primarily the result of foreign emigration. In 20 years from 1825 to 1845, the immigration amounted to 1,028,225. The consequence was a sharp awakening of native American prejudice and alarm. The sentiment first showed itself in New York, where the alien population had reached portentous proportions, in the estimation of citizens of the old stock. A native organization for political purposes was effected, and in 1844 it succeeded in electing James Harper mayor on a native American ticket. About this time began the great immigration due to the Irish famine, and in the five years from 1845 to 1850 there came in about as many aliens as had been received during the whole 20 years before. Native Americanism flamed up hotter than ever, and its political conflagration extended to other cities and States. The great volume of the Irish immigration was Roman Catholic, and animosity to that church gave it fire. At Philadelphia two Roman Catholic churches were destroyed in riots between natives and Irish; at Boston a convent was burned. Six native American representatives were elected to the 29th Congress, that of 1845, four from New York and two from Pennsylvania. Between 1850 and 1855 the immigration amounted to nearly 2,000,000; and the native spirit was aroused even more hotly. Moreover, the anti-slavery agitation, expressing itself in opposition to the extension of slavery to the Territories, was disturbing party allegiance, and special efforts were made to kindle the native American spirit into a hot flame, with an ulterior motive, it was believed, of turning the current of public sentiment into other channels.

In 1852 the Know-nothing organization, distinctly, made its appearance. It was so-called because it was a secret oath-bound fraternity, regarding whose objects and whose real name its members always answered when questioned: «I don't know.» «Americans must rule America!» was its rallying cry, and relentless hostility to the increasing power of the Roman Catholic Church and a demand for the extension of the naturalization to 21 years were its main purposes. The Know-nothings started off brilliantly. In 1854 they carried the State elections in Massachusetts and Delaware, and polled a great number of votes in New York. In 1855 they elected governors and legislatures in New York and four New England States, and at the South they were successful or nearly approached success in nine States. In 1856 eight of the 32 States had native American governors, but in the presidential election of that year the party cast only about one fifth of the popular vote and obtained only eight electoral votes, or the votes of the single State of Maryland. In the 35th Congress, 1857, it had 5 senators and 14 representatives. In the next Congress it had 2 senators and 23 representatives, all of them from Southern States. Soon thereafter Know-nothingism went to pieces rapidly and no more of it was heard in politics. It had no representation in Congress after the 36th. See also AMERICAN PARTY.

Knox, nŏks, **Adeline Trafton,** American novelist; daughter of Mark Trafton (q.v.): b. Saccarappa, Maine, 8 Feb. 1845. She was married to Samuel Knox, a lawyer of St. Louis, Mo., in 1889. She has written: ‹Katherine Earle› (1874); ‹His Inheritance› (1878); ‹An American Girl Abroad›; ‹Dorothy's Experience› (1891).

Knox, George William, American Presbyterian clergyman: b. Rome, N. Y., 11 Aug. 1853. He was graduated from Hamilton College, Clinton, N. Y., in 1874, and from Auburn Theological Seminary in 1877. He subsequently was employed in missionary labors in Japan and was professor of philosophy and ethics in the Imperial University of Japan in 1880. On returning to the United States he became pastor of a Presbyterian Church in Rye, N. Y., and was a professor at Union Seminary, N. Y., 1897–9. He has written (in English): ‹A Japanese Philosopher› (1893); (in Japanese) ‹A Brief System of Theology›; ‹Outlines of Homiletics›; ‹Christ, the Son of God›; ‹The Basis of Ethics›; ‹The Mystery of Life›; ‹The Christian Point of View› (1902).

Knox, Henry, American general and cabinet officer: b. Boston, Mass., 25 July 1750; d. Thomaston, Maine, 25 Oct. 1806. He was the 7th son of William Knox, a native of St. Eustatius, West Indies, who settled in Boston and became a shipmaster. After the father's death in 1762, the son was employed by a Boston bookseller, and in 1771 he opened a bookstore of his own. When a young man he threw in his lot with the patriot cause and spent his leisure studying books on the military art, supplementing his reading by observing and questioning the British officers stationed in Boston. His marriage (16 June 1774) to Lucy Flucker, the daughter of an aristocratic loyalist of Boston, did not prevent him from joining the Colonial army at the outbreak of hostilities in the spring of 1775. He fought in the battle of Bunker Hill and then aided in constructing the defenses of the camps around Boston. The army being in pressing need of artillery, Knox proposed to Washington the plan of bringing heavy cannon and stores from Fort Ticonderoga near the Canadian frontier. He set out (15 Nov. 1775) on this perilous enterprise with a squad of mounted men. In the face of great difficulties he succeeded in getting 55 guns, loaded them on sleds, with 2,300 pounds of lead and a barrel of flints, and reached Cambridge in safety (24 Jan. 1776). For this brilliant exploit he was warmly complimented by Washington. After his return he received his commission as colonel of the one artillery regiment, the appointment having been made by the Continental Congress (17 Nov. 1775). The cannonade of

Knox's batteries (on the night of 1 March 1776) enabled General Thomas to take possession of Dorchester Heights, which resulted in the evacuation of Boston by the British forces. In the summer of 1776 he was stationed at New York city with Washington, who found him a true friend and an able officer. In December he was promoted to brigadier-general of the artillery. He distinguished himself in the battles of Trenton and Princeton, and took part in the engagements at Brandywine, German town, and Monmouth. He helped (May 1777) General Greene in planning the defenses of the Hudson River. In the trying winter of 1777–8 he was in camp at Valley Forge, with his young wife. Many of Washington's letters refer to Knox in terms of high appreciation. He rendered valuable service in the operations against Cornwallis in October 1781, his skill as an artillerist being praised by the Frenchman, De Chastellax. He was made major-general (22 March 1782) and appointed to the command at West Point (29 Aug. 1782). Upon him devolved the delicate task of disbanding the army late in 1783. He had already formed the Society of the Cincinnati to keep alive the friendships of officers formed during the war.

Congress appointed Knox Secretary of War (8 March 1785), a position he worthily filled for ten years. In 1794 he was also at the head of the Navy Department, just organized. Owing to insufficient salary, he resigned from Washington's cabinet (2 Jan. 1795). His remaining years were passed at his home in Thomaston, Maine. Consult: Drake, 'Life and Correspondence of Henry Knox' (1873); Noah Brooks, 'Henry Knox, a Soldier of the Revolution' (1900).

EUGENE PARSONS,
Editor 'The World To-day.'

Knox, John, Scottish Protestant reformer: b. Giffordgate, Haddington, Scotland, 1505; d. Edinburgh 24 Nov. 1572. (The society of antiquaries of Scotland discussed the subject of his birthplace in 1858, when Mr. John Richardson of Haddington brought forward evidence that he was born in Giffordgate, a suburb of Haddington, and not in Gifford, a village near that town. He was supported in this view by Mr. Laing, the editor of the reformer's works.) After receiving his preliminary education at the grammar school of Haddington, he went in 1521 to the University of Glasgow, where for several years he studied scholastic philosophy and theology. Noted as a master of dialectic subtleties, he was ordained prior to 1530, and became a teacher of philosophy at St. Andrew's. The study of the fathers, especially of Jerome and Augustine, had shaken his religious opinions as early as 1535, but it was not till 1542 that he became an avowed and marked reformer. The long period of silence, before in mature age he explained his views with completeness, has been regarded as proof that he was naturally of a prudent and peaceful disposition, and not a turbulent partisan, as his after career would indicate. His reprehension of certain practices of the Church caused him to retire from St. Andrews to the south of Scotland, where he was declared a heretic. After the death of his friend George Wishart, he remained in retirement till he took refuge with many other Protestants (1547) in the castle of St. Andrew's, which the regent was vainly attempting to reduce. There for the first time he became known as a powerful preacher against the papacy. The regent, re-enforced by a French squadron, obliged the garrison to surrender. The terms of the capitulation were violated, and Knox with his comrades was transported to France, where he was imprisoned on the galleys for 19 months. He experienced extreme hardships, and on his release (1549) directed his course to England, where he was appointed to preach at Berwick and at Newcastle, and became one of the chaplains of Edward VI. For the boldness of his discourses he was several times called to account, but was able to vindicate himself. A bishopric was offered to him, but he declined it from scruples as to the divine authority of the episcopal order. On the accession of Queen Mary he fled from England to Dieppe, and passed thence to Geneva, where, after taking part in the memorable troubles at Frankfort and after a short visit to Scotland, he became pastor (1556) of a small English congregation. The two years of his residence in Geneva, in the society of Calvin, Beza, and other learned men, were among the happiest of his life. While in Scotland he had been cited to appear before an assembly of the clergy to be held at Edinburgh, and after his return to Geneva the citation was renewed, and he was condemned to be burned as a heretic, and the sentence was executed on his effigy. Against this condemnation he published the 'Appellation of John Knoxe.' He also wrote a tract entitled the 'First Blast of the Trumpet against the Monstrous Regiment of Women' (1558), a vehement attack on the political government of women, at a time when Mary of Guise was regent of Scotland and Mary Tudor queen of England, and the nearest in succession to both thrones were females. Invited by the Scottish Protestants to resume his labors in his native country, he landed at Leith in 1559. The queen regent had laid her plans for the forcible overthrow of the reformation. At a convention of the nobility and clergy in Edinburgh all the demands of the Protestants were refused. Several of the reforming preachers were summoned to appear at Stirling for trial, but by the dissimulation of the regent were prevented from attending and then outlawed for their failure. Knox hastened to meet them at Perth, where he preached against the "idolatry of the mass" and the veneration of images. At the conclusion of the service there was a violent outbreak. The images in the churches were demolished, the pictures torn from the walls and trampled under foot, the holy recesses invaded, and the "rascal multitude," as Knox calls them, did not stop till they had sacked and laid in ruins the houses of the Dominican and Franciscan friars and the Carthusian monastery. The queen regent advanced upon Perth with an army, but, finding the Protestants well prepared for resistance, proposed terms of accommodation which were accepted. The Protestants, in order to consolidate their strength, formed a religious bond or covenant, and began to be distinguished as the congregation, and their leaders as the lords of the congregation. Iconoclasm was a prominent feature in the Scottish reformation. Events similar to those at Perth followed at Stirling, Lindores, Cupar, St. Andrews, and other places. Knox had preached in the cathedral of St. Andrews with such success that the magistrates united with the inhabitants in desolating the churches and monasteries, and in establishing the reformed worship. Meantime civil war raged throughout the kingdom between the regent, assisted by French troops, and the lords of the congregation. In political as well as ecclesiastical affairs Knox was a conspicuous adviser, and took up his residence in Edinburgh after an extensive circuit through the southern and eastern counties. After a contest of 12 months, the vigorous assistance rendered by Elizabeth, and the death of the queen regent while the English troops were investing Edinburgh led to a truce and to the summons of the Parliament to settle differences. Parliament assembled in August 1560, the reformed religion was established, and Roman Catholicism interdicted by law in Scotland. Soon after the arrival of the young Queen Mary (21 Aug. 1561) she summoned the influential and noted reformer to her presence. Six interviews are recorded between him and the queen, and the questions which she raised were discussed by him with a rude vehemence and rigor, which once drove her to tears. She caused his arrest on a charge of treason in 1563, but all the councillors except the immediate dependents of the court voted for his acquittal. The vehemence of his public discourses led him into frequent difficulties. In 1562 he disputed publicly for three days with Abbot Quentin Kennedy at Maybole; in 1565 he quoted certain texts which gave offense to the court, and was for a short time prohibited from preaching. He fled from Edinburgh when the queen returned from Dunbar after the death of Rizzio; and he preached a sermon at the coronation of the infant king at Stirling (29 July 1567). Under the brief regency of Moray, the work of Knox seemed to be completed, but after the assassination of Moray, civil and religious confusion returned under the regency successively of Lennox and Mar. Weakened by a stroke of apoplexy in 1570, Knox yet reappeared in the pulpit, but so violent was the enmity excited by his animadversions that he left Edinburgh for St. Andrews 5 May 1571. He returned in the following year, and his last energies were put forth in denunciations of the perpetrators of the massacre of St. Bartholomew's.— The doctrines of Knox embraced a Calvinistic creed and a Presbyterian polity. The «Order of Geneva,» a liturgy which he shared in preparing for the use of the church at Frankfort, and subsequently employed in his congregation at Geneva, was introduced into Scottish Protestant churches in 1565. His character was marked by a stern realism, which could be beguiled by no social pretensions, no conventional dignities, no pompous traditions. From this sprang his scornful bitterness and his insensibility to the social graces and refinements which Mary exhibited. He was not a thinker except on political topics. His ‹History of the Reformation of Religioun in the Realme of Scotland› is the best known of his writings. Consult: ‹Lives,› by McCrie (1813); Taylor (1885); P. H. Brown (1895); Lorimer, ‹John Knox and the Church of England› (1875); Carrick, ‹John Knox and his Land› (1902).

Knox, John Jay, American financier: b. Knoxboro, N. Y., 19 March 1828; d. New York 9 Feb. 1892. He was graduated at Hamilton College in 1849, and was a banker till 1862 In that year he received an appointment from Secretary Chase, and subsequently had charge of the mint coinage correspondence of the Treasury Department, becoming in 1867 deputy comptroller of the currency. A bill which he proposed was passed with a few modifications, and is known as the Coinage Act of 1873. In 1872 he was appointed comptroller of the currency, resigning in 1884, to become president of the National Bank of the Republic, New York. In addition to various Reports, he published ‹United States Notes› (1884, revised 1887).

Knox, Philander Chase, American lawyer and politician: b. Brownsville, Pa., 4 May 1853. He was graduated from Mount Union College, Ohio, in 1872; studied law and was admitted to the bar in 1875. He was assistant United States district attorney for the western district of Pennsylvania in 1876–7; resigning this position he took up the practice of law in Pittsburg in partnership with J. H. Reed. The firm's practice grew rapidly, and Knox became known as one of the most successful corporation lawyers in the United States; in 1892 he was counsel for Carnegie during the Homestead strike. April 1901 he was appointed attorney-general of the United States and held this office till June 1904 when he became senator from Pennsylvania. As attorney-general he was involved in the «anti-trust» agitation and dealt with the question from a purely lawyer's standpoint, and in 1902 brought suit against the Northern Securities Company and the so-called «Beef Trust» on the ground that they were violating Federal statutes.

Knox, Thomas Wallace. American journalist and traveler: b. Pembroke, N. H., 26 June 1835; d. New York 6 Jan. 1896. He went to Colorado in 1860 and there engaged in journalism, and during the Civil War served as volunteer aide. He made a journey around the world as a newspaper correspondent in 1866 and again in 1877, and wrote many popular books for young people. Among his very numerous published works are: ‹Underground Life› (1873); ‹How to Travel› (1880); ‹Boy Travelers Series› (15 vols. 1880–94); ‹Lives of Blaine and Logan› (1884); ‹Decisive Battles since Waterloo› (1887); ‹The Lost Army› (1894); ‹Hunters Three› (1895); ‹In Wild Africa› (1895); etc.

Knox College, a coeducational institution, founded in 1837 at Galesburg, Ill., as Knox Manual Labor College. The school was opened in 1841, and in 1857 the name was changed to Knox College. The original plan for founding and maintaining the school was to secure subscriptions to the amount of $40,000 and to purchase lands in the Mississippi Valley, at government price, the lands to be resold at a profit. Every subscriber who purchased 80 acres of land was given free tuition for one student for 25 years. In 1902 the productive fund amounted to about $250,000. The tuitions and other fees amounted to $14,526; the income from the productive funds and other sources was nearly $15,000. There are in the library about 10,000 volumes. In 1903 there were connected with the school 35 instructors and professors; and 700 students. A music department was established in 1883. The famous Lincoln-Douglas debate, in 1858, was held on the grounds of this college.

Knox-Little, William John, English Anglican clergyman and author: b. Stuartstown, County Tyrone, Ireland, 1839. He was educated at Cambridge University, took orders in the English Church, and after holding several curacies was rector of St. Alban's, Cheetwood, Manchester, 1875–85. Since 1885 he has been canon residentiary of Worcester Cathedral and vicar of Hoar Cross. He is an «advanced» churchman and has several times visited the United States, where he has preached in many Episcopal churches conspicuous for High Church leanings. He is a popular religious writer, and among his many books are: 'Meditations on the Three Hours' Agony of Our Blessed Redeemer' (1877); 'The Broken Vow: a Story' (1887); 'The Child of Stafferton' (1888); 'The Perfect Life' (1899); 'Studies on South Africa' (1899); 'Holy Matrimony' (1900).

Knoxville, nŏks'vĭl, Iowa, city and county-seat of Marion County, on the Chicago, B. & Q., and on the Chicago, R. I. & P. R.R.'s, 35 miles southeast of Des Moines. Here is the State Industrial Home for the Blind, court house, high school and public library. It is the centre of an extensive coal-mining, stock-raising and agricultural district, and has flour-mills, canneries and machine shops. Pop. (1890) 2,632; (1900) 3,131.

Knoxville, Tenn., city, county-seat of Knox County; on the Tennessee River, and on the Knoxville & A., the Knoxville, C. G. & L., the Southern, and the Atlanta, K. & N. R.R.'s; about 110 miles northeast of Chattanooga. It is connected with South Knoxville, on the south side of the river, by a magnificent steel bridge. The site is a picturesque one, being near the centre of the valley between ranges of the Alleghany and Appalachian Mountains, which are visible from several points in and about the city. It is built on a series of sloping hills and their intervening valley-like spaces; the average elevation above the sea-level being about 1,000 feet. It is the commercial centre of a large area of territory, embracing, besides the eastern division of Tennessee, also western North Carolina, southwestern Virginia, North Georgia, and a large part of eastern Kentucky. The rich coal fields which furnish so large a proportion of the fuel supply for the Southern States are from 25 to 60 miles distant from Knoxville. These are the Coal Creek and Jellico districts, and the operators of a majority of these mines have their headquarters in Knoxville.

History.—Knoxville was founded in 1791, by Gen. James White, who had been an officer in the American army in the War for Independence. It was named in honor of Gen. Knox, of Revolutionary fame, the first secretary of war. The first building, a block house, was erected for the protection of the pioneer settlers against the attacks of Cherokee Indians. For a number of years Knoxville was a government military post, barracks being erected for the accommodation of those in the military service. In those days Knoxville was the centre of interest in connection with Indian depredations so common in the settlement of Tennessee.

Trade and Manufactories.—For more than a third of a century Knoxville has been doing a large wholesale business. Wholesale merchants have reached out for additional markets into all the surrounding States. It has good shipping facilities and a branch of the Louisville & Nashville road, about 65 miles in length, is being built and when completed will give the city additional direct connection with the Northwest. During two thirds of the months of the year small steamboats ply on the Tennessee and French Broad rivers, above and below the city and do a large amount of local business. The growth in the number and the capacity of manufacturing establishments in the past decade has been very marked. More than 28 per cent of the entire population of the city is engaged in manufacturing. The chief manufactures are woolen and cotton goods, furniture and cabinet mantels, marble sawed and polished, bar iron, boilers, stoves, castings, coffins and caskets, iron fencing, ready-made clothing, beer, desks, and flour. The woolen and cotton factories, the marble works and the flour mills are large establishments. The growth of small manufactories in the past ten years is a feature that is attracting attention. The marble which is found in quarries at the very gates of the city is used for ornamental purposes in almost every large public or private building being erected in any part of the United States, and the hardwood cabinet mantels being manufactured here are sold in almost every State in the Union. The great abundance and close proximity of raw material — timber, a large number of varieties: coal, iron ore, marble, and zinc, make the place desirable as a manufacturing site.

Climate.—The near proximity of the tall mountains on either side, almost surrounding the valley of which Knoxville is so nearly the geographical centre, does much to modify climatic conditions, and to render them different from those of other cities situated in about the same latitude. The city and surrounding country has been comparatively immune against destructive storms. The average mean annual temperature for a period of 25 years, as shown by the local records of the Government Weather Bureau, is 57°, the mean summer temperature 74°; mean winter 40°; mean spring 57°; mean autumn 58°. The temperature in winter has occasionally gone as low as zero, slightly below, but has continued only for a short time. The maximum mid-day summer temperature has gone as high as 100°, but as a rule the nights are cool.

Banks.—There are eleven banks in the city, five of them national banks. Their combined capital is $1,050,000, with $472,000 surplus and undivided profits. The transactions of the clearing-house have trebled in the past ten years, and during the present year (1903) have averaged over a million dollars weekly.

Churches and Schools.—There are 42 churches in the city for the white population and 17 for the colored. All but one of these are Protestant. The leading denominations, reckoning on the basis of the number of communicants, are the Methodists, Baptists and Presbyterians, in the order mentioned. There are two Protestant Episcopal, three Christian, and two Lutheran churches. It is the seat of the University of Tennessee, the East Tennessee Female Institute, the Tennessee Normal College, the University (preparatory) School, and Saint Mary's Academy. The Knoxville College, for colored students, founded and maintained by the United Presbyterian Church, is located here. The public schools have ten buildings for the white children, and four for the colored. About 100 teachers are employed. The school session is nine months in the year at an average annual cost of about $55,000. The State School for Deaf Mutes is located in Knoxville, also the Lyons View branch of the State Hospital for the Insane.

Benevolent Institutions.—Among the chief of these is the Industrial School for Juveniles, sustained at the expense of Knox County, capable of housing and giving instruction to 200 girls and boys; the Home for Aged Women and an orphanage. The Knoxville General Hospital was erected at a cost of more than $50,000, and is one of the leading institutions of its kind in the South.

Government.—The city is governed by a mayor and board of aldermen elected by the people for the term of two years, and a board of public works elected in the same manner. The assessed value of property for taxation is $14,000,000 which is not exceeding 75 per cent of its actual value. The bonded debt of the city is $1,200,000, most of which was created for paving streets, constructing sewers, building bridges, and other public improvements. The city is supplied with pure wholesome water, from the Tennessee River, by a private corporation which owns the water plant. The lighting plants, gas and electric, are also owned by private corporations.

Population.—The population by the census of 1900 was 32,637; in 1890 it was 22,535; in 1880 9,663; in 1870 8,682. In 1900 the colored population numbered 22.5 per cent of the whole and the foreign population 2.7. The increase in recent years has been very rapid, and it is claimed now (1903) with good reason, that the population of the city and close in suburbs, not embraced in the municipal limits, is at least 60,000.

Wm. Rule,
Editor Knoxville ‘*Journal and Tribune.*’

Knurr-and-Spell. See Nur-and-Spell.

Knyphausen, knĭp'how-zĕn, Baron **Wilhelm von,** German soldier: b. Lützberg 4 Nov. 1716; d. Cassel 7 Dec. 1800. Educated at Berlin, he entered the Prussian army in 1734, in which he became in 1775 a general officer under Frederick II. (the Great). He came to the United States in that year as second in command of the Hessians in the English service, and superseded Gen. von Heister as commander-in-chief in 1777. He fought at Long Island, White Plains, Brandywine, and Monmouth; and during the temporary absence of Clinton in 1780, commanded New York. In 1782 he returned to Germany, where he later became military governor of Cassel. He was a capable soldier, and had no high opinion of his unreliable mercenaries.

Koa'la, a remarkable marsupial (*Phascolarctos cinereus*) of the family *Phalangeridæ*, found chiefly in the interior of New South Wales, and known to the colonists as «native bear.» It is about two feet long, and has a heavy, depressed, somewhat bear-like form, no tail, strong limbs with five digits armed with long claws on each, the inner digit on the hind feet and two inner on the fore feet opposable to the others, the ears large and like the rest of the body covered with a dense gray woolly fur. These characteristics fit it for an arboreal existence, and it lives altogether in trees, descending only occasionally to dig for roots. It is especially active at night and feeds on leaves and buds of eucalyptus trees. It is timid and defenseless, and is killed with clubs by the Australian blackfellows, who eat its flesh. Compare Wombat, and consult authorities cited under Marsupialia.

Kobbé, kŏb'bā, **Gustav,** American author and journalist: b. New York 4 March 1857. He was graduated at Columbia University in 1877, and at its Law School in 1879; and has since been employed in newspaper and magazine work. He has published: ‘The Ring of the Nibelungen’ (1889); ‘Wagner's Life and Works’ (1890); ‘My Rosary and Other Poems’ (1896); ‘New York and Its Environs’ (1891); ‘Plays for Amateurs’ (1892); ‘Miriam’ (1898); ‘Opera Singers’ (1901); ‘Signora, a Child of the Opera House,’ a novel (1902).

Kobbe, kŏb, **William A.,** American general: b. New York 10 May 1840. He was educated in Germany till 1862 and was graduated from West Point in 1873. He served in the Civil War in the 7th New York regiment and rose to the rank of captain. In the war in the Philippines he was placed in command, in January 1900, of an expedition to the southern extremity of Luzon, and in March following was appointed military governor of the Province of Albay (Luzon), and Catanduanes Island, and temporary governor of the islands of Samar and Leyte. On the reorganization of the regular army in February 1901, he was appointed one of the new brigadier-generals.

Kobé, kō'bĕ, Japan, a treaty port and former municipality of the main island Hondo, on the west shore of the Gulf of Osaka, adjoining on the northeast the prefectural city of Hiogo (q.v.), with which it was united in 1892. It is the most important of the treaty ports with the largest trade, a fine harbor, docks, wharves for ocean steamers, ship-building yards, railway shops and other important industrial establishments. Kobé is well laid out with wide streets, electrically lighted. Pop. (1898) 215,780.

Ko'bold, a species of elf in the popular superstition of Germany, corresponding to the English *goblin.* The kobold is connected with a house or a family, and appears in bodily shape.

Koch, kŏʜ, **Robert,** German bacteriologist: b. Klausthal, Hanover, 11 Dec. 1843. He received a medical education at Göttingen (1862–6), was assistant-surgeon in the Hamburg general hospital, was in private practice at Langenhagen (Hanover), Rakwitz (Posen), and Wollstein (Posen), and in 1872 was appointed to the Imperial board of health. In 1882 he succeeded in isolating the tubercle bacillus, in 1883 was made privy councillor and became director of the cholera commission to India and Egypt. He discovered in 1884 the cholera spirillum, or comma bacillus, regarded as a positive test of the presence of Asiatic cholera. For this service he received by legislative act a gift of 100,000 marks ($25,000). In 1885 he was appointed professor in the University of Berlin, director of the newly established Hygienic Institute of Berlin, and also director of the Prussian board of health. He announced in 1890 the discovery of a substance called tuberculin, which, he asserted, would cause to cease the growth of the tubercle bacillus.

Subsequent experiment failed in the judgment of scientists to confirm his claim in connection with the treatment of human beings. Among his writings are: ‘Beitrag zur Aetiologie der Tuberkulose’ (1882); ‘Ueber die Cholerabakterien’ (1884); and ‘Weitere Mitteilungen über ein Heilmittel gegen Tuberkulose’ (1890).

Kock, Charles Paul de, shärl pōl dė kŏk, French novelist: b. Passy, France, 21 May 1794; d. Paris 29 Aug. 1871. He was the son of a Dutch banker who was guillotined in 1794. At 15 he was placed in a banking-house, but presently took to writing, and his reputation was soon established by such works as ‘Georgette’ (1820); ‘Gustave, ou le mauvais Sujet’ (1821); ‘Mon Voisin Raymond’ (1822). The last is regarded as the typical romance of its kind. His scenes are cast in the lower ranks of middle-class life. His narrative is a constant succession of stirring incidents without catastrophe. The incidents are always gay and lively, frequently somewhat gross, but scarcely to the extent of indecency. The worst feature of Paul de Kock's works is his style, which is barely presentable, a fault evidently due to deficiency of education. This accounts for his popularity being greater abroad than at home, as the defects of style disappear in translation. Besides his novels, which are very numerous, he wrote several dramas, chiefly taken from them. Consult: Trimm, ‘La Vie de Charles Paul de Kock’ (1873).

Ko'dak, a portable photographic camera of special type for taking instantaneous negatives. It is made in the form of a small box having a lens and a shutter in one side and a reflector on top by which the operator can focus the lens. When this has been done a button is pressed and the snap-shot is taken. The kodak is provided with a continuous roll of sensitized film on which successive negatives can be made.

Koehler, kė'lėr, **Robert,** American artist: b. Hamburg, Germany, 28 Nov. 1850. He came with his parents to the United States in 1854; was educated at Milwaukee, Wis., and learned lithography which he practised in Pittsburg, Pa., and New York. After studying drawing in the night classes of the National Academy of Design, he went to Munich where he learned painting under Loeftz and Defregger and chose genre as his special field of activity. His principal pictures are: ‘Holiday Occupation’; ‘Her Only Support’; ‘The Socialist’; ‘The Strike’; ‘The Family Bible’; and ‘Father and Son.’ Since 1893 he has been director of the Minneapolis School of Fine Arts.

Ko'el, one of a group of East Indian and Australian fruit-eating cuckoos, of the genus *Eudynamis*, which are popularly known as «rain-birds.» They are parasitic, but have many peculiarities, among which are the glossy black plumage of the males, and the fact that, contrary to the rule, the immature young resemble the males instead of the females, which have a reddish dress. A Philippines species (*E. mindanensis*) is locally called «phow.» They utter loud whistling cries.

Kogia, kō'jĭ-a, the generic and ordinary name of the «pigmy» sperm whales of the Pacific, which differ from the true sperm whales (q.v.) in anatomical particulars, and conspicuously in size, not exceeding about 15 feet in length. There are several species of these cetaceans which belong mainly to the New Zealand region, although one species visits the coast of California, but they are little known.

Koh-i-Nûr, kō'ē-noor', or **Kohinoor.** See DIAMOND.

Kohl, Johann Georg, yō'hän gā'ōrg kōl, German traveler and historian: b. Bremen 28 April 1808; d. there 28 Oct. 1878. Nearly his entire life was devoted to travel and historical investigation in Europe and in North America, where he spent four years and published as the fruits of researches: ‘Travels in Canada’ (1855); ‘Travels in the Northwestern Parts of the United States’ (1857); ‘History of the Discovery of America’ (1861); and several essays on American cartography. Other works are: ‘Travels in the Interior of Russia and Poland’ (1841); ‘The British Isles and Their Inhabitants’ (1844); ‘The Rhine’ (1851); ‘The Danube’ (1853).

Kohl-Rabi, kōl-rä'bĭ, a botanical variety of the same species as cabbage (q.v.), from which it differs in the swelled, turnip-like stem with a tuft of loose leaves on the top. This bulbous stem, which may be six inches in diameter, is used for human and stock food, less in America than in Europe. Its quality and texture are less agreeable, except in very young plants, than are those of turnips and cabbage.

Kohler, ko'lėr, **Kaufmann,** American rabbi: b. Fürth, Bavaria, 10 May 1843. After completing his studies at the universities of Munich, Berlin, and Leipsic, he was chosen as rabbi in Detroit in 1869, and two years later elected rabbi of Temple Sinai, Chicago, where he introduced Sunday lectures, a novelty in those days. In 1879 he was called to Temple Beth El, New York. At his initiative in 1885 a rabbinical conference was held at Pittsburg, Pa., which formulated a platform for Reformed Judaism. In later years he frankly receded from the radical standpoint and assumed a more conservative position. In 1903 he was elected president of the Hebrew Union College. He has been a frequent contributor to the Jewish press, and in addition to various volumes and critical papers has written: ‘Der Segen Jakobs’ (1868), and a ‘Guide to Instructions in Judaism’ (1900).

Kohlsaat, kōl'sät, **Herman Henry,** American publisher. He was educated in the public schools of Chicago and Galena, Ill., and after acting as traveling salesman for several years for Chicago firms, became in 1880 a junior partner in a wholesale bakery. He subsequently acquired a fortune in the bakery business and other enterprises, and in 1891 became part owner of the *Inter-Ocean* of Chicago, and in 1894 owner of the Chicago *Times-Herald*, now *The Record-Herald*, and of the Chicago *Evening Post*.

Koko-nor, kō'kō-nôr', or **Kuku-nor,** a lake in Tibet, not far from the Chinese province of Kan-su. It lies 12,007 feet above the level of the sea. Its very salt waters, exquisitely blue in color, cover 66 miles by 40. It contains five islands, one with a Buddhist monastery.

Kokomo, Ind., city, county-seat of Howard County; on the Wildcat River, and on the Toledo, St. L. & K. C., the Pittsburg, C., C. & St. L., and the Lake Erie & W. R.R.'s; about 55 miles north of Indianapolis. It was settled in 1844 by

Daniel Foster, incorporated as a town in 1845 and chartered as a city in 1855. Kokomo is located in a region of good farms, but it is a manufacturing and commercial city. The chief manufacturing establishments are plate, opalescent and table glass works, potteries, steel-mills, a fibre-bond mill, stove works, rubber works, automobile factories, bit works, pulp- and paper-mills; all employing about 7,500 men. There are seven churches, a classical school, a high school, public and parish schools, and a public library. The three banks have a combined capital of $300,000. The government is vested in a mayor and 10 councilmen, elected biennially. Pop. (1890) 8.261; (1900) 10,609; (1903) 17,000, of which about 1,500 are Germans; 1,000 French, and 1,000 Irish.

J. A. KANTZ,
Editor of ‘Kokomo Tribune.’

Ko'la-nut. See COLA-NUT.

Kol'berg. See COLBERG.

Kolb's Farm, Engagement at. After the action at Pine Mountain (q.v.), 15 June 1864, Gen. Sherman closed in on the Confederate army defending Marietta and the railroad south to the Chattahoochee, and began the extension of his lines to the right. The Confederates made a corresponding move to the left, and on the night of the 21st Hood's corps of two divisions, Hindman's and Stevenson's, moved from the right, near the railroad north of Marietta, to the Marietta and Powder Springs road, near Zion Church, about four miles southwest of Marietta and a mile east of Kolb's Farm. Hood now occupied the extreme left of the Confederate line, and had been instructed by Gen. J. E. Johnston to endeavor to prevent any progress of Sherman's right toward the railroad, the course of which was nearly parallel to the Confederate left and centre, and which was seriously menaced by Hooker's and Schofield's corps. On the morning of the 22d Schofield had advanced one division, Hascall's, on the road from Powder Springs Church to Marietta, with orders to take position on Hooker's right, near Kolb's house. Hooker, in going to the right and forward, reached to the Marietta road at Kolb's, and made connection with Hascall's division. Williams' division, massed by brigades, held Hooker's right, Geary's division was on the left of Williams, and Butterfield's division was further to the left on the line of Howard's Fourth corps. Williams and Hascall had very sharp skirmishing in getting into position, and from prisoners taken of Hood's corps it was learned that Hood, supported by Hardee, was about to attack, upon which both Williams and Hascall were ordered to deploy their divisions, and they threw up breastworks, Hascall in heavy woods, and Williams, for the greater part, on open, commanding ground, giving good positions for artillery. The deployment had not been completed and but few breastworks had been thrown up when, about 5 P.M., Hood made his attack. As he advanced from the woods which had sheltered him and concealed his line, his right was met by a terrific fire of shell, case-shot, and canister, that tore great gaps in the line and partially broke up his formation; but he pressed on and, coming under still closer canister fire and deadly volleys of musketry, was repulsed after a most desperate struggle of less than an hour. The attack fell upon the divisions of Williams and Hascall, Williams losing only 130 killed and wounded, and Hascall a less number. Hood's loss was 1,012 killed and wounded and about 100 missing. Consult: ‘Official Records,’ Vol. XXXVIII.; Cox, ‘Atlanta’; Johnston's ‘Narrative.’

E. A. CARMAN,

Kol'lock, Mary, American painter: b. Norfolk, Va., 20 Aug. 1832. She studied at the Academies of New York and Philadelphia, as well as in the Julian school at Paris. In 1877 she was elected instructor in painting to the Ladies' Art Association of New York. She has been industrious in filling many canvases with her graceful landscapes and simple genre groups, and her latest works include: ‘Road in Normandy’; ‘The Italian Brigand’; ‘Washing in Pont-Aven, France’; and ‘The Gossips.’

Kolmar, kōl'mär, Germany, city and capital of Upper Alsace, formerly in the French department of Haut Rhin, 39 miles south of Strasburg. Its fortifications were destroyed in 1673, and it is now surrounded by boulevards, and entered by three gates. Here is the public library with 36,000 volumes, and some pictures by Schön, Albert Dürer, etc.; and the museum, where, among other curiosities, a remarkable aërolite is preserved, which fell near Ensisheim in 1492, and originally weighed about 284 pounds. The portion here weighs about 142 pounds. Kolmar has manufactures of printed goods, calicoes, silks, etc., besides cotton-spinning mills, tanneries, and chamois-leather works. It has a considerable trade in the manufactured goods of Alsace, and in iron, grain, wine, madder, etc.; and in colonial produce, with which it supplies Switzerland. In 1552 Kolmar was surrounded by walls and towers, and made an imperial free town. In 1632 it was taken by the Swedes, who maintained possession for two years. It was united to France in 1697 by the Peace of Ryswick, and surrendered to Germany by the Treaty of Versailles, 26 Feb. 1871. Pop. (1890) 30,411; (1900) 36,736.

Kolyma, kō-lē'mä, a river of Siberia, in the government of Yakutsk, which rises in the mountains of Stanovoi-Krebet. After a course of about 1,000 miles it falls into the Polar Sea. The chief tributaries are the Greater and the Lesser Aniuj and the Omolon, which enter it on the left not far from the sea. Afterward the river divides into two, and subsequently into three branches, forming a delta. The Kolyma has sufficient depth for any vessel, but navigation, especially at the entrance, is rendered dangerous by shifting sand-banks.

Kongo, kŏng'gō, or **Congo, Free State,** an independent State in Central Africa, constituted in 1885. It is bounded northwest and north by French Kongo and British East Africa, the dividing line being partly the Kongo itself and its tributary the Ubangi; on the east it is bounded by British East Africa, German East Africa, Lake Tanganyika, and British Central Africa; on the south by the Portuguese and British territories. It reaches the Atlantic at the mouth of the Kongo by a narrow neck of land. The territory has an area of about 900,000 square miles, and is divided into 15 administrative districts, namely, Banana, Boma, Matadi, the Falls, Stanley Pool, Kwango, Oriental, Kassai, Lake Leopold II., Bangala, Equator, Ubangi, Welle, Stanley Falls, Aruwimi, and Lualaba, each of these districts being under a commissioner. The northeastern portion of the State, forming fully one third of the whole, is mostly under dense and almost impenetrable forest, but the remainder largely consists of arable land of considerable fertility. Among the cultivated plants are maize, millet, manioc, tobacco, coffee, sugar-cane, hemp, bananas, etc., and most of the fruits and vegetables of Europe have been found to thrive excellently. The wild animals include the elephant, hippopotamus, crocodile, buffalo, antelopes of various kinds, the chimpanzee, soko, etc. The imports consist mostly of woven goods, spirits, tobacco, and firearms, and the exports comprise ivory, rubber, ground-nuts, palm-oil, gum-copal, wax, etc. The climate is very unhealthful to white men, owing to the combination of great heat with a very moist atmosphere, but in a few of the more elevated spots it is much better. There are two rainy seasons, namely, October-December and February-May, the latter being much the wetter, and between these intervene the two dry seasons. There are not as yet many good roads in the State, but there are thousands of miles of navigable rivers. The Kongo is navigable from the sea up to Matadi, and again for 1,000 miles between Stanley Pool and Stanley Falls, but the portion between Matadi and the Pool is obstructed by cataracts. A railway has, however, been opened between these two places. The bulk of the inhabitants are of Bantu stock, but in the extreme north the proper negro type is found, and in some of the eastern parts of the State Arabs and other ethnical groups occur. Large numbers of the inhabitants are cannibals of the most pronounced type, and the vast majority are heathens.

After Stanley had proved the identity of the Lualaba with the Kongo, a Comité d'Etudes du Haut Kongo was formed under the auspices of Leopold II., king of the Belgians; and in 1879 this body commissioned Stanley to return to the Kongo region with a view to preparing for the development of its resources. He established his first station at Vivi, and afterward founded others at Isangila, Manyanga, Leopoldville, Equatorville, Stanley Falls, and elsewhere, several of these being connected by good roads. In 1884 the African International Association replaced the committee, and in the following year it secured the foundation of the Kongo Free State and the recognition of its independence by the Congress of Berlin. Trade and navigation on the Kongo and all the rivers, lakes, and canals connected with it were declared absolutely free, and the suppression of the slave-trade was provided for. Leopold II. was made sovereign, and Brussels was named as the seat of the government. In 1889 Leopold bequeathed his sovereign rights to Belgium. In 1890 the territories of the State were declared inalienable, and in that year also the right was reserved to Belgium of annexing it after 10 years. This convention expired on 3 June 1903, when the Belgian government decided to abandon the project of annexation, allowing the option to expire, the reasons given being popular opposition and the attitude of Great Britain. The central government, located at Brussels, comprises the king of the Belgians as sovereign, and a secretary of state, etc. At Boma there is a governor-general, under whom of course there are numerous officials. There is an army of native Africans, having an effective strength of about 16,000, commanded by European officers. Besides Boma, the capital, the chief stations are Banana, Matadi, Vivi, Isangila, Manyanga, Leopoldville, Mswata, Kwamouth, Bolobo, Lubolela, Equatorville, Bolombo, Stanley Falls, Nyangwe, Yambuya, Basoko, Benabendi, etc. Pop. estimated at from 14,000,000 to 30,000,000; number of Europeans (1898) 1,678 — mostly Belgians.

Kongo, or **Congo, River,** Africa, a large river in southwest Africa, flowing into the Atlantic Ocean in lat. 6° S.; lon. 12° 40′ E. Its estuary was discovered by the Portuguese, Diego Cam, in 1482; and the lower part of its course was first explored by Capt. Tuckey in 1816. The upper part of the river remained unknown till Stanley, by descending from Nyangwe on the Lualaba to the mouth of the Kongo (1876–7), proved the two rivers to be identical. The Kongo is formed by the junction of the Luapula and the Lualaba in about the same latitude as the mouth. Of these the former issues from the south end of Lake Bangweolo, bends northward, and flows into Lake Moero, on leaving which it pursues a northwesterly course. The chief inflowing river of Bangweolo is the Chambezi, which enters the lake on the east after flowing southwest from the mountains of northeastern Rhodesia. The Lualaba rises by several headstreams in the south of Kongo Free State and flows north and north-northeast through a series of lakes to its junction with the Luapula. The river thence flows north and slightly west to Nyangwe, receiving the Lukuga on the right from Lake Tanganyika, thus being connected immediately with the great lake system of Central Africa. It then follows a northerly course for about four degrees, near the equator turns to the northwest and holds that direction till it reaches about lat. 1° 45′ N., when it turns first west and then gradually southwest. About the place where the river first crosses the equator there are seven falls, called Stanley Falls; and about lon. 17° E. and lat. 2° 30′ S. there begins a series of cataracts and rapids. In this part of its course it receives some very large tributaries, the most important of which are the Aruwimi, the Rubi, the Mongalla, and the Mobangi (or Ubangi), which join it on the right, and the Boloko, Lopori, Ikelemba, Ruki, and Kwa, which join it from the left, the latter representing the collected waters of the Kassai, the Kwango, Sankuru, etc. Below the Livingstone Falls, near Stanley Pool, the course of the river, which is there contracted, again expands, till at its mouth it attains a breadth of 10 miles. It is navigable for about 110 miles from its mouth up to the cataracts, and above Stanley Pool steamers ply for about 1,000 miles. The amount of water which the river discharges is greater than that discharged by the Mississippi, the volume of water being next to the Amazon. The length of the river is estimated at 3,000 miles, and the area of its basin is about 1,600,000 square miles. Consult: Stanley, 'Through the Dark Continent' (1878).

Kongo-snake, one of the slender amphibians of the family *Amphiumidæ*, which take an intermediate place between the cœcilians and the salamanders as the lowest family of the tailed (urodelous) amphibians. Several genera occur in Asia and North America. The giant "salamander" (*Cryptobranchus maximus*) of the mountain-streams of Japan sometimes more than five feet long, and the American hellbender (q.v.) are of the same family. The term «Kongo-snake,» however, belongs specifically to the typical genus and species, *Amphiuma means,* which inhabits suitable localities in all the warmer parts of the United States, where it receives its name from the negroes of the Southern States. It is an eel-like creature, with very small, three-toed and almost useless limbs, one pair near the head and the other almost at the caudal extremity, which haunts shallow stagnant waters, is numerous in the southern rice-fields, and is superstitiously feared by many persons although perfectly harmless. It feeds on small fishes, snails, crayfish, insects, etc., which it darts upon in the water or roots out of the mud. It reproduces by eggs, deposited at the end of the summer in a damp place, as under a rotting log, which, provided with shells, are connected by a gelatinous cord, and are protected by the female who coils her body about them and afterward takes care of the young. The embryos have well-developed external gills, but these disappear with growth, and even gill-clefts are greatly reduced in adults. Consult: Cope, ‹Batrachia of North America› (1889); Gadow, ‹Amphibia and Reptiles› (1901).

Königsberg, kėn'ĭgz-bĕrg, Prussia, a seaport town, capital of the province of East Prussia and of the government of the same name, on the Pregel, about 4½ miles above where it enters the northeast extremity of the Frische Haff. It was once the Prussian capital, and the residence of the electors of Brandenburg, and still is a residence of the sovereigns and the place of coronation. It is surrounded by ramparts and detached forts. The larger part of the town is on the north bank of the Pregel, on hilly ground, a feature being an ornamental sheet of water with richly wooded banks, called the Schloss-Teich (Castle Pond). The older portion is divided into three parts — Altstadt, or Old Town, on the west, Löbenicht on the east, and Kneiphof, on an island of the Pregel. The town, provided with electric street railroads, has on the whole a modern appearance. The principal public buildings are the cathedral, begun in 1333, an interesting Gothic structure, situated in the Kneiphof; a new Gothic church in the Altstadt; the Haberberg Kirche, a conspicuous church in the southern portion of the city; the Schloss, or palace, a large building, containing apartments for the royal family, once the residence of the grand-masters of the Teutonic Order; the Schlosskirche, occupying a wing of the palace, in which Frederick I. in 1701 and William I. in 1861 placed the crown on their own heads as kings of Prussia; the old citadel of Fredericksburg; the handsome exchange, of recent erection; the university, founded in 1554 by the Margrave Albert, and hence called the Albertine, attended by 800 to 900 students, accommodated in handsome new buildings in the Renaissance style, and having connected with it a library of 220,000 volumes, a zoological museum, etc.; an observatory which the labors of Bessel have rendered famous, a botanical garden, a conservatory of music, museums, an ecclesiastical seminary, and other superior schools; town-house, law-courts, post-office, provincial government buildings, a theatre, a lunatic asylum, an infirmary, and several hospitals and benevolent endowments. The town contains other valuable libraries in addition to that of the university. The manufactures include machinery and iron castings, woolen cloth, yarn and thread, leather, sail-cloth, copper, steel, and ironware, chemicals, tobacco and cigars, pasteboard, vinegar, articles made of amber, earthen and stone ware, liqueurs, and artificial mineral waters. There are also breweries and distilleries, and some ship-building. Large vessels bound for Königsberg stop at Pillau, which is considered its port. The principal exports are grain, flax, hemp, oil-cake, bones, timber, etc. Königsberg is the seat of many important provincial courts and public offices. It was founded in 1255. In 1365 it became a member of the Hanse League; was the residence of the grand-master of Teutonic knights from 1457–1528; in 1626 was surrounded with walls; in 1657 it received a strong additional defense in the citadel of Fredericksburg, though the object of the margrave who built it is said not to have been so much to defend the town as to overawe its citizens. It suffered much during the Seven Years' war and from the French in 1807. Pop. (1900) 189,483.

Koo-cha-bee, koo-chä'bē, a food prepared formerly by the Indians from the dried pupæ of certain flies of the family *Ephydridæ,* which form in the water of some of the lakes of northern California and Nevada, and drift ashore in vast numbers in midsummer. They are dried, ground into meal, and baked into edible cakes. A similar food is obtained in Mexico by gathering the eggs of another aquatic fly of the same family, and is called «ahuatle.»

Koo'doo, one of the largest species of antelope (*Strepsiceros kudu*), originally found throughout the entire southern and eastern parts of Africa but now nearly extinct in Cape Colony. The males bear great, rough, twisted horns nearly four feet long, and wound in a wide, open, spiral of about two turns; the females are hornless. Both sexes have short hoofs, a fringe of rough hair along the middle of the back and a similar one on the throat; and are marked with narrow vertical stripes on the flanks, a spinal band, and a chevron on the face, all of white. The koodoo lives in pairs or small parties in thick forests, especially on the rough hilly districts of Nyasaland. In many districts it has been decimated by the hide-hunters. A smaller species (*S. imberbis*) inhabits the low bushy countries of Somaliland and the Kilima Njaro region.

Kookas, koo'kạz, or **Kukas**, a sect of fanatical Hindus in the Panjab, which originated after the annexation of that territory to British India (1849), in consequence of jealousy of the equal political rights granted to the Mohammedans of that region under British rule. They are a body of reformers of extreme views, and are hence regarded with as much hostility by orthodox Sikhs as they are by the Mohammedans, whose rights they are anxious to invade. The chief right conceded to the Mohammedans by the British government of India, and objected to by the Kookas, is that of killing cows, which are regarded as sacred animals in the Sikh religion; and it was mainly this practice that led to the consolidation of the most violent and fanatical adherents of the Sikh religion into a distinct sect. Their number has been variously estimated at from 50,000 to 800,000. In 1871 they were incited to attack and massacre the

Mohammedan butchers who killed cows in different parts of the Panjab, but they were quickly suppressed by the British government.

Koo'soo, or **Kosin,** a bitter drug prepared from the dried flowers of an Abyssinian plant (*Brayera anthelmintica*), which contains much tannin, and is used as a vermifuge.

Kootenay (koo'tē-nā) **River,** a tributary of the Columbia, rising in British Columbia. It is 400 miles long. After flowing south into Montana and Idaho it again enters British Columbia.

Kopisch, August, ow'goost kō'pĭsh, German poet and painter: b. Breslau 26 May 1799; d. Berlin 3 Feb. 1853. He studied art in the Prague Academy (1815) and in Vienna. From 1819 to 1822 he continued painting, when an injury to his hand disabled him, and he started on travels through Italy, and in Rome and Naples applied himself to the study of local poetry and archæology. It was he who discovered the famous 'Blue Grotto' or 'Grotto of the Nymphs' on the island of Capri. He returned to Germany in 1828, and received the title of professor in Berlin. He removed to Potsdam in 1847 and occupied himself in writing an account of the royal castles there and in the neighborhood. Most of his pictures are mere sketches. His witty poems, clever stories, and translations, including one of Dante, are all included in his 'Gesammelte Werke' (1856).

Kopitar, kō'pē-tär, **Bartholomæus** or **Jernej,** Austrian philologist: b. Carniola, Austrian Hungary, 1780; d. 1844. He was educated at the German gymnasium of Laibach, and completed his studies at Vienna, where he became curator of the imperial library. In 1814 he set out on his travels through Europe, his tour embracing Germany, England, Italy and France, to which last country he went with the special mission of recovering the Slavic manuscripts carried off by the French in 1809. His contribution to philological science consists in pioneer work in Slavic grammar. His principal works are: 'Grammatik der slawischen Sprache in Krain, Kärnten, und Steiermark' (1808); 'Glagolita Clozianus' (1836); and 'Hesychii Glossographi Discipulus Russus' (1839).

Kopp, Georg, gā'ōrg kŏp, German cardinal and statesman: b. Duderstadt 27 July 1837. He was the son of a poor weaver and attended the gymnasium at Hildesheim. In 1856 he became a telegraph operator in the employ of the Hanoverian government. From 1858 to 1861 he studied theology and in 1862 entered the priesthood. He rose rapidly in his profession and in 1872 was made vicar-general at Hildesheim and three years later bishop of Fulda. His reasonable ultramontanism was exercised in bringing about a better understanding between the German government and the papal curia. Being elected member of the house of lords he obtained a mitigation of the harsh provisions which characterized the May laws. In 1887 with the approval of the Prussian government the pope appointed him prince-bishop of Breslau, and in 1893 he was made cardinal.

Kopp, Joseph Eutychius, Swiss antiquarian: b. Beromünster, Canton of Lucerne, 25 April 1793; d. Lucerne 25 Oct. 1866. He studied theology and philology in Lucerne and Freiburg, and in 1819 was appointed professor of Greek in the Lyceum of the former town. While serving in the legislative body of the republic, he was led as a "conservative Catholic" into such bitter controversy with the Jesuits, that in 1845 he was compelled to retire into private life and undertook a tour by way of Vienna to Rome, for the purpose of examining such archives as might throw light upon the history of his native country. He was elected corresponding member of the Academies of Berlin and Vienna. Self taught as he was, he became the Niebuhr of Swiss history, and proved how her true annals had been obscured by such legends as those of William Tell, etc. Among his chief publications are 'Geschichte der Eidgenössischen Bünde' (1862); 'Geschichtsblätter aus des Schweiz' (1856); 'Dramatische Gedichte' (1866).

Köppen, Peter Ivanovitch, pā'tėr ē-vän'ō-vĭch kėp'pĕn, Russian archæologist: b. Kharkov, Russia, 19 Feb. 1793; d. Karabagh, Crimea, 4 June 1864. He was educated at the University of Kharkov and subsequently traveled widely in order to procure historical and archæological material for his work. The outcome of his investigations, written in German, is comprised in the reports of the Academy of St. Petersburg, but among other works of his are: 'Kulturgeschichte Russlands' (1825) and his famous 'Ethnographical Map of European Russia' (1851).

Koran, kō'ran or kō-rän' (Ar. *quran, qoran,* reading, from *qara,* read; with the Arabic article, *Alkoran;* also called *Furkan.* salvation, *Al-Mushaf,* the volume, *Al-Kitab,* the book, *Al-Dhikr,* the reminder or the admonition), the sacred scripture of the Mohammedans, written in Arabic and professing to be the revelation of Allah (God) to Mohammed. It contains a code for the government of all Moslem transactions, and is accepted by true Mussulmans as uncreated and eternal. According to orthodox Mohammedan belief it was written from the beginning in golden rays on a magnificent tablet in heaven, and was communicated to Mohammed on the night of Al-Kadr, in the sacred month of Ramadan, by the angel Gabriel, chapter and verse as they stand, on parchment made of the skin of the ram which Abraham sacrificed instead of his son Isaac, in a volume ornamented with precious stones, gold, and silver from paradise. Other traditions are different, one being that Mohammed was assisted in composing it by a Persian Jew and a Nestorian monk. Its revelations cover Mohammed's entire prophetic career, 610–632 A.D. It is the first work known in Arabian prose, its scattered discourses being preserved on stones, palm-leaf ribs, leather, etc. Except in a few instances, Allah is the speaker. Mohammed named the book at the time of imparting the first revelations, and the name was retained for the collection when this was made in 633 by Zaid, son of Thabit, under direction of Abu-Bekr, father-in-law of the prophet. The authorized text, ever since accepted, was produced under the caliph Othman, 650 A.D., from the fragments, originally thrown together without order, and afterward gathered in a volume with no attempt at arrangement, not long after Mohammed's death. In order to free the book from various readings, Othman commanded the destruction of all other copies, and in purity of text the Koran stands alone among religious scriptures. The chronological order has never been clearly determined, and many conjectural rearrangements and subdivisions have been made by Mohammedan and other scholars.

In size the Koran is nearly the same as the New Testament; it is divided into 114 suras or chapters, each beginning: «In the name of God»; the suras have various subdivisions. The Koran is dogmatic throughout; from beginning to end it is dominated by the positive keynote: «There is no doubt in this book.» Its author was indebted to many other writers. Of the sacred writings of the Jews he directly cites only the Pentateuch and the Psalms; of the New Testament, with which internal evidence shows him to have been acquainted, he cites nothing; but besides the religious writings of the Jews and Christians he knew the systems of the Magians, the Sabians, and other sects, from whom he derived many materials to be incorporated in a new religion for his own country, where numerous and diverse faiths already existed.

Mohammed lived much in solitude, meditating on his mission and his doctrine; he did not reject the teaching of any sect; asserted his desire to restore the purity of the true faith; announced as his fundamental doctrine the unity of God. This idea, together with conceptions of divine might, sovereignty, compassion, and other attributes of Godhead, is all-pervading in the pages of the Koran; «God is God,» it declares, «and Mohammed is his prophet.» He felt that the unity of God had been the essential doctrine of all true religion, in which custom and ceremony were but accidents. «We make no difference,» he says, «between that which God has taught us and that which Abraham, Isaac, Ishmael, the twelve tribes, Moses, and Jesus have learned from the Lord.» «God commands thee to receive the religion which he prescribed to Noah, which he has revealed unto thee, and which he imparted to Abraham, Moses, and Jesus.» To Jesus Mohammed assigns a place in the seventh or highest heaven, in the immediate presence of God.

The Koran dwells much on the resurrection and the last judgment, setting these forth somewhat after the manner of the Apostle Paul: «When the trumpet sounds the second time, they shall rise quickly from the graves to appear before God.» «A sound of the trumpet of judgment will assemble all men before my throne, and every one shall there receive the reward of his deeds.» In its presentation of the last judgment the Koran resembles the teachings of the Jews and the Magians; in the passage of the narrow bridge to paradise — Al-Sirat, over the abyss of hell, finer than a hair, sharper than a razor; in the book wherein all the actions of men are set down, and the scale in which they are weighed. Quite Jewish and Magian also are the Mohammedan views of paradise. The doctrine of predestination as contained in the Koran was successfully employed by Mohammed to encourage his followers in the face of every trial and danger. Herein he probably availed himself of beliefs already widely held, especially among the Sabians, with their worship of intelligences supposed to reside in the heavenly bodies, controlling the lives of men and the course of events, and by the Magians, who held a system of dualism, the influence of these beliefs having exerted itself upon the Arabians.

In the matter of religious exercises Mohammed largely adopted such as he found, to those which were narrow or vague, giving more of universality and precision. The Koran prescribes prayer, fasting, alms, and the pilgrimage to Mecca; prayer embraces ablutions, purifications, and all other exercises needful to preparation for it; to those who sought to be relieved from these observances Mohammed replied, «Religion without prayer is nothing»; prayer he calls «the key to paradise.» Surpassing the severity of the rabbis, he prescribed prayer five times a day, with the face of the suppliant turned toward Mecca. To give alms was always an Arabian practice, but the Koran makes it obligatory. Concerning polygamy, divorce, inheritance, etc., it follows the law of Moses and the decisions of the rabbis, adapting them to the prejudices and customs of the prophet's people; it forbids few of the old practices save idolatry; «God,” it says, «intended that his religion should be easy, else, as he well knew, you would only become hypocrites.»

Although the Koran is written in prose, the different parts of a sentence end in rhymes, and there is marked diversity of style, yet withal an impressive unity, characterized by a free and forcible eloquence unequaled in any other Arabic writings. The earlier utterances of the prophet seem often to be outbursts of unbridled imagination, though still the solemn words of prophetic earnestness proclaiming God with power to reach and sway the hearts of men. In later portions of the book the tone takes more of calmness; imagination is subdued; the author dictates extended passages to be taken down by his hearers. The highest elevations are where he speaks of the greatness of God and describes the last judgment, the pleasures of paradise, and the pains of hell.

The moral precepts of the Koran exhibit a lofty feeling of humanity and a profound sense of ethical law reduced to most practical forms. They inculcate all the noblest virtues and pieties — obedience to divine commandments, charity, humility, mildness, temperance, toleration, and the strong virtues of courage, faith, and justice. To death in the cause of religion it ascribes a peculiar merit. The influence of this book through many centuries and among many peoples has been vast, and it still controls the lives of a great portion of the human race. «From the Atlantic to the Ganges,» says Gibbon, «the Koran is acknowledged as the fundamental code, not only of theology, but of civil and criminal jurisprudence; and the laws which regulate the actions and the property of mankind are guarded by the infallible and immutable sanction of the will of God.» The divinity and authority of the Koran have at times been assailed among Mohammedans themselves. The first serious heresy, about 740, was suppressed by the execution of its chief author, but appeared again in the next century, and was not finally crushed out until 842, when Harun II. prohibited all discussion regarding the character of the Koran, which has since been everywhere held by Mohammedans in admiration as the great Arabian classic, and in reverence as the book of religious authority. Once each day it is read through in the mosques of the Sultan and in the adjoining chapels. By the faithful it is never carried below the girdle; not without their own purification may they even touch it; and on walls, doors, banners, etc., its texts are frequently written.

Commentaries on the Koran are almost innumerable. The library of Tripoli, in Syria, is said to have contained no less than 20,000 of them. Many editions have been published in different countries. For English readers that of Sale (1734), with its comprehensive introduction, covering all the important aspects of Mohammedanism, is still of prime value. The translation of E. H. Palmer (1880) is authoritative, as is also that of Rodwell (2d ed. 1876). Several versions in German have appeared in which it was attempted to reproduce the rhyming style of the original: J. von Hammer's (1811), A. Sprenger's (1861–5), Fr. Rückert's (1888), and M. Klaproth's (1890). Other editions which have their special values are Hinkelmann's (1694), Maracci's (1698), and Flügel's (1883). Consult: Sprenger, ‹Leben und Lehre des Mohammed›; Kremer, ‹Herrschende Ideen d. Islam›; Braun, ‹Gemälde d. Islam›; Deutsch, ‹Islam›; Dozy, ‹L'Histoire d'Islamisme›; Muir, ‹Life of Mahomet and History of Islam›; Gibbon, ‹Decline and Fall,› ch. L.; Irving, ‹Mahomet and his Successors›; Carlyle, ‹Heroes,› «The Hero as Prophet»; Lane, ‹Selections from the Koran›; Johnson, ‹Oriental Religions: Persia,› sec. «Islam»; Conway, ‹The Sacred Anthology› (for many good extracts from the Koran); Hirschfeld, ‹New Researches into the Composition and Exegesis of the Koran (Eng. trans., 1902). See ISLAM; MOHAMMED; MOHAMMEDANISM.

Ko′ras. See HOTTENTOTS.

Kordofan, kŏr-dō-făn′, a province of Egyptian Sudan in lat. 12° 30′ and 15° 30′ N.; lon. 29° 20′ and 31° 30′ E.; between the White Nile and Darfur. The surface is generally flat and the soil naturally fertile. The principal articles of export are gum, hides, and senna leaves, all monopolized by the government as most lucrative; ivory, cattle, tamarinds, ostrich eggs and feathers, gold, salt, slaves, etc.; the imports spices, sugar, coffee, sulphur, rice, soap, cotton and linen cloth, etc. From 1821 onward Kordofan was subject to the Viceroy of Egypt, the country having been subdued by Mehemet Ali. In 1883 it took part in the successful Mahdist revolt, but was regained for Great Britain and Egypt in 1898. Pop. about 300,000, chiefly Arabs.

Korea, or **Corea** (from the native pronunciation of Chinese Kao-li — see *History;* Li Tan in 1392 revived the old name Cho-sen or Cho-sön, Chinese «morning freshness» or «dawnland» — that is, «the east»; in 1897 the official name was made Dai Han). An Asiatic kingdom northeast of China, comprising a strip of coast and a peninsula projecting southward from Manchuria, divided from it by the great valleys of the Yalu or Amnok southwest and the Tuman northeast, both rising in the colossal peak of Paik-tu (White Head), 8,300 feet high. The Japan Sea divides it from Japan, whose southernmost island (Kiushiu) approaches its southern tip within 100 miles, separated by Korea Strait with large islands midway; to the west, Korea Bay and the Yellow Sea, marked off by Shantung peninsula, divide it from China. A dense archipelago fringes it south and west. Its parallels are from 34° 17′ to 43° N., or about the same as from Concord, N. H., to Wilmington, N. C., and average much south of Italy; its meridians, 124° 38′ to 130° 30′ E. It is about 600 miles long by 135 broad; area 80,000 to 90,000 square miles. Population probably 15,000,000 to 20,000,000.

Korea is traversed north to south by a mountain backbone of striking individuality: a perpetual zigzag, skirting the eastern shore with slender coast-lands, in a steep solid wall unbroken for hundreds of miles save by Yung-hing or Broughton's Bay at the northern neck. In the north it has summits 4,000 to 8,000 feet high, and at Cape Pelissier, about lat. 37°, culminates in Mt. Popoff (4,800 feet); thence the main chain turns southwest, and ends in the extinct volcano of Mt. Auckland (6,700 feet), on Quelpaert Island, while to the east it throws out low hills and plateaus. The islands of the southern archipelago, verdant rocks worn into the semblance of fantastic castellated ruins, are the ends of its spurs. On the eastern side the ridge is timbered to the summit; on the west almost treeless, and seamed with deep ravines shallowing out into broad fertile plains, occupying most of Korea. On the east below the boundary there is but one river of any size, the Nak-tong along the southeastern uplands, and almost no islands; the west has 10 considerable streams, and the coast is thickly notched with harbors and fringed with fertile islets.

The chief rivers are, from the north: The great Yalu or Amnok, a mile wide and rising 40 feet in flood, navigable 30 miles for seagoing junks, and 175 for boats, to Wi-wön. Opposite it the Tuman. The Tai-dong or Ta-tong, navigable for boats 75 miles to Ping-yang. The Han («*the* river»), rising on the western slopes of the eastern ridge but 30 miles from the Japan Sea, draining nearly the whole breadth of the peninsula with two main arms, and flowing into a bay of the Yellow Sea among islands. About 30 miles up lies Seoul, the capital, and a line of small steamers runs between it and Chemulpo, on Imperatrice Gulf as much farther south; boats ascend nearly 100 miles more. The Nak-tong (above) empties into Korea Strait near Fusan, and is navigable 140 miles for vessels drawing 4½ feet. The best harbors are Gen-san and Port Lazareff, on Broughton's Bay; the best on the south coast is Fusan on Korea Strait. The tides on the west and south are very high and rapid, often leaving vessels stranded on mud banks.

The climate is much like that of the eastern coast of America in the same latitudes; the north and centre have very hot summers and severe winters; the south is like the Carolinas, and tempered by the ocean breezes. The Han is frozen in winter so that at Seoul, where it is 400 yards wide, is is available for cart traffic three months of the year, from December to February. The rainfall averages 36 inches, 22 in the crop season. A fall of only 4.1 inches in 1901 created a famine.

Flora and Fauna.— There is a great variety of excellent hardwood timber on the east slopes and the northern mountains; in the west it is scarce and sparingly used; lack of coal has caused much wasteful denudation in other parts. The one surpassing animal of the native fauna is the man-eating tiger, who fills the native proverbs and literature, depopulates whole villages, and even besieges houses for days, sometimes leaping on the thatched roof and tearing his way down through. Besides him there are leopards, tiger-cats, and foxes; deer, beaver, badgers, otters, martens, etc., and a great variety of birds.

Products.— The great native crop is ginseng, which grows wild in the Kange Mountains, and is extensively cultivated about Kai-seng; it is a government monopoly, and despite much smuggling, yields some $500,000 a year, or a ninth of the state revenue. Among other products are rice, wheat, millet, sesame, Indian corn, beans, cotton, hemp, and perilla (for oil and pigment). The domestic animals are few. The cattle are excellent, the bull being the usual beast of burden; the ponies very small but hardy, fowls good, pigs inferior. Iron ores of excellent quality are mined; and there are copper mines in several places. In 1886 the value of gold exported was $503,296; the silver output is very small. Three fourths of the trade is with Japan, and over four fifths of the remainder with China.

Government.— This is a hereditary absolute monarchy: till 1895 tributary to and receiving investiture from China, and like it in administrative forms, with officials appointed by examination in the classics. On the declaration of independence (see *History*), the entire system was abolished, as well as the privileges of the aristocracy, and a cabinet of 10 ministers in charge of different departments formed, who with five councillors form a grand council of state to lay measures before the emperor. Till 1896 the country was divided into eight *do* or provinces; it was then redivided into 13, including a metropolitan province around the capital. These are divided into 339 *kun* or prefectures, 7 under *pu-yan* or city governors; 4 treaty ports are under *kamni* («trade overseers»), ranking with consuls. The revenue is about $4,500,000 a year. The standard is gold, and a native coinage is made, supplemented by Japanese paper and coin. The weights and measures are the same as the Chinese. There is an army of 17,000 men with foreign training and equipments, and a bodyguard of 1,000, but no navy.

Social Conditions and Education.— The usual dwellings are mud hovels thatched with straw, and the conditions of life for the masses, as in China, are hard and squalid; but actual distress is rare and beggars are few. Caste till recently was iron-bound, and no offices of even local importance could be held by other than nobles, who are distinguished by colored clothing and horsehair hats. Women are secluded; concubinage is allowed, but only one legal wife at a time. The immemorial system of education was almost wholly in Chinese, which contained the only written memorials needing it, and was of Chinese classics. But in 1894–5 a department of education was established, and a thoroughly graded public-school system, including normal training. There are also schools of foreign languages taught by speakers of the languages.

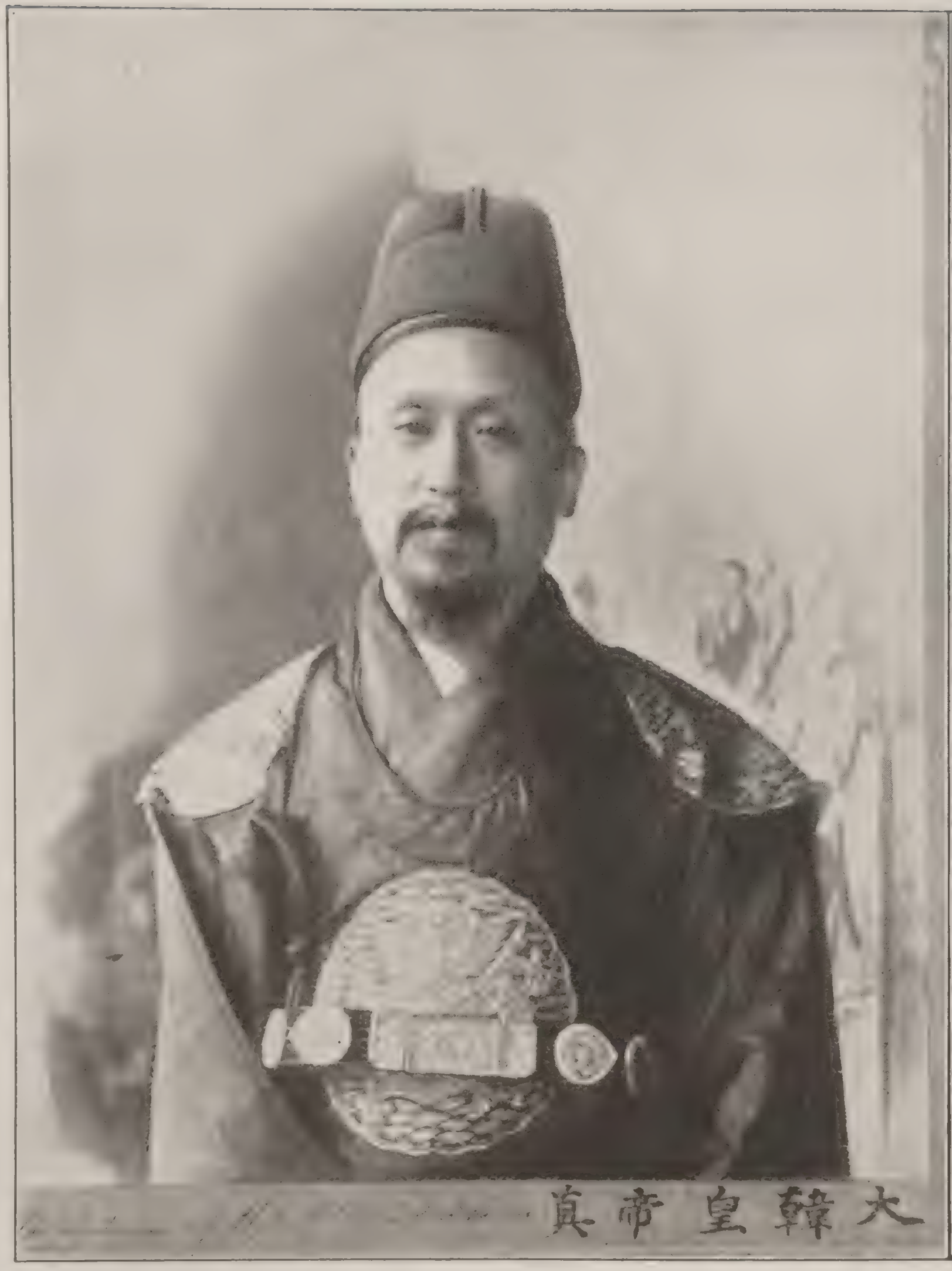
Religion.— See *History* for the vicissitudes of Christianity. There are now about 30,000 Roman Catholic and 2,500 Protestant natives. The popular religion is the degraded Shamanism (q.v.); the higher classes are Confucians; the anciently all-powerful Buddhism, crushed by the revolution of 1392, is slight and uninfluential, with a few ignorant monks.

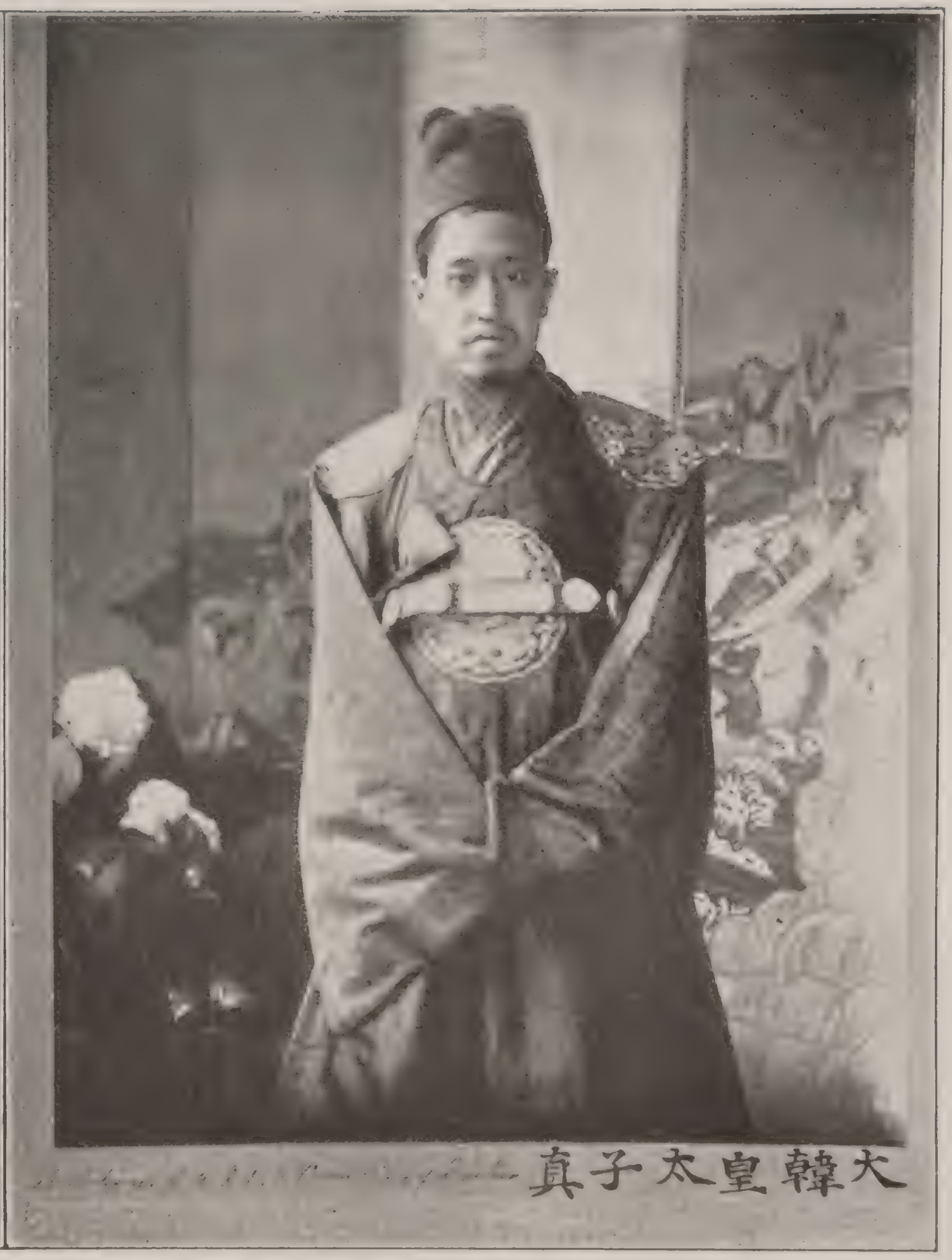
Population.— The people are a mixed race of disputed elements, apparently Mongoloid and Aino with Manchu and Malayan infusions. As in all Eastern countries, where a census means a tax and conscription list (see CENSUS, par. 1), no accurate statistics can be had. An official census of adult males liable to tax in 1900 was 5,608,351; which must mean toward 20,000,000 total population, enormous as the figure is for an agricultural people on this size of territory. Foreign population 21,783, including 16,142 Japanese and about 5,000 Chinese.

The chief cities are Seoul (Han-yang), the capital, estimated at over 200,000; Ping-yang, perhaps 40,000; and Kai-seng. A trolley line nine miles long, built 1899, is operated in Seoul by Americans.

History.— The traditional founder of Korean nationality is the Chinese noble Ki-tse, who left China with 5,000 followers 1122 B.C., and established a kingdom with capital at Ping-yang. The first authentic history is the annexation to China 108 B.C. A century or so later it split into three princedoms, of which, about 960, Koryu (Kao-li) came to the front, probably from borrowing the higher Chinese civilization. It recast the administration upon the Chinese model, introduced Chinese methods and arts, and initiated several centuries of brilliant progress and prosperity, enriched by art and literature. Buddhism was the paramount religion, and developed a powerful and rigid ecclesiastical hierarchy. As a result, a Protestant movement took place, and in 1392 a revolution headed by Li Tan founded the present dynasty and expelled the priests. The capital (*seoul*) was fixed at Han-yang. When the Manchu power began to rise in the 15th century, China, to protect herself against its ravages, desolated a strip of fertile territory many thousand square miles in extent, then or early in the 17th century destroying four cities and many villages and removing 300,000 inhabitants; and down to 1875 this zone of 60 miles wide by 300 long was kept as a permanent buffer between China and Korea. During the rise of the Japanese shogunate out of the 16th century anarchy, Hideyoshi, as a preliminary to invading China, sent an army into Korea, rapidly overrunning it. But Korea is like Spain, easy to conquer and impossible to hold; and the stolid resistance of the natives, with the Chinese armies, gradually forced the Japanese out of the peninsula six years later, retaining Fusan on the southeast coast as a trading station. Thirty years later the Manchus, previous to their conquest of China, invaded it and exacted a tribute, which was continued to the Manchu dynasty in China; in 1653 it was reduced to a third, and for generations down to 1894, when it was finally abolished, had been only nominal, as an acknowledgment of Chinese supremacy and a trading license. But the Chinese wisely attempted no permanent occupation.

Korea had always as intense a determination to seclude herself from foreign influences as ancient Egypt, and practically the first knowledge obtained of it by modern Europe was through the shipwreck of some Dutch on the coast in 1653, though the Jesuit missionary Cespedes had entered it in 1594. In 1784 new missionaries came and planted Christianity in the peninsula,





By Courtesy of J. Sloat Fassett.

THE EMPEROR OF KOREA. THE CROWN PRINCE OF KOREA.

From late photographs presented to Mr. Fassett by the Emperor.

despite steady persecution; in 1835 the French missionaries reinforced them. But in 1864 came a fiercer blast. The then king died childless, and his oldest widow set aside the natural successor, her nephew, and nominated Yi-Hevi, the present king — the 12-year-old son of a royal prince, Ni-Kung, whom she made regent. The latter was a savage reactionist, and let loose fire and blood to extirpate the foreigners, rigidly excluding all new ones. A futile French expedition was sent against him in 1866; the same year a stranded American schooner, the General Sherman, was burnt and her crew murdered in sight of Ping-yang. An American expedition sent in 1871 had no success. Meantime several nations were attempting to force Korea into treaties of commerce and gain trading privileges, but Japan was the first to succeed, having the ports Gensan and Fusan opened in 1876, and Chemulpo in 1880. Meantime the «neutral strip,» for many years a nest of brigands and pirates, was abolished by Li Hung Chang in 1875. In 1882 Commodore Shufeldt negotiated a treaty of friendship between the United States and Korea, and thence on, other nations were rapidly admitted — Great Britain and Germany in 1883, Italy and Russia in 1884, France in 1886, Austria in 1892, and China in 1897.

The flood of new ideas and habits aggravated the conflict between the progressives and the reactionaries, in which the former won, and Korean embassies began to visit other countries,— Japan in 1880, the United States in 1883. The nativists raised an insurrection in 1884. The greatest breach with the past, however, was the result of the Chinese-Japanese war of 1894–5, one of the pretexts of which was the action of China in assuming the ancient suzerainty over Korea. It was at Ping-yang that the first heavy defeat was inflicted on the Chinese, and off the Yalu River that the Chinese fleet was destroyed. On 8 Jan. 1895 the king of Korea proclaimed its independence, and the Chinese Gate at Seoul was publicly destroyed with impressive ceremonies. In 1897 the king proclaimed the country an empire, named it Dai Han, and took the title of emperor. Under the Treaty of Shimonoseki, Korea became a «sphere of influence» for the Japanese, whose struggle against Russian encroachments culminated in the war of 1904–5 (see MANCHURIA). By the Treaty of Portsmouth (q.v.) Japan's preponderating interests in Korea were acknowledged, and notwithstanding violent native opposition, a strong Japanese protectorate was established in November 1905. The readjustment of finances, the building of the Fusan-Seoul railroad, and other civilizing projects, inaugurated a new era of pacific and industrial development.

Language.— Korea since early times has employed two languages: Chinese for writings and native Korean for speech, Chinese if spoken being an acquirement like French in America. The literature in Chinese is sometimes translated into Korean, however; and the recent Korean declaration of independence has produced a revival of appreciation for the native tongue, as with so many other nations from like causes. The reforms of 1897 were proclaimed in the vernacular.

Korean is of a not extreme agglutinative type, belonging to the polysyllabic branch of the Mongol-Tartar languages like Japanese, and unlike the monosyllabic Chinese; it is structurally unrelated to the latter, though it has very many Chinese loan-words, pronounced after its own phonology. Its resemblances to Japanese are far closer: mutual translations word for word, and even particle for particle, are quite feasible. The particles and grammatical terminations in both represent punctuation, emphasis, and inflection of nouns and verbs. The honorific vocabulary — almost a complete ceremonial language even in construction, to express relations between superiors and inferiors, and equals — is common to both. The differences are mainly euphonic: Korean vowels are heavily assimilated to those which follow, the syllables need not end with a vowel, and the spelling is as irregular as English, none of which is true of Japanese.

The grammar of Korean is extremely flexible and pregnant; like Chinese, the roots are invariable. There are no inflectional forms for number, person, or case, or conjugation of verbs, and no form for gender; all are indicated by particles without meaning, or whose meaning has been lost, affixed to the stem, and varying with its terminal letter, as consonant, vowel, or liquid. There are no pronouns of the first and second person; the third, with relational particles, serving for both. Development has expended itself on the verbs, which are marvels of varied, flexile, and ingenious expressiveness. Many words not primarily verbs can be turned into them (as in English), and these with the true verbs constitute 20 per cent of the entire vocabulary. The grammatical forms of the verb are said to average 300. Adjectives and adverbs are not distinguished from the verbs, and the prepositions are verb forms. All conditions expressed by inflections in Western languages — present, continuing, past, unfinished or completed, optative, subjunctive, potential, interrogative, participial, etc.— exist in Korean, and a vast number of others expressed by us in long sentences. Some verbs have no passive, but all have a negative voice. There is no number; the three persons in every variant are expressed by courtesy forms — one to or of superiors, one for equals, one for inferiors or of things. The syntax is positional, as with Chinese. The object precedes the verb or other governing word, the prepositions are postpositions, the adjective precedes the noun it qualifies and the adverb its verb or adjective (as in English). A dependent clause precedes its principal.

Korean has an alphabet of 25 letters, 14 consonants, and 11 vowels; a very simple and scientific one, analyzed by organs of speech. The vowels are a, ya, ŭ, yŭ, ọ, yo, u, yu, i, eu, ă; with the diphthongs è, é, e'. The consonants are — labials, p, ph, m; dentals, t, th, n, l; palatals, ch, chh, s; gutturals, k, kh; laryngeals (?) h, ng final. There are no letters f, v, w, b, d, g, j, or z, though (except the first, which is replaced by p) they exist in speech. There is but one character for l and r, and neither of them can begin a word, their place being taken by n. The characters — women and children's only, the true «learned» characters being Chinese — are of an extreme simplicity, contrasting strongly with the complex Chinese; and there is a cursive form. This alphabet is called *onmun*, «the vulgar»; and there is a system called *nido*, in which the letters are grouped in the 199 possible combinations and learned by rote. The writing is in syllables, in columns from right to left, as with Chinese.

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Ko′ren, John, American statistician: b. Decorah, Iowa, 3 March 1861. He was graduated from Luther College in his native town and from Concordia Theological Seminary, St. Louis, and has since been prominent in investigations of the liquor problem, in State and municipal employ. He has published: ‘Economic Aspect of the Liquor Problem’; ‘The Liquor Problem in its Legislative Aspects’ with F. Wines (1897–8).

Körner, Karl Theodor, kärl tā′ō-dōr kėr′-nĕr, German poet: b. Dresden 23 Sept. 1791; d. 26 Aug. 1813. After studies at Freiberg, Leipsic, and Berlin, young Körner, through Kotzebue's influence, was appointed dramatist to a Vienna theatre, and wrote light comedies, such as ‘The Green Mask’ and ‘The Night Watches,’ and some tragedies, of which ‘Zriny’ was the most successful. In the uprising of the German nation against Napoleon, Körner not only displayed heroic personal courage in many encounters, but wrote numerous patriotic songs. These were published in 1814 under the title of ‘Lyre and Sword.’ The most famous of these pieces is the ‘Sword Song,’ composed only a few hours before the author fell in a skirmish, between Schwerin and Gadebusch.

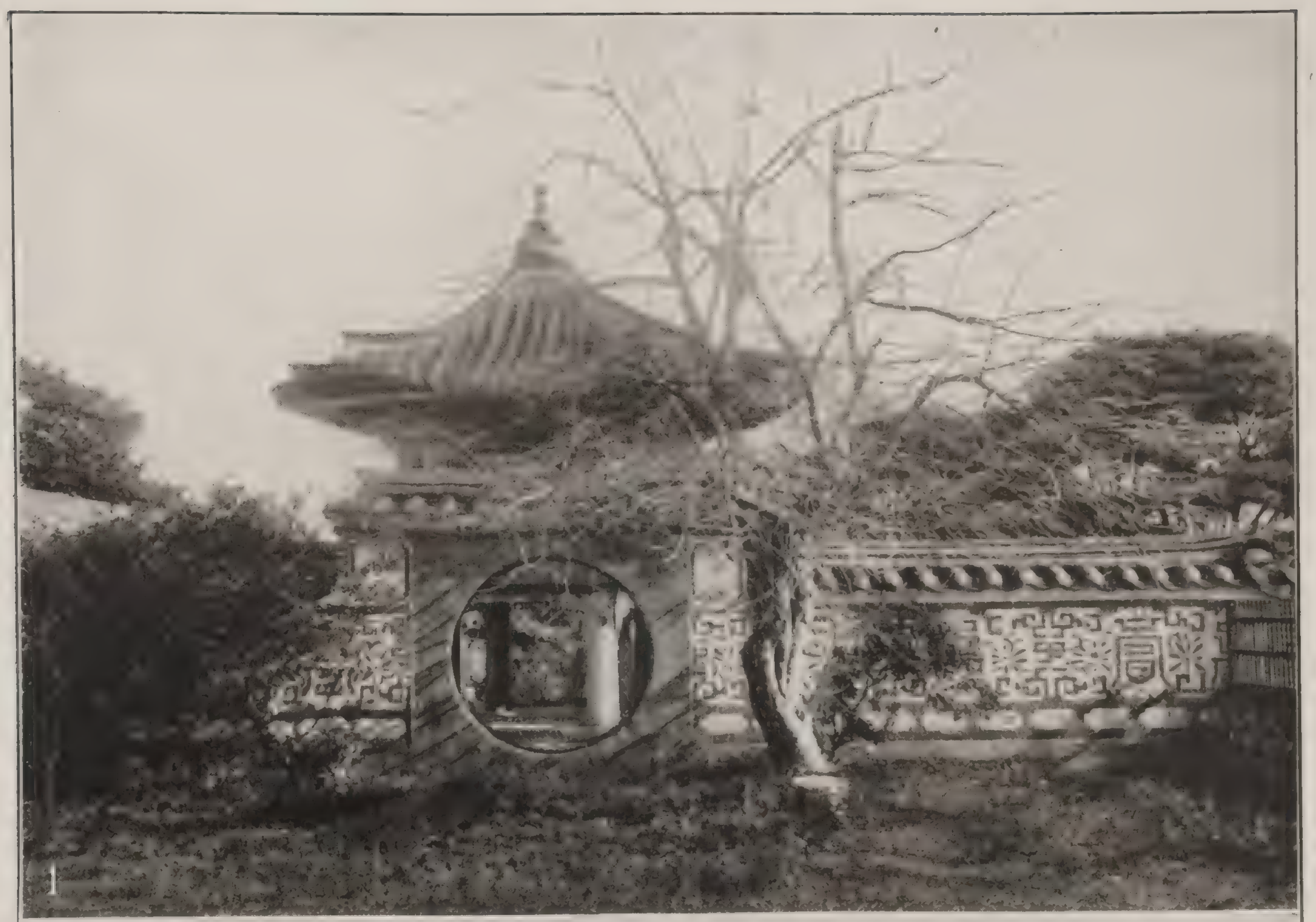
Kosciuszko, kŏs-ĭ-ŭs′kō, Pol. kŏs-choosh′-kō, **Thaddeus** (Polish Tadeusz), Polish patriot: b. Mereczowszczyzna, Lithuania, 12 Feb. 1746; d. Soleure (Solothurn), Switzerland, 15 Oct. 1817. He was educated in the military school at Warsaw, and completed his studies in France. On his return to Poland he became suitor to the daughter of Sosnovski, marshal of Lithuania, but his love meeting no return he betook himself to America (1777). Having attracted the notice of Washington, he was appointed him engineer, with the rank of colonel, and afterward general of brigade. He performed excellent service and at the end of the war received the thanks of Congress, with the brevet of major-general. He returned to Poland in 1786, and on the occasion of the reorganization of the Polish army in 1789 was appointed major-general, and having declared for the constitution of 3 May 1791, he fought in the war which soon after broke out, with the rank of lieutenant-general. When Stanislaus Augustus in 1793 agreed to the second partition of Poland, Kosciuszko withdrew from the army and retired to Leipsic. At this time the legislative assembly in France conferred on him the title of French citizen. When a new insurrection broke out in Poland for the purpose of delivering the country from the Russians in 1794 Kosciuszko was recalled and made commander-in-chief of the insurgent army. He defeated the Russians at Raclavice, but at the battle of Maciejovice his army was defeated, and he himself wounded and taken prisoner. He remained in captivity for two years, and he then proceeded to England, and thence to America. In 1798 he returned to Europe on a mission from Congress to France, and contributed to bring about an understanding between the latter country and the United States. In April 1814, he addressed a petition to Alexander I., emperor of Russia, requesting him to grant an amnesty to all expatriated Poles, to accept the title of King of Poland, and to give that country a free constitution similar to that of England, but the petition remained without effect. In April 1817 he issued a letter of emancipation to the serfs on his estate of Siechnovice, in Poland. His death was occasioned by a fall from his horse. In 1818 his body was removed at the expense of the Emperor Alexander of Russia to Cracow, where it was buried in the cathedral, and a monument erected to him.

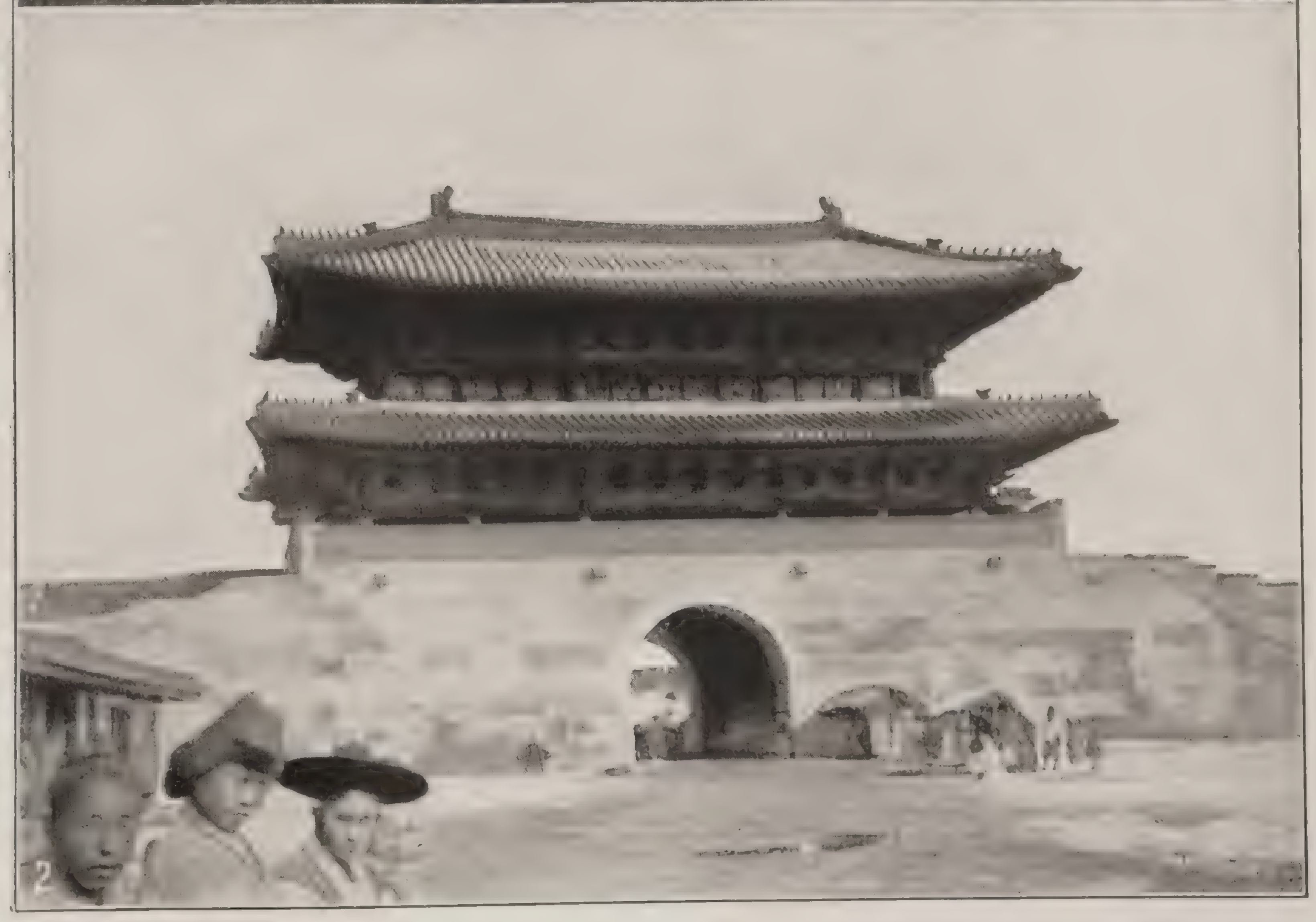
Consult: Lives by Falkenstein (1834), German; Chodzko (1837), French; Paszkovski (1837), Polish.

Kosciuszko, Mount, in Australia, one of the highest mountain peaks in the Muniong Alps, in New South Wales, near the frontier of Victoria. It is 7,308 feet high.

Kos′mos. See Cosmos.

Kossuth, kŏs-sooth′, Hung. kŏsh′oot, **Lajos** (Louis), Hungarian patriot: b. Monok, Hungary, 27 April 1802; d. Turin, Italy, 20 March 1894. He came of a family of noble rank and of the Protestant religion, studied and practised law, and in 1832 entered the parliament of Pesth, becoming also editor of a newspaper circulated in writing. For persisting in publishing the parliamentary debates he was condemned to four years' imprisonment, but was released in 1840 before the end of this period. In 1841 he became editor of the Pesth ‘Journal,’ a paper that advocated very advanced views; and in 1844 founded the national league in opposition to the Viennese government. In 1847 he was elected to the Hungarian diet by the national party, and in 1848 became minister of finance in the Hungarian government. His influence had much to do in bringing about the revolution which followed, and in which he played the most prominent part, being appointed governor or dictator by his fellow-countrymen; but the intervention of Russia rendered all the efforts of the Magyars unavailing. He resigned his position in favor of Görgei (whom he accused of treachery), and in 1849 he found it necessary to take refuge in Turkey, where he was kept as a prisoner. Being released in 1851 through the influence of Great Britain and the United States, he soon after visited both these countries and was received in the most enthusiastic manner. He endeavored subsequently to induce Napoleon III. as well as Victor Emmanuel to act against Austria in favor of Hungarian independence, but without success. Though by the amnesty of 1867 he might have returned to his native land he did not do so, but lived chiefly in Italy, and was





1. Round Gate, on the Palace Grounds, Seoul. 2. Big East Gate, Seoul.

never fully reconciled to the union that had taken place between Austria and Hungary. His ‘Memories of My Exile’ appeared in English in 1880.

Ko′to, a Japanese musical instrument, having a long box, larger at one end than the other, and with a convex top over which 13 silk strings are strung and fastened tightly at each end, each string having a bridge. To tune the instrument it is necessary to move the bridges. The instrument is played with both hands like a harp.

Kotow, kō tow′ or -tō′, a Chinese form of obeisance; the ceremony of prostration, in which an inferior, kneeling, touches his forehead to the ground. Kotowing is unknown outside of China.

Kotzebue, August Friedrich Ferdinand von, ow′goost frēd′rĭн fĕr′dĭ-nänd fōn kŏt′-sĕ-boo, German dramatist and Russian official: b. Weimar 3 May 1761; d. Mannheim 23 March 1819. In 1781 he went to St. Petersburg, where, obtaining the patronage of the empress, he was made governor of Esthonia and ennobled. About 1800 he returned to Germany, and attacked Goethe and other great German authors who had refused to associate with him. In 1806 he went again to Russia, and lived from 1807 on his estate Schwartze, in Esthonia. In 1813, as counsellor of state, he followed the Russian headquarters, constantly writing to excite the nations against Napoleon. In 1817 he received a salary of 15,000 roubles, with directions to reside in Germany, and to report upon literature and public opinion. Kotzebue, who during the whole campaign had written in favor of the Russians, even at the expense of his native country, and had expressed the utmost contempt for liberal principles and institutions, was now odious in the eyes of most of his countrymen, and regarded as a spy. This feeling was so strong in the case of a young enthusiast named Sand, that he assassinated him as a traitor to liberty. Kotzebue wrote more than 100 plays, a history of Germany and other works, most of which are now forgotten. Two of his plays, ‘The Stranger’ and ‘Pizarro,’ are still performed on the English stage.

Kotzebue, Otto von, Russian navigator; second son of A. F. F. Kotzebue (q.v.): b. Reval 30 Dec. 1787; d. there 15 Feb. 1846. In his 17th year he accompanied Krusenstern in his voyage round the world. In 1815 he was appointed to the command of the ship Rurik, destined to ascertain the practicability of a northeast passage in the direction of Bering Strait. He discovered several groups of islands in the Pacific, and a large sound on the southeast of Bering Strait, which now bears his name; and returned after a three years’ absence. The results of the voyage were published in a work called ‘A Voyage of Discovery in the South Sea and to Behring’s Strait in Search of a Northeast Passage’ (1821–23). In 1823 he was commissioned by the Emperor Alexander to make a third voyage round the world. He returned in 1826, publishing the results of the voyage in a work which has been of great importance to hydrography, particularly that of the Pacific, ‘Neue Reise um die Welt’ (1830).

Kou′miss. See Kumiss.

Kuropatkin, Alexei Nikolayevitch, Russian soldier: b. 17 March 1848. He was trained for the army in the Imperial Military College and the Academy of the General Staff; was sent abroad to study military conditions in various European countries; in 1874 became a member of the general staff of the army; in 1876–7 assisted Skobeleff in the conquest of Khokand, Turkestan, and its reorganization as the territory of Ferghana; and in 1877–8 won high distinction in the Russo-Turkish war by his services at Plevna and the Chipka Pass. In 1878 he was made colonel and in 1878–9 was chief of the Asiatic bureau of the general staff. In 1880–1 he was in Middle Asia, where he commanded the main detachment against the Tekke-Turkomans, and, after a forced march of 600 miles across the desert, stormed Geok-Tepa, by which victory he won his greatest reputation. He was made major-general in 1882, lieutenant-general in 1890, governor of the Trans-Kaspian district and commander of the troops in that district in 1890, and minister of war in 1898. In 1901 he became general of infantry. At the outbreak of the hostilities with Japan, he was sent to command the Russian forces in the Far East. As a military writer he is favorably known by several volumes, including ‘Kashgarie’ (1879), for which he received the gold medal of the Imperial Russian Geographical Society; ‘The Operations of the Troops of General Skobeleff during the War of Russia with the Turks’ (1885); etc.

Kowloon′, or **Kaulun,** a district in China, forming a peninsula at the mouth of the Canton River.

Koyunjik, koo-yoon-jĕk′, or **Kuyunjik.** See Nineveh.

Kraft, kräft, **Adam,** German sculptor: b. Nuremberg 1440; d. Schwabach, Bavaria, 1507. Nothing is known of his teachers, his student travels or his fortunes. His known productions begin with the seven reliefs (Stations of the Cross) set up in Nuremberg 1490 near the entrance of Saint John’s Church; these are now in the German Museum, their original place being taken by sandstone copies. He executed many sepulchral monuments, and in the Church of Saint Sebaldus is the statue he made for Sebald Schreyer, 1492. In the choir of the same church is his bas-relief of three scenes from the Passion, the figures being life-size. He also carved the monument for the Pergerstorff family in the Frauenkirche (Church of St. Mary, the Virgin); that for the Landauer family in a chapel of the Church of St. Ægidius. His last work was the Entombment, a group of 15 life-size figures in the mortuary chapel of the Holzschuherschen family, a part of the Church of St. John (1507). He also executed several works of minor importance, as decorations of private and public buildings. His masterpiece is the tabernacle in the Church of Saint Lawrence which he took seven years (1493–1500) in completing. It is more than 50 feet high, and is an example of gorgeous Gothic carving enriched with numerous figures. At the foot he has placed his own portrait, life-size. His style is bold and vigorous, his conceptions are profoundly religious, and his power of life-like characterization is wonderful. He is the finest exponent of the Nuremberg school of Gothic sculpture.

Krait, one of the most dreaded of Oriental poisonous snakes (*Bungarus cœruleus*), nearly related to the cobras. It inhabits nearly all India and Ceylon, is very common in Bengal and southern India, and causes more deaths than any other snake, since in its pursuit of rats, lizards and snakes, it frequently enters camps and village houses; furthermore, its venom is astonishingly rapid in its effects. It reaches a length of four feet, has smooth scales, a ridge along the spine, no hood, and is bluish or brownish black with highly variable bars and markings of yellow and white. Other deadly species of the same genus of bungars or rock-snakes are the larger *raj-samp* or «king-snake» (*B. fasciatus*), noted for its active killing of cobras and other snakes; and other species in Ceylon and the Indo-Chinese region. Consult the works of Fayrer and of Ewart on the poisonous snakes of India, and the ‹Proceedings› of the Zoological Society of London for 1899.

Krakatoa, a volcanic island in Sunda Strait, between Sumatra and Java; area, 6 square miles, formerly about 12 square miles. The island, now uninhabited, is known as having been the scene of a terrific volcanic eruption on the night of 26–27 Aug. 1883. The volcano had been practically inactive for over 200 years until May of 1883, when there were indications of an eruption, which culminated at the date mentioned. A number of explosions occurred, the noise of which was heard for many miles. A mass of rock, in the form of dust, ashes, and small stones, and of the volume of about a cubic mile, was thrown up for a considerable distance. The dust was projected, vertically, nearly 20 miles, and distributed to all parts of the globe by the upper air currents. The effect, especially as shown in brilliant sunrises and sunsets, was visible for many months. The disturbance created a series of extensive sea-waves which swept over the shores of Java and Sumatra, destroying many villages and causing the loss of more than 30,000 people. The wave-motion was observed in South America. About one-half of the island was destroyed, including the highest mountain. One immediate effect was the darkness which alarmed many people, and which made 27 Aug. 1883 known as one of the dark days.

Kraken, krä'- or krā'kĕn, the term, of Norwegian origin, applied to a fabulous sea-monster, generally assumed to be a gigantic squid (q.v.). It was first described by Pontoppidan, bishop of Bergen in Norway, but other old writers have accounts of substantially the same kind of monster. It is described as of enormous size; rising from the sea like an island about 1½ miles in circumference, with enormous mast-like arms with which it wrecked ships, created whirlpools, and realized all that was prodigious and strange in size, habits, and appearance. The kraken stories led to a similar creation by Victor Hugo in his ‹Toilers of the Sea,› which, considered zoologically, is almost as far from possible truth as was that of old Pontoppidan.

Kra'nach, Lucas. See CRANACH.

Krausé, Lyda Farrington, «BARBARA YECHTON,» American novelist and writer for young people: b. Saint Croix, W. I., 1864. She was for many years on the staff of ‹The Churchman› in New York, and among her published books are: ‹Christine's Inspiration› (1892); ‹Toinette› (1897); ‹A Young Savage› (1899); ‹Fortune's Boats› (1900).

Krausse, krows, **Alexis Sidney,** English author and publicist: b. Islington, London, 1859; d. 27 Sept. 1904. He was educated at University College, London, devoted much time to foreign, especially Asiatic history and policy, and contributed largely to newspapers and magazines. Among the books he published are: ‹Starving London› (1886); ‹China in Decay› (1900); ‹Russia in Asia› (1899); ‹The Story of the China Crisis›; ‹The Far East, its History and its Question› (1900).

Krefeld, krā'fĕld, or **Crefeld,** Prussia, a town in the government of Düsseldorf, 12 miles northwest of the town of Düsseldorf, and about four miles west of the Rhine. It consists of straight spacious streets and well-built houses; is the seat of several courts and public offices; contains churches for Roman Catholics, Old Catholics, Protestants, Mennonites, and Jews; a royal textile college, gymnasia, a monument of Moltke erected in 1897, hospitals, etc.; and is the principal locality in Prussia for the manufacture of silk and mixed silk goods, which was introduced by refugees from Juliers and Berg in the 17th and 18th centuries. The number of factories producing silk goods is about 120, exclusive of nearly 50 silk-dyeing works. The town also contains railroad shops, boiler-works, machine-shops, iron-foundries, chemical works, distilleries, sugar-refineries, soap-works, tanneries, paper-mills, etc. Krefeld came into the possession of Prussia in 1702, and except during the Napoleonic ascendency it has remained with her ever since. Pop. (1890), 105,376; (1900), 106,928.

Krehbiel, krā'bēl, **Henry Edward,** American musical critic: b. Ann Arbor, Mich., 10 March 1854. He was musical critic successively on the Cincinnati *Gazette* and the New York *Tribune*. His published works include: ‹The Technics of Violin Playing› (1880); ‹How to Listen to Music› (1896); ‹Studies in the Wagnerian Drama› (1891); ‹The Philharmonic Society of New York: a Memorial› (1892); ‹Music and Manners in the Classical Period› (1898); ‹Music of the Modern World› (1897). He also edited an ‹Annotated Bibliography of Fine Art› (1897).

Krem'lin, a Russian citadel, especially the citadel of Moscow (q.v.). It lies in the centre of the city, and contains the royal edifices and churches, particularly the residence of the emperor.

Kremnitz, krĕm'nĭts, or **Cremnitz,** Hungary, a free mining town (called in Hungarian Körmöczbánya), in the county of Bars, in a deep valley surrounded by lofty hills, 15 miles northeast of Schemnitz. It consists of the town proper, surrounded by walls, and containing a castle; and of several large suburbs, in which are almost all the public buildings. There are some old churches, a Franciscan monastery of the 17th century, a mint, hospitals, etc. The manufactures consist of paper, delft-ware, vitriol, and cinnabar; but the prosperity of the town depends chiefly on the gold and silver mines in the vicinity. Pop. about 10,000.

Kre'osote. See CREOSOTE.

From ' Memoirs of a Revolutionist."

By courtesy of Messrs. Houghton, Mifflin & Co.

PRINCE KROPOTKIN,
The Russian Revolutionist.

Kriegspiel, krēg'spēl (“war-game”), a game of German origin, played with maps on a large scale, and colored metal blocks, on the same scale as the map, representing bodies of troops of various strength (brigades of infantry, battalions of rifles, regiments of cavalry, besides artillery, engineers, etc.). The players are usually two on each side, and the game forms an exact miniature of tactical operations. It is played by alternate moves; each move represents the lapse of two minutes, and rules are given to determine the distance that each branch of the service may move over in that time. When two bodies of men on opposite sides come into contact, the weaker in numbers and position is held to be defeated; but when they are equal in these respects victory is determined to one side or the other by the use of a die.

Krieker, krē'kėr, a gunner's name for jack-snipe (q.v.).

Kris. See CREESE.

Krishna, krĭsh'na, in Hindu mythology, the eighth avatar of Vishnu and the most popular deity in the Hindu pantheon. See AVATAR; VISHNU.

Kriss Kringle, a sort of St. Nicholas. On Christmas eve, Kriss Kringle, arrayed in a fur cap and strange apparel, goes to the bedroom of all good children, where he finds a stocking or sock hung up in expectation of his visit, in which depository he leaves a present for the young wearer. The word means Christ-child, and the eve is called Kriss-Kringle eve. See ST. NICHOLAS.

Kronstadt, krōn'stät, or **Cronstadt,** Russia, a maritime fortress in the government of St. Petersburg, and about 25 miles west of that city. It stands in the narrowest part of the Gulf of Finland, opposite to the mouth of the Neva, on a height of the long, narrow, rocky island of Kotlin, forming, both by its position and the strength of its fortifications, the bulwark of the capital, and the most important naval station of the empire. It was founded by Peter the Great in 1710, and has spacious, regular streets, with many handsome houses; Greek, Lutheran, English, and Roman Catholic churches; very large marine establishments, a navigation school, a naval arsenal, a cannon-foundry, a barracks, building-yards, docks, etc. The harbor consists of three separate basins — a merchant haven, capable of containing 1,000 ships; a central haven for the repair of ships of war; and the war haven, which, in addition to the other works of the place, is defended by the strong fort of Kronslot, built on two small adjoining islands. The chief disadvantage of Kronstadt as a port is the long period during which the harbor is blocked up by ice. The construction of a canal affording better access by sea to the capital has diminished the trade of Kronstadt, which in consequence will cease to be a commercial port. Pop. (1897) 59,539.

Kropotkin, Peter Alexeievitch, pā'tėr ä-lĕk-sī-ā'vĭch krō-pŏt'kĭn, Russian geographer and revolutionist: b. Moscow 9 Dec. 1842. He was educated in the Corps of Pages at St. Petersburg, and joining a regiment of Cossacks of the Amur went to Eastern Siberia as aide-de-camp to the military governor of Transbaikalia, becoming later attaché for Cossacks' affairs to the governor-general of Eastern Siberia. He was connected with a prison commission and strove to get some reforms introduced into Siberian convict prisons, but his efforts proved of no avail. From 1863 he devoted his energies to a scientific investigation of Manchuria and the neighboring parts of Siberia, and his work in this department gained him the gold medal of the Russian Geographical Society in 1864. In 1871 he was sent by the Geographical Society to Finland to study glacial phenomena. Arrested in 1874 for promulgating radical ideas of social reform, he was confined in the prison of the military hospital, from which he contrived to escape to England in 1876. In the following year he went to Switzerland, where he founded at Geneva an anarchist journal called ‘Le Révolté,’ but in 1881 was expelled by the Swiss authorities on the demand of Russia. Returning to England in 1882, he wrote and lectured against the government of Alexander III. Having gone to France, he was arrested by the authorities and condemned (Jan. 1883) to five years' imprisonment for participation in the International, but he was released in January 1886, in consequence of a strong appeal made by leading French and English savants. Since then he has lived chiefly in London, engaged in literary work. He has written much on scientific subjects and has contributed to various encyclopædias. His separate publications include: ‘Paroles d'un Révolté’ (1885); ‘In Russian and French Prisons’ (1887); ‘La Conquête du Pain’ (1888); ‘L'Anarchie, sa Philosophie, son Idéal’ (1896; Eng. trans. 1897); ‘The State: its Part in History’ (1898); ‘Fields, Factories, and Workshops’ (1899); ‘Memoirs of a Revolutionist,’ first issued serially in ‘The Atlantic Monthly’ (1899). Prince Kropotkin is one of the ablest representatives and most eloquent exponents of that theory of society known as anarchist-communism. He is opposed to all societies based on force or restraint, and looks forward to the advent of a purely voluntary society on a communistic basis. He desires to see the division of labor, which is the dominant factor in modern industry, replaced by what he calls the “integration of labor,” and is a stanch believer in the immense possibilities of intensive agriculture. In 1901 he delivered a course of lectures at the Lowell Institute in Boston.

Krout, Mary H., American journalist: b. Crawfordsville, Ind., 3 Nov. 1857. She was for 10 years on the staff of the Chicago *Inter-Ocean,* has traveled extensively as a staff correspondent and is the author of ‘Hawaii and a Revolution’; ‘A Looker-on in London’ (1899); ‘Alice in the Hawaiian Islands’ (1899); etc.

Kruger, kroo'gĕr, **Stephanus Johannes Paulus,** Boer statesman: b. Colesberg, Cape Colony, 10 Oct. 1825; d. Clarens, Switzerland, 14 July 1904. At 11 he accompanied his parents in the “great trek” or migration of Boers, whom the British administrators had antagonized, from the Cape Colony, — a movement which resulted in the colonization by Boers of Natal, the Orange Free State, and the Transvaal. He and his parents resided for a time in the Orange Free State, but they ultimately made their home north of the river Vaal. At 16 he was assistant to a field cornet, and not long afterward became a field cornet himself. From that time he was constantly connected with either the military or the civil government of the

Transvaal, and his force of character gradually brought him to the front. In 1863 he became commandant-general, and in that capacity put down civil feuds and defeated the Basutos. At the time of the annexation of the Transvaal to the British territories in 1877 he was vice-president under President Burgers. Upon the reorganization of the Boer government by the national committee in 1880, he again assumed the office of vice-president, and in the war of 1880–1 with Great Britain, he took a leading part. He was elected president in 1883, and re-elected in 1888, 1893, and 1898. He visited England in 1883 in order to obtain a revision of the Pretoria Convention of 1881, and before his return in the following year he secured its replacement by a new convention practically granting independence — except in so far as relations with foreign countries were concerned — and authorizing the renaming of the State as the South African Republic. Kruger's position in the republic was now one of almost unlimited influence and authority. The enormous influx of foreigners after the discovery of the rich gold deposits of the Witwatersrand created problems of the utmost gravity. The greed of the British South African Company was extreme, the Uitlanders complained of injustice, and the Boers on their part were determined to resist foreign aggression. A crisis presented itself in the so-called ‘Jameson Raid’ (q.v.) of December 1895, which was easily crushed by the Boers, and at the same time led them to look forward to another and greater struggle with the English and to accumulate a large supply of military stores. Kruger managed with much diplomatic skill the difficult matters connected with this affair. In the second war with Great Britain Kruger remained in the country till the fall of Pretoria (5 June 1900), then escaped into Portuguese territory, and thence 19 Oct. sailed for Europe, hoping to enlist some of the European powers on behalf of the Boer republics, but failing in this he took up his residence in the Netherlands. In the summer of 1901 he proposed visiting the United States for the purpose of inducing the government to give its moral support to the Boers, but on being informed that neither President McKinley nor after him President Roosevelt would receive him in other than a strictly unofficial manner, the project was abandoned. His wife died at Pretoria in July 1901. See also SOUTH AFRICAN WAR. Consult: Van Dordt, ‘Paul Kruger’ (1900); Statham, ‘Paul Kruger and his Times’ (1898).

Krummacher, Friedrich Adolf, frēd'rĭʜ ä'dōlf kroom'mäʜ-ĕr, German theologian: b. Tecklenburg 13 July 1767; d. Bremen 4 April 1845. A minister in the German Reformed Church and a professor of theology, he became widely known by his ‘Parables’ (1805), which ran through many editions and are familiar in an English translation. They were as a rule short, written in simple prose, on such subjects as ‘The Blind Man,’ ‘Life and Death,’ ‘The Hero,’ etc. None of his other writings won popularity.

Krupp, kroop, **Alfred,** German inventor and metallurgist: b. Essen, Prussia, 26 April 1812; d. there 14 July 1887. He was a son of Friedrich Krupp (q.v.). In 1848 he assumed charge of the Krupp Steel Works at Essen and presently discovered the method of casting steel in very large masses. In 1851 he sent to the London Exhibition a block of steel weighing 4,500 pounds, and was able to cast steel in one mass weighing more than 100,000 pounds. Although he manufactured a great variety of articles for use in various peaceful industries, his world-wide fame arose from his production of the enormous siege guns used by the Germans when they invested Paris. Several of Krupp's processes in the manufacture of steel and in the making of cannon were very carefully kept from the knowledge of the outside world and only employees were admitted to his foundries.

Krupp, Friedrich, frēd'rĭʜ, German manufacturer: b. 1787; d. 1826. He established a small forge at Essen, Rhenish Prussia, in 1807, experimented in the making of cast-steel, the secret of which was then carefully kept in Great Britain, and was able in 1812 to manufacture some of the material. In 1818, on the site of the present large Krupp establishment, he built a small plant of eight melting furnaces, each with one crucible. He turned out a steel of excellent quality, though not perfectly successful; but demand for the product was then slight, despite its use for mint-dies and some other purposes, and the activity of the manufactory was correspondingly small.

Krupp, Friedrich Alfred, German gunmaker: b. Essen, Germany, 17 Feb. 1854; d. there 22 Nov. 1902. He was known as the “Cannon King” in Germany and was the son of Alfred Krupp, who invented a new Bessemer steel, out of which he made rifles and cannons, a seamless tire for car-wheels; and discovered a new method of hardening armor plate. His grandfather, Friedrich Krupp (q.v.), founded the steel industry of Essen, beginning in 1817 with two laborers. The present Krupp works cover 150 acres, and the daily output is about 1,877 tons. The Krupps have been head of the iron and steel industry of Prussia for many years; their establishment is one of the greatest in the world. Friedrich Alfred Krupp was the richest man in the empire. He was generous to his operatives, built for them 5,469 dwellings, each with its garden, besides providing convalescent hospitals and orphanages. He also maintained a pension fund of $4,125,000 for their benefit. He vastly improved the capacity of the business by taking in other steel works at Rheinhausen and in the neighborhood of Magdeburg; acquiring coal mines in Germany, and iron mines in Spain, as well as in Germany. The shipyards and engine shops of Kiel and Berlin which he amalgamated with the mining and founding business, were sources of great wealth, and he owned a fleet of steamers for the exportation of his goods. Thus although he took no active part in his business on its technical side (in which he differed from his father and grandfather) his skill in finance was so great that in 15 years he almost doubled his inherited fortune. Compare: ARMOR-PLATE; IRON AND STEEL INDUSTRY; and ORDNANCE.

Krupp's Steel. See STEEL.

Krutt'schnitt, Ernest Benjamin, American publicist and lawyer: b. New Orleans 17 April 1852; d. New Orleans, La., 16 April 1906. He studied three years at Washington College (1867–70), and then entered its law school, being admitted to the bar in 1874. He had occupied many positions of prominence in New Orleans, and was particularly interested in its public schools, being from 1890 president of the board of directors. In 1898 he received the degree of LL.D. from Washington and Lee University. He was chairman of the Democratic State Executive Committee (1892–6) and later chairman of the Democratic State Central Committee. In 1898 he was elected president of the Louisiana Constitutional Convention.

Kryp'ton, a gaseous element discovered in the atmosphere by Ramsay and Travers, in 1898. (The history of this member of the argon group is so bound up with that of argon itself, that reference should be made to the article ARGON, and to the references there given.) Krypton was discovered in the last fraction remaining after the evaporation of a considerable quantity of liquid air. The residue consisted chiefly of argon, oxygen and nitrogen; but when the oxygen and nitrogen had been removed, a spectroscopic examination of what remained showed lines that indicated the existence of at least one new element, in addition to argon and helium. To this new element the name «krypton» was assigned, from a Greek word signifying «hidden,» in allusion to the circumstances under which the discovery was made. (See also NEON and XENON.) Little is known, as yet, concerning the properties of krypton. When it was isolated by means of a tedious diffusion process, it was found by Ramsay and Travers to have a density about 40.75 times as great as that of hydrogen, and an atomic weight of about 81.5. The ratio of its specific heat at constant pressure to its specific heat at constant volume was found to be 1.66, as in the cases of argon and helium. Subsequent experiments by Ladenburg and Krügel have indicated a density of about 29.5, and therefore an atomic weight of about 59. Travers, in his book issued subsequently to these later experiments, makes no reference to them. Considerations based upon the periodic law (q.v.) appear to indicate that the results of Ramsay and Travers are the more probable; but this point is as yet undecided. Krypton exists in the air in the proportion of about one part in a million. It has the chemical symbol Kr, and appears to be as inert, chemically, as argon.

Ktistola'træ. See MONOPHYSITES.

Ku-klux (kū'klŭks) **Klan,** a secret organization founded at Pulaski, Tenn., in 1866. Formed originally for purposes of amusement only, it soon developed into an association of «regulators,» and became notorious for the lawless deeds of violence performed in its name. The proceedings of the Ku-Klux in the Southern States were a feature of the determined struggle to withhold from the emancipated slaves the right of voting. The outrages and murders which convulsed the country in 1868–9 ended in the calling out of troops and the formal disbandment of the society in March of the latter year; but its name and often its disguises were used for years to cover the violence of political desperadoes. At the first meeting in 1866 a name was suggested — «Ku-Kloi,» from the Greek «Kuklos,» a band or circle. On the mention of this name some one cried out, «Call it 'Kuklux.' » Nearly all present were Tennesseeans, with only one or two from farther south. On the name being pronounced, a Georgia man present remarked: «Kuklux, that sounds like 'Cocletz,' our old society, called the 'Lost Clan of Cocletz.' » The Cocletz Indians were a clan, not a tribe, that had existed some 200 years previously. The name was adopted and the society provided for the following officers: A Grand Cyclops or President; a Grand Magus or Vice-President; a Grand Turk or Marshal; a Grand Exchequer or Treasurer, and two Lictors. There were the outer and inner guards of the «Den,» as the place of meeting was designated. Each member was required to provide himself with the following outfit: A white mask for the face, with orifices for the eyes and nose; a tall, fantastic cardboard hat, so constructed as to increase the wearer's apparent height, and in shape like those placed on the heads of the heretics formerly burnt in the Portuguese and Spanish *auto-de-fes;* a gown or robe of sufficient length to cover the entire person. The color and material were left to the wearer's fancy, and each selected what would in his judgment be most hideous and fantastic. Each member carried also a small whistle, with which, by means of a code of signals agreed on, they held communication with one another. The Klan increased in numbers and in power, an *imperium in imperio,* until its decrees were far more potent and its powers more dreaded than that of the visible commonwealths which it either dominated or terrorized. In April 1867 the Grand Cyclops of the Pulaski den sent out a request to all the dens scattered over the South to appoint delegates to meet in convention at Nashville, Tenn., in the early summer of 1867. At the time appointed this convention was held. Delegates were present from the Carolinas, Alabama, Georgia, Louisiana and other Southern States. A plan of reorganization previously prepared was submitted to the Convention and adopted, and the delegates returned to their various States as secretly as they had come.

The grand officers were: The Grand Wizard of the Invisible Empire and his ten Genii. The powers of this officer were almost autocratic. The Grand Dragon of the Realm and his eight Hydras; the Grand Titian of the Dominion and his six Furies; the Grand Cyclops of the Den and his two Nighthawks; a Grand Monk; a Grand Exchequer; a grand Lictor; a Grand Scribe; a Grand Turk; a Grand Sentinel. The Genii, Hydras, Furies, Goblins and Nighthawks were staff officers. The gradation and distribution of authority were perfect.

One of the most important things done by this Nashville convention was to make a positive and emphatic declaration of the principles of the order. It was in the following terms:

«We recognize our relations to the United States Government; the supremacy of the Constitution; the constitutional laws thereof; and the union of the States thereunder.»

This Nashville convention also defined and set forth the peculiar objects of the order as follows:

1. To protect the weak, the innocent, and the defenseless from the indignities, wrongs, and outrages of the lawless, the violent and the brutal; to relieve the injured and the oppressed; to succor the suffering, and especially the widows and orphans of Confederate soldiers.

2. To protect and defend the Constitution of the United States and all laws passed in con-

formity thereto, and to protect the States and people from all invasion from any source whatever.

3. To aid and assist in the execution of all constitutional laws, and to protect the people from unlawful seizure, and from trial except by their peers in conformity to the laws of the land.

The Klan had a very large membership; it exerted a vast, terrifying and wholesome power, but its influence was never at any time dependent on or proportioned to its membership. A careful estimate placed the number of Kuklux in Tennessee at 40,000, and in the entire South at 550,000. The organization was disbanded in March 1869.

Kubelik, Jan, yän koo'bĕ-lēk, Bohemian violinist: b. Miehle, near Prague, 1880. He studied at the Prague Conservatory and subsequently performed at semi-private musicales. In 1898 he appeared at a public orchestral concert and in 1900 with the Berlin Philharmonic Society, and made his début in London in June of that year. Subsequently he made a brief but successful tour on the Continent and in England, and in December, 1901, came to the United States, where he was most enthusiastically received.

Kûblai Khan, koob'lī khän (more properly Khŭbilai Khan), called by the Chinese Chi-Tson, Mongol emperor: b. 1214; d. 1294. He was the founder of the twentieth Chinese dynasty, that of the Mongols or Yuen. He was a grandson of Genghis Khan, and in 1259 succeeded his brother Mangû as Khagan or Grand Khan of the Mongols, and in 1260 he conquered the whole of northern China, driving out the Tartar or Kin dynasty. He then ruled over the conquered territory himself, and 19 years later added to it southern China, the dominion of the Song dynasty, which had originally summoned his assistance in driving out the Tartars from the north. Kûblai thus became sole ruler of an empire extending over a large part of Asia, as well as over those parts of Europe that had belonged to the dominion of Genghis Khan. He repaired the evils of so many wars by a wise administration, and by the encouragement which he gave to letters, commerce, industry, and agriculture, brought them all to a very flourishing condition. Marco Polo, the celebrated Venetian traveler, who lived 17 years at the court of this prince, gives some interesting information regarding him. Kûblai Khan is the subject of a poetical fragment by Coleridge.

Kuch Behar. See Cooch Behar.

Kuen-lun, kwĕn-loon', a great mountain system of central Asia, between the Himalayas on the south and the Thian-Shan on the north. It extends from the Pamir plateau in about lon. 75° E. eastward into China, terminating in about lon. 120° E. It varies in breadth, both extremities being compressed, its middle portion consisting of numerous more or less parallel chains. Nearly the whole group is between lat. 30° and 40° N. The most northern part on the west is a continuous mountain-wall having several names and being farther continued by the Nan-shan and other chains well into China. Toward the south are three roughly parallel shorter ranges, the last of which, with its eastern continuations, forms the southern boundary of a mountainous region in which are the Tsaidam salt waste and the Koko-Nor lakes. Between the last named group and one farther south the Hoang-ho rises. The most southerly chain of the central Kuen-lun is that of the Yang-la Mountains. The greatest elevation of the Kuen-lun is in the western ranges, and reaches over 22,500 feet, while the chief western ranges average about 20,000 feet. Most of the peaks of the eastern chains, in China proper, are under 17,000 feet.

Kugler, Franz Theodor, fränts tā'ō-dōr koog'lĕr, German writer on art: b. Stettin 19 Jan. 1808; d. Berlin 18 March 1858. He was appointed a professor of fine arts in the University of Berlin in 1833, and subsequently became a member of the Academy of Berlin. His works have undoubtedly exercised great influence on German art and culture; notably a ‘History of Painting from Constantine the Great to the Present Times’ (1837); ‘Handbook of the History of Art’ (1841–2); ‘History of Architecture’ (1856). He also wrote a ‘History of Frederick the Great’ (1840), which is popular in Germany. His ‘History of Art’ was continued by W. Lübke (q.v.).

Kuhns, koons, **Oscar,** American educator and author: b. Columbia, Pa., 21 Feb. 1856. He was graduated from Wesleyan University in 1885 and has been professor of modern languages there from 1890. He has written ‘The German and Swiss Settlements of Colonial Pennsylvania’ (1900); ‘The Treatment of Nature in Dante's Divina Commedia’ (1897); etc.

Kulturkampf, kool'toor-kämpf, a German term denoting the contest for political and legal rights waged between the authorities of Germany on the one hand and the authorities of the Roman Catholic Church on the other. The conflict was initiated by Bismarck in 1872 and had for its main point of dispute the control by the State of educational and ecclesiastical appointments. He urged that the declaration of Papal infallibility by the Vatican council in 1870 was an arrogation of rights dangerous to the state and that the Roman Catholic Church had assumed an attitude of aggression dangerous to the laws of the state. The ill feeling arising from the questions at issue led the Reichstag to pass a law in 1872 expelling the Jesuits from the German empire. The outbreak of the Kulturkampf, however, dated from the enactment of the May Laws (1873) aiming at state control of the clergy. The Roman Catholic bishops, clergy, and people refused to recognize the validity of the new laws. This opposition was met by still more drastic government measures and in 1875 all recusant priests were deprived of their salaries and all religious orders were abolished. The accession of Pope Leo XIII. prepared the way, however, for a resumption of friendly relations between the Imperial government and the Roman Catholic Church, and negotiations began in 1878 resulting in a nullification of the laws of 1873.

Kumas'si. See Coomassie.

Kumiss, koo'mĭs, a preparation of milk, whether cow's, mare's, ass's, or goat's, which is said to possess wonderful nutritive and assimilable properties, so that it is very valuable in the treatment of consumption, scrofula, chronic diarrhœa, and debility and emaciation in general. It consists essentially of milk in process of fermentation, and cow's milk is what is used for making it in Great Britain. On the Asiatic steppes, where it has been long used as a beverage, it is made of mare's milk, but kumiss of mare's milk or goat's milk has a somewhat unpleasant smell. The manufacture of kumiss is carried on in Switzerland, Russia, and elsewhere. An analysis of a Swiss variety showed that it was composed of fully 90 per cent of water, nearly 3¼ of alcohol, rather more than 2 of sugar, about 1¾ each of butter and albuminates, besides lactic acid, free carbonic acid, and inorganic salts.

Kumquat, kŭm'kwŏt, a tree about six feet high, one of the *Citrus* group, closely related to the orange and growing in China and Japan. There are groves of it in the island of Chusan. The fruit, which is oval, is about the size of a gooseberry, and has a sweet rind and an acid taste. The Chinese make preserves of it, which are largely sold in American cities.

Kuntze, koont'sė, **Edward J.,** German-American sculptor: b. Pomerania 1824; d. United States 1870. After studying in the Academy of Fine Arts, Stockholm, Sweden, he took up his residence in London, but eventually (1844) went to New York, where he was elected Associate of the National Academy (1869). His reputation was made in the United States by his statuettes, among which that of Lincoln was extremely popular. He also executed figures of Shakespeare and Goethe on the same scale; while his statue of 'Psyche,' his bust of 'Mirth,' and his medallion portraits are all in their way excellent.

Kunz, koonz, **George Frederick,** American gem expert: b. New York 29 Sept. 1856. He was educated at Cooper Union, and became a special agent of the United States Geological Survey in 1883. He was placed in charge of the department of mines at the Omaha, Atlanta, World's Columbian and Paris Expositions. He has been president of the New York Mineralogical Club and vice-president of the American Institute of Mining Engineers, and is a member of many societies at home and abroad. Beside contributing innumerable papers on gems, minerals, etc., to magazines and reviews, he has published 'Gems and Precious Stones of North America'; and annual reports on the 'Production of Precious Stones,' in 'Mineral Resources of the United States,' etc.

Kunz'ite, the name of a recently discovered precious stone found in southern California; so called in honor of Dr. George F. Kunz, the special agent in charge of precious stones, United States Geological Survey, since 1882. It is a brilliant gem and is between the topaz and pink sapphire in color. A rose-lilac is the tint which marks this stone, a color new among gems; and its radiance is peculiar and beautiful.

Kunzite was brought to light in 1902 near Pala, in San Diego County, Cal., and was sent for classification to Dr. Kunz, the eminent mineralogist of New York. Much attention was attracted by the beautiful lilac-colored crystals, for nowhere in the country, not even in the American Museum of Natural History at New York, which has the finest collection of spodumene, under which the new gem was classed, had there been seen such remarkable and perfect specimens as these. Dr. Kunz identified the gem and described it; but Dr. Charles Baskerville, professor of chemistry in the University of North Carolina, finally subjected it to ultraviolet light, then to the rays of high penetrative power, and lastly to the bombardment of the corpuscles shooting out from radium, which resulted in some wonderful effects new to the scientific world. Of these effects Dr. Charles Baskerville, who took the liberty of naming the gem «Kunzite,» for his friend, gives the following account:

«On examining this gem we directed our attention to discovering the effect of radium on precious stones. It was shown early in the experiments of the French mineralogist, Curie, that many diamonds phosphoresce, that is, glow in the dark, after being exposed to the emanations of radium. All diamonds phosphoresce with radium, as we learned by applying the test to about two thousand gems collected from some fifteen thousand. The gem in which we were particularly interested belongs to the class of spodumene. Mineral spodumene is usually obtained in large opaque whitish crystals, but from time to time small specimens, often richly colored and transparent, are found. The three characteristic varieties of the latter are a clear yellow gem spodumene of Brazil, the green hiddenite, or lithia emerald of North Carolina, and the lilac sometimes found in Connecticut. These are without doubt remnants of large specimens, which must have been elegant. Spodumene is very subject to alteration and has usually lost all its transparency and beauty of tint.»

The California spodumene crystals are of a rose-lilac tint, varying with the spodumene dichroism, from a very pale tinge when observed transversely to the prism, to a rich amethystine hue longitudinally. No such crystals of spodumene have ever been seen before, and the discovery is of great mineralogical interest. The crystals have been etched by weathering and have a twinning like the hiddenite variety. When cut and mounted parallel to the base, they yield gems of great beauty. Baskerville, Kunz and Crookes have found this almost as luminously responsive to the action of radium as the diamond.

Kurdistan, koor-dĭs-tän' (Persian, «land of the Kurds»), an extensive territory of western Asia, comprehending the greater part of the mountainous region which borders on the western side of the great plateau of Iran or Persia, and stretches westward till it overhangs the low plains of Mesopotamia on the southwest, and reaches the borders of the Turkish provinces of Diarbekir and Erzerum on the northwest. Its limits, as nearly as they can be defined, lie between lat. 34° and 39° N.; and lon. 42° and 47° E., with an area of nearly 40,000 square miles. The surface is very mountainous, and is traversed by lofty ranges stretching northwest to southeast. The whole surface on the west of the Persian frontier is drained by the Tigris and the Euphrates and their tributaries. Unless Lake Van is considered as partly within the territory, there are no lakes of any consequence. The mountains are covered with forests of oak and other hard timber. Many of the valleys are under regular culture, with corn-fields, orchards, and vineyards. One of the most remarkable vegetables is manna, expressively called in Turkish *Kudret-hal-vassiz*, or the Divine sweetmeat, which is used as food. Fine horses and oxen are bred, and sheep and goats are kept in large numbers.

The Kurds are a stout, dark race, well formed, with dark hair, small eyes, wide mouth, and a fierce look. Most of the men are armed, using lances, sabres, daggers, muskets, and pistols. Many of the tribes are still nomadic. The language is of the same stock as the modern Persian. The great body of the Kurds are Mohammedans. They care little for trade, although they send to Kirkuk, Hamadan, etc., gall-nuts, tobacco, honey, sheep-skins, and cattle; obtaining in return coffee, rice, leather, and clothing, chiefly cotton goods. Their allegiance to the Turkish sultan is but slight. The famous Sultan Saladin was a Kurd. It is very difficult to form even an approximate estimate of the whole Kurd population; the Turkish portion is supposed to contain about 2,500,000, and the Persian portion 400,000; but another estimate would give for these numbers 1,300,000 and 500,000 respectively.

Kuria Muria (koo'rē-ä moo'rē-ä) **Islands,** a group of islands situated off the southern coast of Arabia at distances varying from 10 to about 30 miles, with a total area of over 25 square miles. Guano deposits are found in these islands, but they are considered to be barren, and have very few inhabitants. In 1854 they were ceded to Great Britain.

Kuriles, koo'rĭlz, a chain of islands in the North Pacific Ocean, belonging to Japan (q.v.). The chain extends southwest to northeast from lat. 43° 40′ to 51° N.; lon. 145° to 156° E. They are divided into the Great and the Little Kuriles.

Kuroshiwo, koo-rō-shē'wō (Japanese, «black current»), a current of the Pacific Ocean somewhat analogous to the Gulf Stream. It takes its origin in the great north equatorial current along the southeast of Asia, flows past the Philippine Islands and Formosa, which somewhat deflect it, past Japan, the Kuriles and the Aleutian Islands, and thence bends southward toward California. As it approaches the American coast the current increases in breadth. It is much inferior to the Gulf Stream both in volume and in high temperature. It was formerly thought that the Kuroshiwo had a moderating effect upon the Pacific coast climate of this continent, but this view has been abandoned by reason of the scientific knowledge that the prevailing winds of the North Pacific bring eastward the warmth and moisture which produce the climatic moderation observed upon its shores.

Kurtz, koorts, **Charles M.,** art expert: b. Pennsylvania about 1855. He was graduated from Washington and Jefferson College in 1876, studied at the National Academy of Design (New York), was for some time on the staff of the New York *Tribune,* was nine years editor of ‹National Academy Notes,› and edited the ‹Art Union Magazine› in 1884. In 1891 he withdrew from journalism and was appointed assistant chief of the department of fine arts in the World's Columbian Exposition (Chicago 1893). In 1894–9 he was art director of the St. Louis annual exposition, in 1899 was appointed assistant director of fine arts for the United States at the Paris exposition of 1900, and in 1901 assistant chief of the department of art at the Louisiana Purchase exposition.

Kusi, koo sē. See Coosy.

Kuskoquim, kŭs'kō-kwĭm, Alaska, the second river in size in the Territory, rising on the northern slopes of Mount McKinley, and after a southwestern course of over 500 miles, flowing through the wide estuary of Kuskoquim Bay into Bering Sea, about 200 miles south of the Yukon Delta. The trading stations along its banks are Kolmakof, Oknagamut, Odgavigamut, Gavimamutt and Bethel. The inhabitants in the region are chiefly Indians and Eskimos. Gold was discovered in the valley of the Kuskoquim in 1903.

Kutchin, kŭ-chĭn′, a name given to the tribes of the Athabascan Indians who live near the Yukon River in Alaska, and in British North America. They are also called Loucheux and Quarrelers. They number less than 2,000.

Kutztown, koots'town, Pa., borough in Berks County, on the Philadelphia & R. railroad, 18 miles northeast of Reading. There is a normal school here and manufactures of flour, leather, shoes, hosiery, etc. Pop. (1900) 1,328.

Kuyp, Albert. See Cuyp, Albert.

Kuyper, kī'pėr, **Abraham,** Dutch theologian and politician: b. Maassluis, Netherlands, 1837. After a course of theology at Leyden he became a preacher, and in 1874 was elected member of the lower house of Parliament, or Second Chamber, where he formed the Anti-Revolutionary party. He soon afterward quitted parliamentary life and launched out into the career of a publicist and journalist, still leading his party with great éclat. In theology he is the leader of staunch Calvinistic orthodoxy, and is opposed to all «modernism.» In 1880 he founded in Amsterdam the Free University. His political organ is the ‹Standaard›; his religious organ the ‹Heraut.› Among his works is ‹Ons Program› (1880); he has also edited the works of the Polish reformer Jan Laski, and is well known in the United States from De Vries's English translation of his ‹Encyclopedia of Sacred Theology› (1898).

Kwalhiokwa, kwäl-hē-ō'kwä, a tribe of Athabascan Indians, formerly living on Willopah River, Washington, near the Lower Chinook Indians. They are frequently confounded with the Owilapsh or Whilpah.

Kwanza, kwän'zạ, or **Coanza,** kō-än'zạ, a large river of Portuguese West Africa. Rising in Lake Mussombo, it flows at first in a northeasterly direction, then north, and finally in a westerly and northwesterly course, and enters the Atlantic Ocean near lat. 9° 10′ S., not far south of Saint Paul de Loanda. In the lower part of its course there are many falls, the last being the Livingstone or Kambambe Falls, below which for a distance of about 170 miles the river is navigable for small steamers. Its total length is about 800 miles.

Kyanite, kī'ạ-nīt, or **Cyanite,** a native aluminum silicate, Al_2SiO_5, identical in composition with sillimanite and andalusite but very different in its physical properties. Its hardness varies on different faces from 4. to 7. Its specific gravity is 3.56 to 3.67. It is triclinic, the crystals usually being long-bladed, transparent or translucent, and of a beautiful sky-blue color in the centre. Stout crystals of a grass-green color occur in North Carolina. The finest specimens come from Faido, Switzerland, occurring in paragonite schist. Cyanite abounds throughout the New England and Middle Atlantic States.

Ky'anizing, a process for preserving timber, cordage, etc., from the effects of dry-rot, named from an inventor of the name of Kyan. It consists in immersing the material to be preserved in a solution of corrosive sublimate and water, in the proportion of 1 pound of the former to from 10 to 15 gallons of the latter, according to the strength required. The time during which timber must be allowed to remain in the solution depends upon its size and thickness. For boards and small timbers 24 hours are required for each inch of thickness. This process is now almost entirely disused, as wood is much better preserved by being saturated with kreosote or coal-tar.

Kym'ry. See Cymri.

Kyrie Eleison, kĭr'ĭ-ĕ ĕ-lā'ĭ-sŏn (from the Greek *Kyrie eleēson,* «Lord, have mercy»), an invocation following the introit of the mass. It is almost the only part of the liturgy in which the Roman Catholic Church has retained the use of Greek words. Just after the introit the priest celebrating the mass and the servers repeat alternately three times «Kyrie eleison,» and then as many times in the same manner «Christe eleison,» and so on alternately. When it is sung the leading singer takes the part of the priest, and the choir that of the servers. The introduction of the Kyrie into the mass is attributed to Pope Sylvester I., in the beginning of the 4th century.

L

L the twelfth letter of the English and most of the other modern European languages. Its definitive form in the Greek alphabet is Λ, but in very early Grecian, Hebrew and Phœnician monuments it has the form 𐤋 or L. Its name in Hebrew and Phœnician is lamed and in Greek lambda.

The sound of l is produced when the tip of the tongue is brought into contact with the palate behind the upper front teeth, and, with the jaws apart, the breath is emitted. The sound of r is produced in nearly the same way, but in sounding the r the tongue is not in contact with the palate and may vibrate. Thus these two letters represent sounds that are much alike. But there are nations that cannot sound the r, as the Chinese and sundry other races; these substitute l for r: the technical name for this vice of utterance is lambdacism; the opposite vice is an inability to pronounce l, for which r is substituted, as by the Japanese. In languages whose syllabaries admit both these sounds the two letters are freely interchanged or confounded. In languages belonging to one common family, the Aryan, for example, a word which in one language has r, in another has l, and *vice versa;* examples: Lat. *prunus,* Eng. plum; Lat. *ulmus* (elm), Fr. *orme.* The like is seen in the formation of derivatives within one language. Thus in Latin the adjective termination *alis* (Eng. al, as in liberal) is changed to *aris* when the word has already an l: for example: from *peculium* comes *peculiaris,* from *auxilium, auxiliaris,* and *vice versa,* r for a like reason is changed to l: thus from *per* and *lucidus* comes *pellucidus,* from *inter* and *lectus, intellectus.* L is also substituted in one language for n in another; for example: Gr. *pneumon* (lung), Lat. *pulmo.* Or d and l are interchanged: Gr. *Odysseus,* Lat. *Ulysses;* the like is seen in the two Latin words *odor* and *olor;* and the Latin *lingua* was once written *dingua,* allied to Eng. tongue and Ger. *zunge.*

In Italian the l of Latin words is often changed to i: Lat. *planus, plumbum* (lead), Ital. *piano, piombo.*

In English l is often silent: palm, calm. In French *al* becomes *au; à le* becomes *au, cheval* (horse) plu. *chevaux;* and the English auburn is from Latin *alburnus.* In English and most of the other languages l, whether single or double, has one sound-value only, the same which it has in pale, pallid; but in French sometimes ll has a sound resembling that of lli in million: in Spanish ll may commence a word, for example: *llana* (wool), and is classed as a distinct alphabetic character: its sound-value is the same as that of ll in French.

L. E. L., the *nom-de-plume* initials of an English novelist, Letitia Elizabeth Landon, later Mrs. Maclean.

La, in music, the syllable which denotes the sixth note of the diatonic scale.

Laager, lä'gėr (Dutch, «a camp»), in South Africa, an encampment more or less fortified. The original Boer laager is an enclosure made of the wagons of a traveling party for defense against enemies.

Laaland, lâ'länd, or **Lol'land,** an island of Denmark, in the Baltic Sea. Its greatest length, southeast to northwest, is 36 miles; breadth, varying from 9 miles to 17 miles; area, 462 square miles. The surface, as implied by its name, meaning «low land,» is so very little raised above the sea, that parts of it along the coast are subject to frequent inundations; and for a considerable distance around it the water is so shallow that there are few places in which vessels drawing 8 feet can approach it without danger. The soil, consisting generally of a heavy loam, is very fertile, and yields excellent crops of corn. Beans, hops, and hemp are extensively grown. Varieties of hardwood timber are abundant. Pop. 65,550.

Laar, or **Laer, Peter van,** Dutch painter: b. Haarlem, Netherlands, 1590; d. sometime after 1658. Early in life he went to France, and subsequently visited Italy (1623). Here he mainly resided at Rome, where he became associated with Claude Lorraine, Poussin and Sandrart. He was small and crooked in stature, and was thus called by the Italians «Bamboccio,» and the comic scenes of rustic life painted in his style became known as «Bambocciads.» He returned to Haarlem in 1639. He painted pastoral and banditti scenes, fairs, and such like rural incidents, with spirited and vigorous brush, although his coloring is somewhat hard. A masterpiece of his, ‹The Market Crier,› is in the gallery at Cassel. Other pictures of his are to be found at Paris, Dresden, Vienna, Munich, etc. About 20 etchings from his hand are also extant, chiefly animals and landscape, which are spirited and finely executed.

Labadie, Jean de, French mystic and separatist: b. Bourg en Guienne 13 Feb. 1610; d. Altona, Prussia, 13 Feb. 1674. He was educated at Bordeaux by the Jesuits, and belonged to their order till 1639. He then quitted it, both because irregularities were detected in his conduct, and he was found to have adopted many very peculiar and extravagant views. For these he was cited before the Parliament, but fled to Geneva. At a later period he returned to France, and took up his residence in Amiens, whose bishop entrusted him with the visitation of the monasteries in his diocese. He also found a patron in the archbishop of Toulouse. His zealous opposition to some of the clergy subjected him again to persecution, and to escape from it he, in 1650, went over to the Reformed Church, but not finding himself so comfortable as he expected, he thought he had received a call to found an apostolic church for himself. He now became a preacher in Montauban, and afterward, on being obliged to leave it, in the town of Orange, from which he proceeded successively to Geneva, Middleburg, and Amsterdam. In the last city he collected his followers into a distinct church or society under the name of Labadists. Toleration being now denied him, he in 1670 proceeded to Herford, where the Palsgravine Elizabeth gave him protection. Driven thence by an imperial edict in 1672, he went first to Bremen, and finally to Altona, where he held private meetings.

La Barca, lä bär′kä, Mexico, town in the State of Jalisco, east of Chapala, and 60 miles southeast of Guadalajara, on the International railroad between that city and the capital. The town was founded in 1529 by Nuño de Guzman, and during the Mexican war for independence the town was the scene of two serious battles. Pop. (1900) 10,000.

La Barre, Antoine Joseph Lefèvre de, French sailor: b. about the beginning of the 17th century; d. 4 May 1688. He rose to early prominence as an officer of the French navy, and was appointed governor of Guiana in 1663. He was successful in recapturing Cayenne which had been occupied by the Dutch. On being commissioned lieutenant-general he sailed for the West Indies, and, in a fight with the English in the Antilles, compelled them to raise the blockade of Saint Christopher. Succeeding Frontenac as governor of Canada in 1682, his irresolution in his negotiations with the Indians was so disastrous that he was recalled in 1684.

Lab′arum, the name given from the time of Constantine to the imperial banner. Eusebius has described it with much particularity. It was in the form of a long pike, crossed at a certain height by a beam, from which depended a banner richly embroidered with gold, and adorned with precious stones. The pike was surmounted by a crown of gold, enclosing within it a monogram of the two initial letters of the name of Christ.

Labat, Jean Baptiste, zhŏṅ băp′tēst lä-bä, French Dominican missionary and traveler: b. Paris 1663; d. there 6 Jan. 1738. In 1693 he went as a missionary to the French Antilles, landed at Martinique, and undertook the care of the parish of Macouba, which he superintended for two years, after which he was sent to Guadaloupe. His mathematical knowledge recommended him to the governor there, whom he accompanied during a tour through the island to assist him in selecting the points best adapted for works of defense. On his return to Martinique Labat received the office of *procureur-général* of the mission, in which an opportunity was afforded him of displaying the whole extent of his useful activity, at the same time that he served the government by his mathematical knowledge. In 1705 he was sent to Europe on business of the order, and landing at Cadiz, surveyed geometrically and scientifically the environs and the whole coast of Andalusia as far as Gibraltar. He returned to Paris in 1716. His ‘Nouveau Voyage aux Iles de l'Amérique,’ which has been translated into several languages, contains an account of the natural history, particularly of some of the smaller and less frequented islands; of their productions; the origin, customs, religion, and governments of the inhabitants. He also published a ‘Nouvelle Relation de l'Afrique occidentale’; ‘Voyage en Espagne et Italie’; ‘Relation historique de l'Ethiopie occidentale’; ‘Mémoires du chevalier d'Arvieu.’

Labédoyère, Charles Angélique Huchet, shärl än-zhā-lēk hü-shā lä-bā-dwä-yăr, COMTE DE, French general: b. Paris 17 April 1786; d. there 19 Aug. 1815. He entered the army in his 20th year, and served with much distinction in Spain, Germany, and elsewhere. Napoleon raised him to the rank of general of division in 1815, and he fought with great courage at Waterloo. After the battle he hurried to Paris, and there distinguished himself by his hostility to the Bourbons. On the capitulation of Paris he followed the army behind the Loire, but returning to Paris, was taken, tried by court-martial, and shot.

Label, Union. See UNION LABEL.

Labezares, Guido de, gwē-dō dā lä-bā-thä′rĕs, Spanish adventurer: b. Bilbao, Spain, 1510; d. Manila 1580. He began his career in South America, from which he made a voyage to Java and Sumatra 1542. In 1550 he discovered the Bay Filipina, in Florida, and in the following year with Luna de Arellano visited and re-named the place Bay Santa Maria. He entered with Legaspi upon the project of conquering and converting the Philippine Islands. His success was complete in the matter of conquest and in 1574 he was appointed governor-general of Manila. By means of new fortifications he so strengthened the place against the Chinese corsairs and the Dutch pirates, that these were driven from the adjacent islands. In 1575 he took the position of lieutenant-governor, under a new governor-general sent from Spain, and kept his position until his death.

Labia′tæ, a natural order of dicotyledonous herbs or sub-shrubs distributed mainly in temperate climates. The species, of which there are more than 2,500, grouped in about 150 genera, are characterized by four-cornered stems; opposite, exstipulate leaves; two-lipped flowers generally in whorls, cymes or heads; and one to four achenes in a persistent calyx. They are noted for their volatile oils, which in many instances are of economic importance either as perfumes, or as flavorings. Some species are cultivated for ornament, but probably the best known are those which have been used for centuries for flavoring food, such as sage, thyme, savory, marjoram, mint, balm, and basil (qq.v.). The species used most frequently in perfumery are probably lavender, rosemary and patchouli. One species variously known as Chinese and Japanese artichoke, chorogi, and knotroot. *Stachys sieboldi* or *S. affinis* yields edible tubers which are eaten raw or cooked in Asia, France and to a small extent in the United States. Many labiates have at some time been reputed medicinal but are now rarely used except to disguise the taste of disagreeably flavored drugs. The best known genera represented in the United States are: *Nepeta* (catnip), *Mentha* (mint), *Origanum* (marjoram), *Salvia* (sage), *Thymus* (thyme), *Marrubium* (horehound), *Satureia* (savory), *Lavandula* (lavender), *Monarda* (horsemint), *Ocimum* (basil), *Melissa* (balm), *Scutellaria* (skullcap), *Lamium* (dead nettle), *Calamintha* (calaminth), *Teucrium* (germander), and *Trichostema* (blue curls).

Labiche, Eugène Marin, ė-zhãn mä-răṅ lä-bēsh, French dramatist: b. Paris 5 May 1815; d. there 13 Jan. 1888. He wrote, chiefly in collaboration with other authors, upward of 100 plays, many of them very successful. They are mostly distinguished by extravagant plots, and are full of droll situations. In 1880 he was elected to the Academy, and after that date ceased to write for the stage. His dramatic works were collected in 10 volumes (1878–9). Among the best of them may be mentioned: ‘The Italian Straw Hat’ (1857); ‘Le Voyage de M. Perrichon’ (1860); ‘Moi’ (1864). Consult: Matthews, ‘French Dramatists’ (1901).

Lablache, Luigi, loo-ē′jē lä-bläsh′, operatic singer: b. Naples, Italy, 6 Dec. 1794; d. there 23 Jan. 1858. He studied at the local Conservatory della Pietá de Turchini under the guidance of Valesis, and made his début as a bass singer, *buffo Napoletano,* in Fioravanti's ‘Molinara.’ Later he enlarged his repertoire by singing in grand opera, and appeared as Mercadente in ‘Elisa and Claudio.’ His reputation soon extended over Italy. In his 20th year, when the triumph of Rossini was at its height, he stood forth as the greatest interpreter of that master, and reached the summit of his fame. A medal was struck off in his honor at Vienna in 1825. For the next 17 years he annually appeared in Italian opera in London, Paris, and St. Petersburg. He was equally admirable in comic and serious operas, and the school of music which he opened in Paris had considerable success in handing on the traditions of his style.

Labor. See AMERICAN LABOR.

Labor, American Federation of. See AMERICAN FEDERATION OF LABOR.

Labor and Commerce, Department of. See COMMERCE.

Labor Bureau, more properly the bureau of labor, a sub-department of the Department of Labor and Commerce. Originally the Bureau of Labor was a part of the Interior Department, but at the creation of the new department by the Congress 11 Feb. 1903, the bureau was transferred. It was organized in 1885, and Carroll D. Wright, who had been very successful as chief of the Bureau of Statistics in Massachusetts, was appointed Commissioner of Labor. At the end of three years Commissioner Wright had made such signal success in the new department that the bureau was changed to the Department of Labor, with independent functions. It has issued annual reports, special reports and bi-monthly bulletins of great educational value.

Nearly every State in the Union also has a labor bureau, or department of labor, the oldest being that of Massachusetts, organized in 1869. Several of the State bureaus, particularly those of New York and Connecticut, maintain free employment agencies. The Federal and State bureaus had published up to October 1903 only 500 volumes on labor topics. These State bureaus have been kept remarkably free from partisan politics, and those have been decidedly successful in the settling of labor disputes and in preventing strikes and lockouts. These organizations proved so successful that European nations soon followed the American example. In 1891 France organized a bureau of labor and in 1892 Germany followed with a labor commission. In 1893 a labor department under the direction of a Commission for Labor was instituted in England. Austra, Italy, Sweden, New Zealand, New South Wales and Canada have since established similar bureaus. Consult: Wright, ‘The Workings of the Department of Labor,’ and ‘The Value and Influence of Labor Statistics,’ in ‘Monographs on Social Economics’ (Washington 1901).

Labor Colonies, or agricultural communities, are common in Europe but almost unknown in the United States. They are maintained for the purpose of giving employment and training to individuals who, on account of misfortune or inefficiency, find it difficult to earn a living. In Holland there are four of these labor colonies, at Wilhelmsoord, Frederiksoord, Wilhelminasoord and Colony No. 7, which have been established for over half a century. They occupy 5,000 acres of land and have a membership of over 2,000. At La Chalmelle, France, is a colony established in 1892. It occupies 318 acres of land and has 300 colonists. In Germany there are 26 colonies all established since 1882. New Zealand has a government farm of 1,000 acres. In Belgium are two colonies which are practically penal institutions for vagrants and beggars. There are several colonies in England, and in the United States three small colonies have been established by the Salvation Army, one each in Colorado, California and Ohio. The most successful is the Colorado colony which has 150 members. The colony system in all the European countries is practically communism under government control, all the colonies being conducted on the co-operative plan.

Labor Congress, an assemblage, either national or international, of representatives of organized labor. In 1866 the first International Labor Congress was held at Geneva, Switzerland, about 60 delegates being present from England, France, Germany, Holland and Switzerland. The results of this meeting were the condemnation of the industrial employment of women, the advocating of technical education and the organization of mutual credit associations. At the congress of 1869, held at Basel, Switzerland, labor representatives were in attendance from Russia, Austria, Germany, France, England, Spain, Italy, and Switzerland. This assembly by a vote of 54 to 4 declared that landed property should be abolished. Other similar congresses were held at Dresden, 1871; The Hague, 1872; Paris, 1886; Berlin, 1891, and Zürich, 1897.

An International Socialist-Labor Congress was held in Paris in 1889. In 1891 a second Socialist-Labor congress was held at Brussels, at which 400 delegates were present from nearly every country in the world, including Canada and the United States. Among the topics discussed were: the eight-hour day, militarism, universal suffrage, and legislative protection of labor. At the congress of 1893 at Zürich, Switzerland, 385 delegates were present, and admission was denied to all avowed anarchists. The congress, now assuming definite organization, met in London in 1896, and arranged to meet every four years thereafter. The anarchists were again denied admission, and resolutions were adopted opposing standing armies, advocating the nationalization of land and the socialization of industry.

The next meeting of the International Socialist-Labor Congress was held in Paris, in 1900, when the assembly discussed the laws regulating strikes and boycotts and favored the abolition of the capitalistic class. Resolutions were passed favoring a fixed minimum wage and the nationalization of mines. The congress for 1901 held 14 Sept. at Amsterdam, discussed the following questions: General strikes; general rules of political socialism; trades unionism and politics; colonial politics; international arbitration; the relation of the trust question to the unemployed problem; emigration. Of this organization which meets every four years there is a standing committee known as the International Socialist Bureau, which meets annually. The meeting for 1903 was held in Berlin.

Various national labor congresses are held in several countries, particularly in England, where an annual convention has been held since 1868. Congresses of anarchists convening under the disguise of labor have been held at intervals in Lyons, Havre, Brussels, Barcelona and other cities. See also LABOR UNIONS; SOCIALISM.

Labor, Court of (Industrial Department of the National Civic Federation). At a conference of representatives of capital and labor, held in New York 17 Dec. 1901, under the auspices of the National Civic Federation (q.v.), a permanent board was appointed to settle differences between the employees and the labor unions. On this board were 12 representatives of organized labor, 12 representative employers and 12 leading educators, clergymen and public men. On 18 Dec. 1901 the committee organized on a permanent basis, with Senator M. A. Hanna as chairman, and Oscar S. Straus and Samuel Gompers, vice-chairmen. The following statement was issued, indicative of the purposes of the committee:

«This committee shall be known as the industrial department of the National Civic Federation. The scope and province of this department shall be to do what may seem best to promote industrial peace; to be helpful in establishing rightful relations between employers and workers; by its good offices to endeavor to obviate and prevent strikes and lockouts; to aid in renewing industrial relations where a rupture has occurred. That at all times representatives of employers and workers, organized or unorganized, should confer for the adjustment of differences or disputes before an acute stage is reached, and thus avoid or minimize the number of strikes or lockouts. That mutual agreements as to conditions under which labor shall be performed should be encouraged, and that when agreements are made the terms thereof should be faithfully adhered to, both in letter and spirit, by both parties. This department, either as a whole, or a sub-committee by it appointed, shall, when requested, act as a forum to adjust and decide upon questions at issue between workers and their employers, provided in its opinion the subject is one of sufficient importance. This department will not consider abstract industrial problems. This department assumes no power of arbitration unless such powers be conferred by both parties to a dispute. This department shall adopt a set of by-laws for its government.»

The committee since its organization has been instrumental in settling numerous troubles and disputes between capital and labor. See NATIONAL CIVIC FEDERATION.

Labor Day, in the United States, the first Monday in September, a legal holiday in all the States and Territories except Nevada, North Dakota, and Wyoming. In Louisiana it is observed only in the parish of New Orleans. The celebration of this day was inaugurated by the Knights of Labor, who in 1882 held a parade in New York, and again in 1884, when resolutions were passed to hold all parades on that day. Workingmen of all organizations then began agitation to have the day made a legal holiday, and in 1887 the first law to that effect was passed in Colorado. The day is celebrated by parades and by meetings addressed by prominent labor leaders. In Europe the celebration of the first of May as Labor Day was begun in 1890 with a demonstration in favor of the eight-hour day; it was at that time and for a few years later much feared and violently opposed by the various governments, and there were many clashes between the police and soldiers and the workingmen. It is now usually celebrated without trouble. In the United States, May Day is celebrated by the Socialist-Labor party, but there is no attempt to cease work on that day.

Labor Exchanges, a name erroneously applied to employment bureaus (q.v.). It was also a term given to a class of institutions founded by the followers of Robert Owen (q.v.) in 1832–5. These were designed to bring about an exchange of products of labor without the intervention of money. Many stores were founded but the plan was soon found impracticable.

Labor Legislation in the United States. The problem of protecting the laboring classes against the employing class is of relatively late development in the United States, owing to the superior prosperity of the laborers, the rapid increase in employments and competition for workmen. Of course, direct United States laws on the subject cannot exist, all such legislation being reserved to the States; the most the government can do is to set an example of short hours, high wages, and sanitary conditions in its own workshops or other employments, and make enactments for the District of Columbia. State legislation is too scattered and discordant to present in full; only a classification of the subjects of legislation will be attempted.

The Contract in General.— One of the fundamental principals of the common law, though not expressed in statutes, is that long contracts for personal service, which might end in a form of serfdom, will not be enforced beyond two years; in one State nothing beyond one year is enforceable; which implies that under these limits it could be, but no case has yet arisen. The notice to be given on quitting employment has been regulated in several States by an enactment that an employer shall give an employee the same notice which he exacts by withholding wages, requiring bonds, etc.

Rate, Form, Period, etc., of Wages.—There is no statute in any State fixing the rate of wages, nor would it be constitutional, in all probability. The nearest approach is an Indiana statute of 1899 providing a minimum of 15 cents an hour for manual labor. It is often provided in municipal orders, however, that work on contracts shall not be paid at less than current local rates. The wage-paying period has in some cases been legally fixed as weekly; it is not certain that this is either constitutional or wise. More common and of much less doubtful utility are the laws in some States forbidding the payment of wages in orders for goods, or anything but cash, and prohibiting companies from operating or being interested in stores or supply establishments, Maryland and Illinois have this in action; the Pennsylvania statute was held unconstitutional. Laws regulating fines and deductions, weighing, etc., have been enacted, and «screen laws» for the coal mines.

Hours of Labor.—This has been and is one of the most persistently fought of labor questions, but for adult work it has not been very successful thus far on the State-arena, the only statute establishing a general 8-hour law with enforced payment for overtime — that of Nebraska — having been declared unconstitutional. Wyoming by constitution, however, and Missouri and Utah by statute, have established an 8-hour day for the mines; and it is usual to fix 8 hours as a day's work where the contract does not specify any. This is also becoming customary in public work for States and cities, and will doubtless become universal. The State also claims the right to regulate hours in unsanitary or dangerous occupations. On the subject of children's labor, the Northern States east of the Rockies have generally a full and systematic body of legislation; efforts are making by the best citizens of the South to have its States adopt similar laws. These statutes restrict the labor of children under certain years (10 at lowest, more commonly 12 or 14) to a usual 10 hours a day, and 55 to 58 hours a week; 12 hours in Pennsylvania, but even there only 60 hours a week. It is also usual to order the hours arranged so as not to interfere with school hours, unless the children have reached a certain standard. Some States make these laws apply to adult women as well; some prohibit women's labor in the mines altogether.

Personal Liberty.—A number of enactments have been made to prevent intimidation of workmen by threats of loss of employment, etc.; and by pay envelopes or placards in work-rooms drawing menacing pictures of shutting down, discharging men, etc., if certain political results ensue. Forbidding men to join unions, forcing them to contribute to benefit societies, or to employ a company physician, etc., are legislated against.

«Government by Injunction» (q.v.).—The use of injunctions and proceedings for contempt to suppress labor riots has greatly incensed the workingmen, and in Kansas a statute has been passed which goes so far as practically to make it impossible to enforce any contract that does not sound in damages.

Health, Safety, Moral Conditions, etc.— The evils of the sweat-shop — tenement manufactures, mainly confined to clothing — have drawn out legislation, either extending the factory acts to them, or restricting the manufacture to members of the resident family and requiring a license. In factories, there are laws providing a given air space for each hand, and machine appliances for removing dust, guards for belts, shafts, dangerous machinery, elevators, etc., prohibition of cleaning machinery while in motion, sometimes of women or children cleaning it at all, fire escapes, etc. See FACTORIES AND FACTORY INSPECTION.

Employers' Liability.— This branch of law in America is almost entirely the creation of the past 20 years; so much so that a great and flourishing branch of accident insurance, unknown a generation ago, now takes in many millions of dollars in premiums annually. The employer has always been liable in damages to an employee for accident resulting from his own negligence, or defects in his plant, as from breaking machinery, bad floors, etc.; but not from the negligence of fellow employees. The latter has of late years been changed, so that the employer is now liable for all accidents in his service except where the employee's own negligence is the cause; and the large liability superinduced makes it needful to insure the hazard.

Labor, Organized. See UNIONISM.

Labor Union, The American, a Socialist-Labor organization founded in May 1898, as the Western Labor Union. At a convention held in Denver, Colo., in 1902, the scope of the organization was widened and the name changed. It favors international socialism, and the government of the body is more centralized than ordinary federations of trade unions. The Union is composed largely of trade unions in the States of Colorado, Idaho, Montana, Washington, and Wyoming. In 1903 it had 173 local unions, 5 district unions, and a membership of 150,000. The official organ is the 'American Labor Union Journal,' published at Butte, Mont.

Labor Unions. See UNIONISM.

Laboratory (from the mediæval Latin *laboratorium,* meaning workshop). The word is used to denote any room or building devoted to experimental investigations in technics and the sciences, or to the teaching of scientific and technical knowledge by means of experiments. The term is used to denote the work-room of a manufacturing chemist, or to the testing-rooms of an industry. In early times laboratories were used by the priesthood, who tried to throw a mantle of secrecy about them. Chemical operations were carried on in them and drugs and potions were made in them. Out of these early laboratories grew those of the Middle Ages. In this later period they were devoted to astrology, the making of drugs, potions and charms and to the search for the philosopher's stone by means of which it might be possible to change the baser metals into gold. Some of these laboratories were very important in their day, having the nobility for patrons, or being maintained at the public expense.

In 1683, a laboratory for academic instruction was opened at the University of Altdorf. Many private laboratories were established about this time, but their rapid development for instruction and research did not begin until the 19th century.

Among the first laboratories established, open to students, were those of Purkinje, who established a physiological laboratory at

Breslau in 1825; and the chemical laboratory established through the efforts of Baron von Liebig at the University of Giessen in the same year. The first physical laboratories for students were founded about 1846; one at Heidelberg, by Philipp Gustav Jolly; and one at the University of Glasgow by William Thomson — now Lord Kelvin.

The introduction of the laboratory into the educational system of the United States was made by the Rensselaer Polytechnic Institute, which established a chemical laboratory at about the same time as that established at the University of Giessen; and by the Massachusetts Institute of Technology, which also established a chemical laboratory. The movement for the establishment of laboratories in the United States was independent of that in Europe.

Among the great laboratories of the world may be noted that of the Royal Institution, established in 1800 by Count Rumford, which was to be devoted to the applied sciences, but which soon became the seat of great activity in researches in pure science, conducted by such men as Davy, Faraday, and Tyndall. The Physikalische Reichsanstalt, in Charlottenburg, near Berlin, is a very famous laboratory where there are departments devoted to research in pure science, and other departments for the study of the applications of science to industrial pursuits. In 1875 a Committee of Weights and Measures, made up of representatives of 18 nations, was organized for the purpose of reproducing and furnishing international metric standards to the members. A laboratory for their manufacture and for research was established near Paris. Great Britain has placed the control of a recently founded national laboratory, where standards of weights and measures are to be kept, duplicates made, instruments tested, and research is to be carried on, with the Royal Society. In the United States the Smithsonian Institution (q.v.) was established in 1846. Many important lines of research have been developed there, out of some of which have grown up some governmental departments; as the United States Weather Bureau and the United States Fish Commission. The United States government has established, by act of Congress, approved 3 March 1901, a National Bureau of Standards, a suitable building and equipment also being provided for. The bureau has the custody of the standards of weights and measures, and has power to manufacture duplicates, multiples and submultiples. It also has the power to officially test and calibrate physical and chemical apparatus and issue certificates for them. Research is to be carried on, when of great importance to commercial and scientific interests.

Laboratories for studying science by means of experiment, and for research, have been established in practically all American institutions of learning. In many preparatory schools and in an ever-increasing number of high schools, elementary laboratories are added for the study of physics, chemistry, and biology.

Laboratories for research and for testing form a part of many industrial enterprises, as in the manufacture of steel. The material is tested chemically at different stages of the process in order to determine the treatment in a subsequent process. Physical tests are made of its strength and density. Investigations are carried out with respect to the effect of different processes of manufacture on its physical characteristics. Another example is the laboratory of the manufacturing chemist, where he tests his product and seeks for new, better and cheaper processes of manufacture.

Many industries of to-day are based on processes devised and worked out in laboratories for research. Some examples are the great plants at Niagara Falls, where metallic aluminium, calcium carbide, sodium hydrate and many other compounds are made. The basis of the progress in applied electricity is research in physics and chemistry. In many lines of industry scientific research in public and private laboratories has made possible new and better processes. In those countries where there is the greatest activity in research in science and its applications there is also the greatest industrial activity.

Research in the biological sciences has helped to a better understanding of life and to its prolongation. The causes of many infectious and contagious diseases have been discovered, and effective methods of prevention and of combating them have been found. The Pasteur institutes in many large cities all over the world are witnesses to these facts.

A general outline and some of the details of construction, equipment, and uses of a few of the most common types of laboratories found in educational institutions of the present day are given below. Many laboratories where excellent work is being done are very much simpler than those described; and, on the other hand, some are much more elaborate in construction and equipment. Some features are common to them all, one of which is the lecture room, where experimental demonstrations are given before many students at one time.

Biological Laboratory.— It is necessary in the present instance to dwell but briefly on any particular subdivision of laboratories devoted to the study of biology. Biological laboratories in Europe were established during the early part of the last half of the 19th century. Louis Agassiz led the movement in the United States in the establishment of biological laboratories, by establishing a zoological laboratory at Harvard.

Agassiz also developed the modern marine laboratory which has led to the establishment of many such laboratories in all parts of the world. The researches in these laboratories have been of greatest value in the biological sciences. Among the marine laboratories of the world must be enumerated the great laboratory established in 1872 by Dr. Anton Dohrn at Naples. Specialists from all parts of the world go to this laboratory to do research work. The United States Fish Commission has established two very important marine laboratories in the United States: one at Woods Holl, Mass., the other at Beaufort, N. C., in 1899. Woods Holl was the centre of activity in 1871 and again in 1875. The first building of the present fish culture and experiment station was completed in 1884. This laboratory has been open to voluntary investigators, tables being assigned to them. The investigators have numbered among them men from the principal universities of the country, and much valuable work both of economic and scientific value has been done there. The marine laboratory established at Beaufort, N. C., promises to be one of the greatest, if not the greatest, biological station in the world; larger than the one at Woods Holl or the one at Naples on the Mediterranean.

A second very important marine biological laboratory for research exists at Woods Holl, where scientists from many institutions congregate. This laboratory is devoted entirely to research. There are many other important biological stations along the Atlantic, Pacific, and Gulf coasts and a few on the Great Lakes.

The special appliances necessary to meet the needs of marine laboratories, are boats, both large and small, nets, apparatus for obtaining the vegetable as well as the animal life of the salt and fresh water bodies, and aquariums.

The epoch-making researches of Pasteur in France on bacteria have led to the establishment of important bacteriological laboratories throughout the world. The universities and colleges in the United States have many laboratories devoted to teaching and investigation along the different groups of the biological sciences.

The botanical laboratory is devoted to the study of the life of plants, and their classification according to their distinguishing characteristics and structure.

The laboratories for the whole group of biological sciences have much equipment in common. The laboratory rooms should be well lighted, preferably with north light and with window bars done away with as much as possible; the building should be situated so as to have a low horizon. This is important in microscopic and microphotographic work, in order to get a uniform lighting of the slide on the microscope stage. The rooms should be provided with tables, on which is placed a full equipment of reagents, staining and preserving solutions. Dissecting instruments are among the individual needs of the students. The microscopes for the more advanced work should have three objectives, one of comparatively low power, another of higher power, and the third an immersion objective. Microtomes are needed for cutting sections, to be mounted on slides for examination under the microscope. The photomicrographic camera aids very materially in the careful, systematic study of specimens. The negatives thus obtained are available for making lantern slides for projection purposes and for making enlarged photographs. In some lines of research work, as in bacteriology, culture media, in which the particular form of life may grow and multiply, may be used. Often the cultures must be kept for hours at a certain temperature, thus necessitating incubators, of which the temperature is regulated by thermostats. Frequently rooms are set apart for cultures. Dark rooms are essential for the development of negatives resulting from the photographic work.

Chemical Laboratory.— The chemical laboratory is one of the most important factors in the educational and industrial systems of our civilization. The rooms of the chemical laboratory should be well lighted and ventilated. Special lines of work should be isolated. The lecture room for demonstration purposes should be much the same in its general features as the physical lecture room (q.v.). The lecture room should be supplied with different gases, including common illuminating gas, oxygen, and hydrogen. The oxygen and hydrogen are generally supplied in heavy steel tanks under high pressure. A demonstration lantern should be conveniently placed. The table top should have one or two holes in it connected to the suction fan for carrying off fumes and gases, thus keeping them from being disseminated through the room.

The inorganic laboratories, for elementary purposes, may be divided into three principal divisions: first, that devoted to the study of the simple reactions by the beginner, who there learns experimentally what takes place in the simple reactions, as that of the production of hydrogen gas by pouring sulphuric acid on zinc, forming zinc sulphate and liberating the gas. The second division is that part devoted to qualitative analysis, where more complex reactions are studied and where the student learns to recognize and to test for the presence of the different elements. Under the third division is found quantitative analysis, which, as the name implies, is devoted to the study of the quantitative relations of compounds.

The work in these three divisions leads up to the more complex work of organic chemistry and research work. The equipment of these laboratories will give a general outline of the whole. Wide top tables should be provided. The tops should be impervious to water and as little acted on by acids as possible. Alberene stone is excellent material for such purposes. A good construction is to have the tops slope a little from both sides to the centre line, where a trough is placed to carry off the wastes to the sewer. Racks for the storing of bottles containing reagents should be placed so as to be easily reached by the students from both sides of the table. Beneath the top should be drawers and shelving so subdivided that each student may keep his apparatus separate. The tables should be provided with gas and water, with plenty of taps, and with electrical connections. Means should also be furnished for boiling under reduced pressure. For the experiments where noxious gases are given off, hoods should be provided, the bases being of the same material as the table tops, the sides and top of fixed glass with a glass window that may be opened in front. For ventilation within the hood there should be openings to a flue connected with a blower which produces a suction of the gases from the hood. One of the openings should be well toward the top and the other at the bottom of the hood. If artificial lighting is required it should be from above the glass top. Plenty of stop-cocks for gas, water, and suction should be provided for each hood.

Among the independent rooms needed, are those for the following purposes: A hydrogen sulphide plant is an absolute necessity, and it should be isolated to the extent of having a well ventilated room of its own. It should, however, be situated as conveniently as possible to the main divisions of the laboratory. Sometimes it may be advantageous to pipe the gas to different rooms. Near the quantitative laboratory should be a balance room well stocked with analytical balances supported on solid tables or wall brackets. A combustion room and a furnace room are often required. The furnace room should be so located as to get a good draft or so as to be connected to a suction fan system. Dark rooms for photography and spectroscopy should have a dead black finish, and those for photography should be supplied with means for obtaining ruby light.

The study of the spectrum of gases makes it necessary to have a good induction coil to produce a spark spectrum, which may be viewed by the eye, or which may be photographed. The range of temperatures at which chemical phenomena are now studied calls for very high and very low temperatures, which means that the electric furnace and a liquid air plant are often desirable. Apparatus for distillation under different pressures, and for obtaining constant temperatures are very necessary in some phases of the work. The rooms for gas analysis should be so situated as to make it possible to have but small temperature fluctuations. A north exposure, thus getting rid of direct sunlight and yet getting good illumination, is preferable. The principal part of the equipment needed for gas analysis by the Hempel method includes gas buretts, to measure volumes, absorption pipettes for the different reagents used to absorb different gases, combustion pipettes and oxygen generators.

The physical chemistry laboratory requires much apparatus and equipment needed in physics and in the other divisions of chemical work, including analytical balances, thermometers, barometers, manometers, calorimeters, thermostats, motors, stirring gear, refractometers, spectrometers, apparatus for studying polarized light, ammeters, voltmeters, resistances, and many other pieces. Among the subjects studied in the student laboratory are density, viscosity, vapor pressure, boiling and freezing points, heats of fusion and vaporization, critical temperatures, pressures and volumes, heats of combustion, solubility and the various divisions of electrolysis and electro-chemistry.

Electrical Laboratory.— The student and investigator in the field of electricity should have a thorough grounding in general physics and physical laboratory methods. The student in the electrical laboratory becomes acquainted with the relations of electric currents, electromotive forces and resistances; and the production and transmission of electrical energy, electrical quantity, capacity, magnetism and the relations between electricity and magnetism. The laboratory should be of strong construction on account of the lines of shafting and the heavy machines used. In the general laboratory will be found for purposes of investigation: dynamos of the various direct and alternating current types; direct and alternating current motors, the latter covering synchronous, two-phase and three-phase motors, induction motors, and rotary converters. Portable and variable inductive and non-inductive resistances; portable and fixed instruments for measuring current, electrical pressure or potential and power should be plentifully supplied. The fixed machines, instruments, the private rooms and tables should have lines of wire connecting them with a central switchboard through which any desired grouping of stations may be made. Among the separate departments may be one for testing and studying transformers; one for investigating the magnetic properties of iron, steel and other metals; a potentiometer room in which to test and calibrate the instruments used in electrical measurements. Some interesting and important parts of the work are the investigation of the resistance and strength of insulators and conductors; the study of condensers and their effect in a circuit; the study of self and mutual induction and the measurements of them. Separate rooms which can be made dark, the walls of which absorb as much light as possible, or which can be made any color desired by a proper arrangement of coverings, where work in lighting and photometry may be performed, are also important parts of the equipment of an electrical laboratory.

The electrical engineering student should find it possible to make tests in all lines of his profession, approximating, as nearly as possible, actual working conditions in the commercial world. In order to give the greatest usefulness to the laboratory, the equipment should be kept abreast with the advances in the best engineering practice.

Engineering Laboratory.— Engineering laboratories have been developed within the past forty years along all lines of engineering and technical education. The divisions are many, but only a few of them will be considered here. The electrical engineering laboratory has been discussed above under the head of *Electrical Laboratory.* Under the division of Mechanical Engineering may be placed railroad engineering, marine engineering and the like. Among the subdivisions under Civil Engineering are mining engineering, hydraulic engineering, sanitary engineering and bridge engineering, for all of which laboratories have been developed.

The mechanical laboratory, as its name implies, treats of mechanics, the sources of mechanical energy and its transmission. The laboratory should be a solid structure with massive foundations for the heavy machines used. Boiler rooms, engine rooms, material testing rooms, and general experimental rooms on mechanical devices, are the requisites. The boilers tested comprise fire-tube, water-tube, and shell boilers. Tests are made of fuels, as to their steaming qualities, the ash, and flue gases, by means of calorimeters, gas meters, thermometers, thermo-elements, and balances. Engine tests may be made on many steam motors comprising steam turbines, simple slide valve, Corliss, and compound engines of high and low pressure types. For these tests are needed steam gauges, thermometers, indicators communicating directly with the inside of the cylinders, together with «reducing motions» for obtaining automatic records of the steam pressure within the cylinders during a complete stroke, from which data may be obtained by means of which to compute the energy put into the engine; and dynamometers to measure the output in useful work.

Another department is devoted to internal combustion motors. Under this class are included hot air engines, oil and gas engines, which require dynamometers, gas meters, and other measurers of the fuel supplied, and means for testing the products of combustion. In the mechanical laboratory, water motors, fans, blowers, air compressors, compressed air machines and tools, different methods of power transmission, as by shafting, gearing, belts, ropes and chains, and the like, are studied. Measurements of the coefficients of friction of different substances are found, and the effects of lubrication by different substances are investigated. Lubricants are tested under various conditions, such as at various temperatures, pressures, and in the presence of different vapors or gases. The testing of materials is common to mechanical and civil engineering laboratories. It will be outlined under the latter head.

In the civil engineering laboratories, calculating and measuring instruments are tested and calibrated. Among these instruments are transits and levels, and all instruments having graduated circles, cross-hairs and spirit levels; steel tapes; chains and bars for measuring lengths; chronometers for measuring time; barometers and thermometers. Here also is studied the magnetometer; and by means of it the strength of the horizontal component of the earth's magnetic field. The variation and dip of the earth field are also investigated. The «acceleration of gravity» is determined.

In the hydraulic division of these laboratories are studied the flow of water in pipes, «skin friction,» the flow of water through different orifices under different conditions, the flow of water over weirs and its measurement. This is very important in irrigation.

The laboratory devoted to the testing of materials is a very important one in all engineering work. All kinds of materials used in engineering work are tested. The apparatus required comprises machines for testing the resistance to compression, of tensile strength, of torsion and flexure of materials. Cements are tested for their resistance to tension and compression and for the length of time required for them to set. For the last test named, automatic apparatus has been devised which registers time and amount of «set.» Forms in which to mold the briquettes, and water tanks in which to immerse them for setting, are among the required equipment. Tests on concretes are made in a similar manner. Abrasion machines are used to make tests on paving material and other material subject to wear.

Physical Laboratory.— The requirements of the modern physical laboratory depend greatly upon the work to be done, but a few of the chief requisites that are common to all may be noted. The housing and equipment of a physical laboratory is of very great importance. The building in which the laboratory is to be located should be so situated as to reduce to a minimum all jar and tremor, and to do away with all outside magnetic disturbances, such as those due to electric car lines.

Many rooms are needed for special divisions of the work; such as constant temperature rooms, which require special precautions in design and construction and which are best situated below ground. Special rooms are demanded for radiometers, spectrometers, potentiometers, and such other instruments as require constant conditions to insure good results. Dark rooms are necessary for work in light, which includes experiments requiring diffraction gratings, photometers and the phenomena of light in general. Since photography has become of very great practical importance, fully equipped dark rooms are desired; also a sky-light room where enlargements and reductions of negatives may be made, and lantern slides prepared. It should be possible to introduce sunlight into some of the rooms.

A lecture room in which experimental demonstrations may be given is a necessity, and much attention should be given to its arrangement. The lecture room should be well lighted but should be provided with arrangements for readily darkening it. The experimental lecture table should be placed so as to be easily seen from all parts of the room. This table should have water, gas, air blast, suction, water motors and other motors, sink, and terminals for obtaining direct and alternating currents. A solid masonry pier upon which to set up delicate apparatus and that requiring no vibration, should be provided. The table tops should be impervious to water and so far as possible acid-resisting.

An apparatus room in which is kept demonstration apparatus should be situated conveniently to the lecture room; general apparatus may also be kept there. The opening between the apparatus room and the lecture room should be large enough to admit the passage of large pieces of apparatus, and also to allow experiments to be set up on wheeled tables in the apparatus room, then wheeled directly into the lecture room.

Separate rooms should be provided for research work. It is desirable that it be possible to connect some of the rooms in suites, and to provide dark rooms for some of the suites.

Research rooms should contain water and gas, both ordinary illuminating and acetylene gas. They should have electrical connections to a central switchboard sufficient to obtain various types of current at one time. The floors of the building should be solid. Stone tables built in the walls form good supports for instruments, but there should be provided in some cases stone piers with independent foundations.

The general laboratories should have plenty of light and should be provided with separate rooms for some classes of work, as in light and sound, where it is often necessary to have darkened rooms. A heat bench or table should be provided; it should have an impervious top with enough pitch to drain into a central trough or hole to conduct away the waste. A rack with hooks above the bench, from which to suspend thermometers, is convenient. The rooms should be well supplied with tables, and along the walls stone shelving built in the walls, will be found useful. The dirt incident to primary batteries may be concentrated if all the cells be kept together, their terminals leading to a switchboard to which are connected the terminals of lines leading to the various stations in the rooms.

Some of the apparatus needed may be noted: projection lanterns for demonstration purposes; pulleys; weights; pendulums; machines for studying the acceleration of bodies; balances of different capacity and sensitiveness; vacuum pumps; pressure pumps; apparatus for comparing densities of substances; apparatus for testing the gas laws; calorimeters; thermometers; hydrometers; dividing engines; chronometers; chronographs; standard tuning-forks, some electrically driven; resonators; sirens; lenses; mirrors; prisms; spectrometers; radiometers; photometers; permanent and electromagnets; electroscopes; electrometers; many types of galvanometers, some for the measurement of electrical differences of potential or pressure, some for measuring current, and others for measuring quantity; ammeters; voltmeters; wattmeters;

bridges, for measuring resistances; condensers; Leyden jars; electric machines; potentiometers; and a plentiful supply of standard cells and resistance boxes.

The laboratory should also have storage batteries, and, if necessary, have its own dynamos in order to procure direct and alternating currents. An acetylene gas plant, and a compressor and liquefier for obtaining liquid air and other gases, are becoming necessary parts of the general equipment of a Physical Laboratory. A plant for the production of oxygen and hydrogen is also often desirable. A workshop in which to repair and build apparatus is a great convenience. The wiring and plumbing should be open and accessible as possible. All dark rooms as well as other rooms should be well ventilated, as it is often imperative for an observer to be confined in a room for hours at a time. Further reference to physical laboratory equipment will be found under the head of *Electrical Laboratory.*

Psychological Laboratory.— Since the establishment of the first psychological laboratory in Leipsic in 1875, by Wilhelm Wundt, where one room was devoted to apparatus and research, the development of the psychological laboratory has been rapid. One of Wundt's first students, G. Stanley Hall, established the first psychological laboratory in America at Johns Hopkins University in 1881.

The requirements of the psychological laboratory have increased very rapidly with the development of the subject, until its housing and equipment has become a problem of great importance and interest. Many rooms and much equipment are now required for a detailed study of the various subdivisions of the subject. Beside the rooms necessary in teaching psychology by means of experiments, other rooms for research are needed. Quiet and relaxation being often necessary, it is important to so arrange the rooms that the work of one student will in no way interfere with that of another student. The separate rooms should be provided with gas, electric lights, and water. Where absolute quiet is required, piping of all kinds should be excluded, the heating being done by indirect radiation if necessary, and only incandescent electric lighting being used. The rooms should be wired for electrical inter-communication between those which may likely be desired to be used in suites. They should also have wires leading to the rooms where chronometers and electrical recording devices are located.

For the study of the sensations of light and the eye, its capacity and limitations, suites of rooms are desirable in many instances. These rooms should be capable of being either well lighted or darkened to any desired degree. The equipment of this part of the laboratory includes models of the eye and the muscles governing its movements, sectional models; apparatus for studying color sensations, color mixing, color blindness, contrast, brightness independent of the color sensation; apparatus for studying optical illusions, the sensitiveness of the retina at different points, the sensitiveness of the eye to changes in position, the sense of location, and the imperfections of the eye; and apparatus for studying reactions and reaction times.

The sensation of sound requires isolated rooms where the noises produced may not reach other parts of the laboratory; and for certain parts of the work, rooms that are sound and light proof. In this part of the laboratory the sensitiveness, range, and analyzing power of the ear are studied. The equipment for the work in sound comprises models of the ear; instruments for producing sound, such as tuning-forks, sirens, organ pipes, and other sources of vibrations; and resonators for analyzing complex sounds.

Other rooms are needed for studying the sense of heat and cold, pressure, pain, and the locations of the various end organs. The apparatus necessary is that required to produce the corresponding sensations. The effects of different sensations on the respiratory organs and heart action is another subject for investigation. Other parts of the laboratory are devoted to the senses of taste and smell. The equipment comprises the substances with which to test the various parts of the tongue, and also substances to produce different odors.

Among the special pieces of apparatus necessary may be mentioned the chronometer, the chronograph, electrically driven tuning-forks, sources of mechanical and electrical energy, and induction coils.

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Labori, Fernand Gustave Gaston, fĕr-näñ güs-täv gäs-tôñ lä-bō-rē, French lawyer and editor: b. Rheims 18 April 1860. He studied at the Rheims Lycée and for two years in Germany and England; took his degrees in the law faculty of Paris in 1881 and 1883, and was enrolled at the bar of the court of appeals in 1884; was secretary of the conference of advocates in 1887-8; took a high professional rank; and was especially prominent as counsel for the defense in notable cases, as the libel action by Compayré against Numa Gilly, and the trials of the anarchists Duval and Vaillant. In 1898 he defended Emile Zola (q.v.), accused of libeling the army and the president of the republic in the letter concerning the Dreyfus case. He was junior counsel to Demange in the defense of Dreyfus at the trial at Rennes in 1899, and thoroughly confuted his opponents by his logic and his brilliant cross-questioning. He did not make the final plea, but his ‘Notes de Plaiderie’ were published in the ‘Compte-rendu Sténographique In-extenso du Procès Dreyfus à Rennes.’ On 14 August, while on his way to the court, he was dangerously wounded by a revolver bullet fired by a fanatic or mercenary. He was shortly enabled, however, to continue the case. In 1903 he defended the Humbert swindlers (see HUMBERT SWINDLE, THE). He was editor-in-chief of the judicial daily *La Gazette du Palais* in 1888–94; established the ‘Revue du

Palais’ and ‘Grande Revue’ in 1897; and published a ‘Repertoire encyclopédique de Droit Français,’ in twelve volumes (1898). See DREYFUS, ALFRED.

Labouchère, lä-boo-shãr′, **Henry,** English politician and editor: b. London 1831. He was educated at Eton; was in the British diplomatic service in 1854–64, being at one time a member of the British legation at Washington; in 1865–6 sat in Parliament for Windsor; was then unseated on petition; but represented Middlesex in 1867–8 and Northampton in 1880–1902. During his parliamentary career he strongly advocated Home Rule. He was at one time part proprietor of the London *Daily News,* to which he contributed letters from Paris during the German siege (1870–1) over the signature ‘The Besieged Resident.’ In 1876 he established and became editor of ‘Truth,’ a weekly journal in which he has expressed his opinions with great vigor. Indeed, as both parliamentary speaker and journalist, Labouchère gained an important place in English public life through his wit and incisiveness.

Laboulaye, Edouard René Lefebvre, ā-doo-är rė-nā le-fāvr lä-boo-lā, French publicist and jurist: b. Paris 18 Jan. 1811; d. there 25 May 1883. He studied law and in 1842 he joined the Paris bar. He was a close student of the great German writers on jurisprudence, whose works and researches he introduced to his countrymen in a series of able essays, written in an admirable style. The Academy of Inscriptions and Belles-Lettres crowned his ‘Histoire du Droit de Propriété Foncière’ (1839), and elected him to its membership in 1845. An ‘Essai sur la Vie et les Ouvrages de Savigny’ (1840), was followed by ‘Recherches sur la Condition civile et politique des Femmes depuis les Romains jusqu’à nos Jours’ (1843), and an ‘Essai sur les Lois criminelles des Romains concernant la Responsibilité des Magistrats’ (1845), both crowned by the Academy of Moral Sciences. In 1849 he was appointed professor of comparative legislation of the Collège de France. After the foundation of the Second Empire he constantly strove to rouse opposition to it, and in several published works as well as in his lectures held up the American constitution to the admiration of his countrymen. He sacrificed his popularity, however, by his support of the plebiscite in 1870, and soon afterward he resigned his chair at the Collège de France. After the fall of the Empire he was elected for Paris in 1871. In 1875 he was elected a life senator. Besides the works abovementioned he wrote: ‘Histoire des Etats-Unis d’Amérique’ (1854); ‘Etudes Contemporaines sur l’Allemagne et les Pays Slaves’ (1854); ‘Souvenirs d’un Voyageur’ (1857); ‘Liberté Religieuse’ (1858); Etudes sur la Propriété Littéraire en France et en Angleterre’ (1858); ‘Abdallah’ (1859), an Arab romance; ‘L’Etat et Ses Limites’ (1863); ‘Paris en Amérique’ (1863), an ingenious and extremely popular satirical romance; ‘Contes Bleus’ (1863), a series of admirably told tales; ‘Nouveaux Contes Bleus’ (1866); ‘Prince Caniche’ (1868), another extremely popular satirical novel; ‘Contes et Nouvelles’ (1868); ‘Discours Populaires’ (1869); ‘Questions constitutionnelles’ (1872); ‘Lettres politiques’ (1872); ‘La Liberté des Enseignements’ (1880); and ‘Trente Ans d’Enseignement au Collège de France’ (1888), a posthumous collection of lectures. He translated into French several of Channing’s works and the ‘Memoirs and Correspondence of Franklin.’

Labrador. *History.*—The peninsula of Labrador is doubly distinguished as the first part of North America to be discovered by Europeans, and by being the last portion of the continent in which large areas remain unexplored by white men.

Lief, the Norseman, voyaging westward from Greenland in the year 1000 reached its northeastern part and sailed south along its Atlantic coast to more temperate regions. Cortereal rediscovered this coast and traced it northward from the Strait of Belle Isle to the entrance to Hudson strait, in 1500. A cargo of Eskimo slaves carried by him to Portugal accounts for the name Lavrador given to the country. Jacques Cartier, on his voyage up the Gulf of Saint Lawrence, in 1535, outlined the southern coast of the peninsula; while the northern and western coasts were discovered by Henry Hudson in 1610. The valuable fisheries of the western Atlantic early attracted the fishermen of Europe and the town of Brest was founded, near the Strait of Belle Isle, in 1504. At the height of its prosperity about the year 1600 it contained upwards of 200 houses and was visited by fishing vessels from France, England, Spain, and Portugal.

Exploration.— Although the coasts of the peninsula were early known, their barren character and the mountainous-looking interior, which could only be penetrated by the ascent of difficult and dangerous rivers, long delayed the exploration of the interior and led to much misinformation concerning it. During the past 40 years surveyors of the Province of Quebec have accurately mapped the principal rivers of the southern watershed to their heads, thus giving a good idea of the geography of the southern third of the peninsula. The exploration of the more inaccessible northern two-thirds has been undertaken by the Canadian Geological Survey during the past 25 years and it has been the fortune of the writer to have been in charge of these explorations. In this work the northern and western coasts have been closely examined and exploratory lines have been carried along a number of the largest streams of the eastern, northern, and western watersheds. Much still remains unknown, but sufficient has been learned to give a good general idea of the geography and resources of these northern parts.

Topography.— The peninsula of Labrador forms the northeastern part of Canada and has an area of 511,000 square miles. Its southern boundary is an arbitrary line drawn eastward 600 miles from the south end of Hudson bay to the Gulf of Saint Lawrence, thence 500 miles along the north shore of the gulf to the Strait of Belle Isle. The Atlantic coast runs north-northwest 700 miles to the eastern entrance of Hudson strait; the south shore of the strait has a general trend of west-northwest for about 500 miles, while the western boundary is a north-and-south line along the east side of Hudson bay, and is 800 miles in length. The Atlantic coast is indented by many long, narrow bays, or fiords, of which Hamilton inlet is the largest, extending inland 150 miles, while several of the others exceed 50 miles in length.

Abrupt, partly-wooded hills surround the fiords and rise from 1,000 to 5,000 feet above their deep waters. Numerous rocky islands fringe the coast outside, and afford protected navigation for long distances in the channels between them, thus rendering the coast an ideal one for a safe summer cruise amid scenery rivalling in beauty and grandeur that of the coast of Norway.

The southern and northern coasts are similar in character to that on the Atlantic, but are on a scale less grand, while the eastern shores of Hudson bay are generally low and fringed with shallow, dangerous waters.

The peninsula as a whole may be considered a plateau that rises somewhat abruptly from the sea on the north, east, and south sides and more gently from the west to heights varying from 1,500 to 2,500 feet. The only mountain range lies close to the sea along the northern half of the Atlantic coast with summits rising from 3,000 to 6,000 feet above the ocean.

Geology.— The crystalline rocks which form the peninsula belong to the earliest crust of the earth, the newest dating back to Huronian time. Since then the plateau has stood continuously above the level of the sea and has been subjected to the degrading action of atmosphere and stream. Great thicknesses of rock became rotten and rains and small streams removed much of the loose material from the heights to the depressions while the larger rivers cut deep valleys into the granites and other hard rocks. In recent geological times a thick cap of ice covered the peninsula moving slowly outward from the interior. This motion of the ice removed the rotted rock from the hills and deposited it in the valleys thus blocking many of the deep river valleys and reducing the surface of the interior to a general level with a gentle slope toward the coasts. No physical changes have occurred since the melting of the ice-cap and the interior country is still slightly undulating with low ridges of rock, or of glacial drift separated by wide shallow valleys.

Lakes.— Myriads of lakes great and small occupy the lower parts of the valleys and are connected by networks of streams so that canoe travel is possible in any direction. Mistassini and Michigamau having areas exceeding 500 square miles are the largest, while dozens of others range in surface-area from 50 to 250 square miles.

Rivers.— The rivers in the central portion flow in the depressions without distinct valleys and in fact are chains of lake-expansions connected by short stretches of rapids. As they approach the coast they fall into their ancient valleys cut deep below the surface of the plateau. The descent is usually abrupt and is often accompanied by a great development of power and beauty. The Hamilton river, one of the largest streams of Labrador, falls from the surface of the plateau into its ancient valley about 200 miles above its mouth. The descent of 900 feet is accomplished in a distance of less than 10 miles and includes one direct fall of 315 feet where the river shoots from a gigantic trough into a circular basin at the head of a narrow canon in which the last part of the descent is made. A rough estimate of the energy developed by the water in this descent gives the enormous sum of 9,000,000 horse-power. This wonderful display of energy and the grand beauty of the fall and canon place the Grand Falls of the Hamilton among the marvels of the world. With light rock-cuttings the river might be diverted into a side channel, where, passing through small lakes, it would fall sheer 700 feet into the ancient valley; this actually happens on a small scale when the river is in freshet.

Climate.— The climate of Labrador varies from cold temperate in the south to Arctic on the northern highlands and about the shores of Hudson strait; it is generally so rigorous that it is doubtful if the country will ever be fit for agriculture except in the southern valleys and on the low lands fronting the southern part of Hudson bay. In the interior the mercury often drops to 150° F. during the winter.

Forests.— The southern half of the peninsula is included in the sub-Arctic forest belt, which contains the following trees: White birch, aspen, balsam poplar, cedar, banksian pine, white and black spruce, balsam fir, and larch. The forest is continuous over the southern interior; to the northward of latitude 54° N. the higher hills are treeless, open glades appear and the trees branch from the ground. Proceeding north the size and number of the treeless areas increase rapidly until trees totally disappear on the northern third. At least one-half of the forests has been destroyed by frequent fires.

Resources.—Among the resources of the peninsula are the fur-bearing animals, all prized for their dark glossy pelts, and all fairly numerous throughout the region. Of these the most valuable are the silver fox, marten, otter, mink, beaver, cross, red and white foxes, and white and black bears. The barren-ground caribou of the interior and seals along the coasts are the chief source of animal food for the natives.

Fisheries.— The cod and salmon fisheries of the Atlantic coast have long been sources of wealth to Newfoundland. The fisheries of Hudson strait and Hudson bay are still undeveloped, but enough is known of them to predict their future great value. All the lakes and streams of the interior swarm with superior food fishes, including land-locked salmon, lake and brook trout, whitefish, pike, and pickerel.

Minerals.— The mineral wealth of the peninsula is totally undeveloped. Immense deposits of valuable iron ore have been found in the interior and along the northern and western coasts. Over great areas are found rocks similar to those from which the more precious metals — gold, silver, copper, and nickel are taken in southern parts of Canada, and they only await discovery by the prospector.

Population.— The total population is about 14,000, of which 8,000 are whites, living along the southern and eastern shores. The remaining 6,000 are Indians and Eskimos, the former being confined to the wooded country, while the Eskimos live along the northern coasts and on the northern barrens of the interior.

Government.— A strip of land along the Atlantic coast, extending from Blanc Sablon on the Strait of Belle Isle to Cape Chidley, is under the jurisdiction of the Government of Newfoundland. The Province of Quebec extends northward to near the parallel of 52° N. latitude; the East Main river to the west, and the Hamilton river to the east, being the division line between that Province and the District of Ungava, a portion of the Northwest Territory under the administration of the Dominion Government.

A. P. Low.

Of the Geological Survey of Canada.

Labrador Duck, a rather small handsome sea-duck (*Camptolaimus labradorius*), allied to the eiders, of the northeastern American coast; it bred in Labrador, and migrated in winter as far south as Chesapeake Bay, but was never very numerous, and became extinct about 1875, leaving only about 35 specimen-skins in the museums of the world. No very satisfactory theory exists to account for the closure of the species, since the fault does not seem chargeable to excessive shooting or disturbance of breeding-places. The race seemed to be waning, and an epidemic of disease or some weather-disaster destroying many eggs and young, may have been a final blow. The last one seems to have been killed in 1875. Consult: Stejneger, Vol. IV. (‘Birds’) of ‘Standard Natural History’ (1885); Lucas, ‘Ann. Rept. Smithsonian Inst.,’ 1888; Dutcher, article in ‘The Auk,’ January 1894.

Labrador Tea, or **Marsh Tea,** either of two species of heath of the genus *Ledum* (*L. latifolium* and *L. palustre*). They grow in the northern parts of both Europe and America, and are low shrubs with alternate entire leaves clothed underneath with rusty wool. The fragrant crushed leaves are used by the natives of Labrador as a substitute for tea. They possess narcotic properties, render beer heady, and are used in Russia in the manufacture of leather, yielding an oil known to druggists as ledum oil, rich in tannin and resinous properties. The plant finds a place in medicine as an astringent and tonic.

Labradorite, a plagioclase feldspar of the albite-anorthite series, corresponding chiefly to Ab_1An_3 (see FELDSPARS). It is, therefore, a silicate of aluminum, calcium, and sodium. It has a hardness of 5 to 6 and a specific gravity of 2.73. It ordinarily occurs in cleavable or granular masses, or as an essential constituent of certain basic eruptive rocks, such as norite, gabbro, diabase, basalt, dolerite or andesite. In these it is associated with some member of the pyroxene or amphibole groups. Labradorite abounds in the Adirondacks, but its type locality is along the coast of Labrador, where it occurs in pure masses of enormous size which exhibit a wonderful change of colors, from dull gray to a gorgeous blue, or more rarely green, copper-red, purple or yellow. It has been used as an ornamental stone, especially in inlaid work.

Lab′ridæ, a family of marine fishes, the grasses, representing the highly specialized suborder *Pharyngognathi* by a large number of beautiful and useful species inhabiting all the warmer seas, and traceable as far back as the Eocene period. These are brilliantly colored fishes usually elongate in form and of large size, with cycloid scales and thick fleshy lips. There are powerful teeth on the margins of the jaws, but none on the palate; while the united lower pharyngeals are much thickened and form a plate beset with rounded, rarely acuminate grinding-teeth. The upper pharyngeals are usually separate, bearing similar teeth. Jordan enumerates 60 genera and 450 species, «chiefly of the tropical seas, living among rocks or kelp.» The typical genus *Labrus* is almost wholy European. The principal genera represented in American waters are *Ctenolabrus* (cunners), *Tautoga* (tautogs), *Harpe* (lady-fishes), *Pimelometopon* (fatheads), and *Iridio* (doncellas); and by some authors the parrot-fishes (*Scaridæ*) are included. Consult: Jordan's ‘Review’ of the family in ‘Report U. S. Fish Commission for 1887.’

La Bruyère, Jean de, zhŏṅ dė lä brü-yãr, French moralist: b. Paris 17 Aug. 1645; d. Versailles 10 May 1696. He was educated for the law, became treasurer at Caen, and through the influence of Bossuet, was employed in the education of the Duke of Bourbon, grandson of the great Condé, with a pension of 3,000 livres, and was attached to his person during the remainder of his life. In 1688 he published the ‘Characters of Theophrastus,’ translated into French, to which he added others of his own, in which he represented the manners of his time with great accuracy, and in a style epigrammatical, ingenious, and witty. The work contained 386 «characters»; the 4th edition (1689), 340 additional ones, while the 9th, in press at the time of the author's death, included over 1,100 «characters.» Consult: Rahstede, ‘La Bruyère und seine Charaktere’ (1886); Allaire, ‘La Bruyère dans la maison de Condé’ (1886); Pellisson, ‘La Bruyère’ (1893).

Labuan, lä-boo-än′, an island of the Malay Archipelago, belonging to Great Britain, situated on the northwest coast of Borneo; about 12 miles in greatest length by 7 miles in greatest breadth; area, 32 square miles. It is mostly low and marshy, and not very fertile, but it is well supplied with water, and has a good harbor at the settlement of Victoria, on its southeast side. Coal of excellent quality is plentiful, and has been mined for many years. The chief town is Victoria. Pop. 5,853, mostly Malays.

Labur′num, Golden-chain, or **Bean-tree,** a genus of trees and shrubs of the order *Leguminosæ*. The few species, which are natives of southern Europe and western Asia, are characterized by trifoliate leaves and brilliant yellow blossoms in pendulous many-flowered racemes produced during late spring and early summer. The larger species yield a very hard, heavy, tough, fine-grained, dark green or brown wood, which can be highly polished and is valued for inlaying, cabinet work, turning, etc. The species are also prized for ornamental planting in shrubberies, not only for their flowers, but also for their glossy foliage, which remains green until late in the autumn. No part of the plant is relished by insects, and all parts, but particularly the seeds, are reputed poisonous. Nevertheless, it is said, the young stems are greedily eaten by rabbits, and may thus be made to serve as a sacrificial protection to other shrubbery. The best known species, probably, is the English laburnum (*L. vulgare*), which sometimes attains a height of 40 feet but usually not more than 20 feet. It is hardy nearly as far north as Massachusetts. The Scotch laburnum (*L. alpinum*) is hardier, more erect and rigid, bears broader leaves and much longer and slenderer racemes of dark yellow flowers, and continues in blossom about two weeks later than the preceding. By some botanists it is considered only a form or variety of *L. vulgare*. Laburnums thrive in any well-drained soil in either partial shade or full sun. They are readily propagated by seeds generally spring-sown, and also by layers. Choice varieties, of which there are many, are grafted upon seedlings.

Lab′yrinth, a structure having numerous intricate winding passages. The legendary labyrinth of Crete, out of which no one could find his way, but became the prey of the Minotaur, was said to have been constructed by Dædalus. The hint of this legend was probably given by the fact that the rocks of Crete are full of winding caves. The Egyptian labyrinth was a building situated in central Egypt, in the district now called the Fayoum. The building, half above and half below the ground, contained 3,000 rooms. It was probably a place of burial. The labyrinth at Clusium, in Italy, was erected by the Etruscans, according to Varro, for the sepulchre of King Porsenna. Imitations of labyrinths, called mazes, were once fashionable in gardening. They were made of hedges; the best known is that at Hampton Court, near London.

Labyrinthodon'ta, or **Stegocephali,** a group of primitive four-footed animals, forerunners of modern amphibians and reptiles, whose remains are found fossil in Peruvian, Carboniferous and Triassic strata, and which are the oldest known lung-breathing terrestrial quadrupeds. They were first discovered through finding their footprints imprinted in the Triassic rocks (Keuper beds) of Germany, long before the actual fossilized remains were brought to light. The footprints were described at first as those of a hypothetical form to which the name *Cheirotherium* («hand beast») was given. As geological science and research progressed, the remains of the labyrinthodonts were discovered, when a comparison of their structure with the footprints showed that some of the latter were made by these creatures; many of the tracks, however, are unidentified. Later, when a great variety of related remains had been discovered, the term *Labyrinthodonta,* which relates to the curious «labyrinthine» infoldings of the enamel-wall of the teeth, was restricted to a single group or suborder (also called *Stereospondyli*) within the general amphibian order *Stegocephalia.* This suborder contains highly developed and mostly large forms, characterized by the complication in tooth-structure above mentioned, and by co-ordinate anatomical distinctions. The principal genera are *Laxomma, Trematosaurus, Metopias, Capitosaurus, Mastodonsaurus,* and *Labyrinthodon,* the last including the most recent forms of the Upper Trias, at the close of which period the group appears to have become extinct. See STEGOCEPHALIA.

Lac, various products of the lac insect (*Coccus lacca* or *Carteria lacca*), for which see COCCUS. The insects infect the young branches and twigs of various Asiatic trees, especially figs, and excrete resinous and coloring matters under which they become buried often to the depth of more than a quarter of an inch. They are often so numerous at times of migration that the twigs seem to be concealed by red dust. In northern India and in Assam the production of lac is fostered by hanging infested twigs in non-infested trees, and regular collections are made each autumn and spring, the former being of greater commercial importance, the latter mainly for propagating purposes. Trees in ordinary vigor are considered best, and are said to furnish six or eight crops before being given a rest, though some trees may yield more than twenty crops.

Two methods are commonly employed in preparing lac for market. In the commoner, the twigs are broken or powdered and thrown into and kneaded in hot water to melt the resin, dissolve the coloring substance and separate the dead insect remains and wood. Several alternate washings and dryings follow in order to have the resin as free as possible from coloring matter. The dried lac is then suspended in coarse cotton sacks before charcoal fires. The bags are twisted to force out the resin, which is caught in films upon pieces of wood upon which it hardens and becomes commercial shellac. The finest quality is a light brown or deep orange. Imperfect removal of the coloring matter results in dark-colored lac. Button lac and plate lac are merely the drops of various sizes which missed the sticks and fell to the ground. The lac that falls to the ground from the trees is collected and sold as seed lac, a name also given to the resin before it is fused but after it has been purified by washing. The first water mentioned above is strained and evaporated, the purple pigment cut in cakes and marketed as lac dye. The other process of purifying the crude lac consists in crushing between rollers, mixing with water, stirring in a cylinder, precipitating the coloring matter with lime, removing the lac, withdrawing the water, pressing the precipitate into cakes and drying them in the sun. The resin, in this process, is melted by steam heat, poured upon tilted, flattened zinc tubes filled with warm water. After cooling it is marketed.

Lacs are prized because of their varnishing properties, because they can be highly polished when dry, and because they are translucent and, in some of the finer grades, transparent, thus allowing the grain of the wood to show clearly through them. They are also used for making the finest grades of sealing wax, vermilion and other colors being added to them after pulling and twisting to make them opaque.

Lac, or **Lak,** from the Sanskrit *lakshâ,* or *laksha,* that is, 100,000. In the East Indies it is applied to the computation of money. Thus, a lac of rupees is 100,000. A lac of rupees was equal to about $46,350. A lac of Sicca rupees was equal to about $50,000; 100 lacs, or 10,000,000 of rupees, make a *crore.* In 1835 the British government remodeled the currency of India, establishing a more uniform system, and the value of the rupee is now fixed at 32 cents.

Lacaille, Nicolas Louis de, nē-kō-lä loo-ē dė lä-kä-ē, French mathematician and astronomer: b. Rumigny, France, 15 March 1713; d. Paris 21 March 1762. He was educated for the Church, but soon renounced theology for astronomy. He took an important part in the work of measuring an arc of the meridian, and in 1746 was appointed professor of mathematics in the Collège Mazarin. In 1751 he went to the Cape of Good Hope at the expense of the government, where he determined the position of some 10,000 stars with wonderful accuracy. As his departure from the Cape was delayed, he employed the interval in measuring a degree of the southern hemisphere. His works on geometry, mechanics, astronomy, and optics were numerous. Among them are: ‹Leçons d'Astronomie,› and ‹Astronomiæ Fundamenta›; ‹Cœlum Australe Stelliferum›; ‹Journal historique du Voyage fait au Cap de Bonne Espérance.›

Lacandones, lä-kän-dō'nĕs, an Indian tribe living in Guatemala and Mexico. At one time numerous and powerful, they waged war against the whites. There are now about 1,000 left, of whom a part are friendly to the white people, though retaining their native customs.

Laccadive (lăk'a-dīv) **Isles,** a group of small coral islands in the Indian Ocean, about 150 miles off the coast of Malabar. They form 20 separate reefs, containing, however, but 13 islands, only 8 of which are inhabited. The surface soil is naturally so barren that there is little or no spontaneous vegetation on the majority of the islands, and their prosperity must ever depend on the cultivation of the cocoanut. The natives of these islands, a race of Mohammedans called Moplas (of mixed Hindu and Arab descent), are a mild and inoffensive race and dwell in low, thatched, stone-built houses, and live poorly. Vasco de Gama discovered these islands in 1499. They were ceded to the British in 1792. Pop. 6,800.

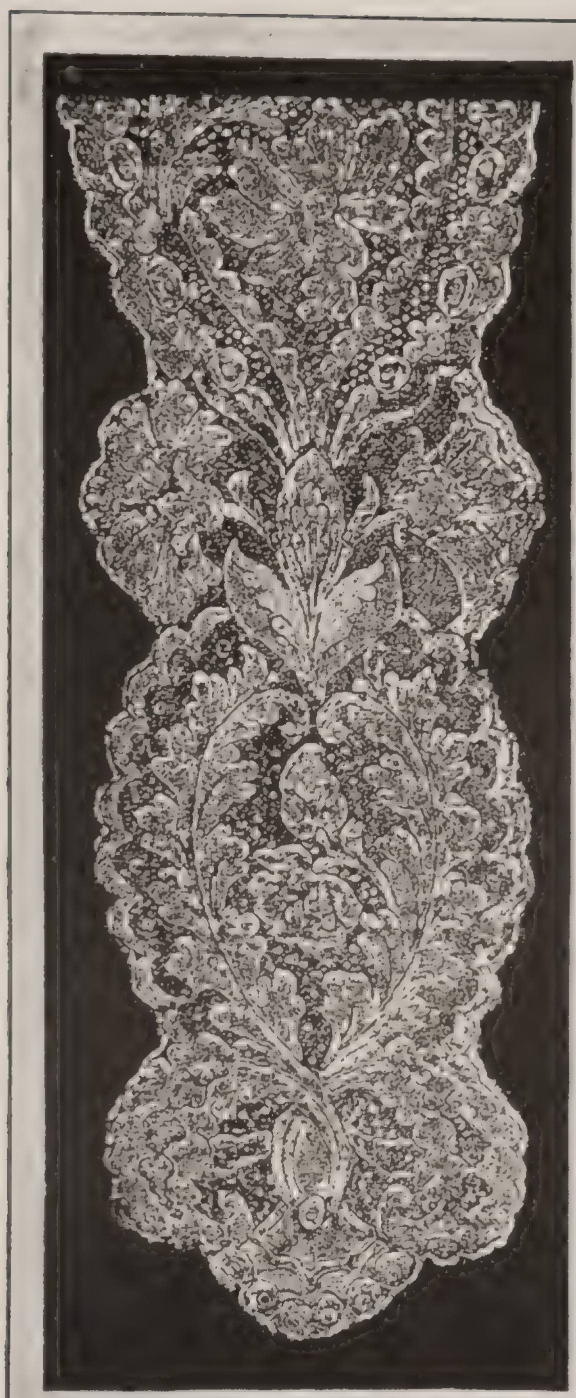
Laccolith, lăk'ō-lĭth, or **Laccolite** (Greek, «stone-pit»), a mass of lava or intrusive rock having a mammiform shape supposed to be due to its spreading laterally when forced up from below, the rocks above it being lifted up into dome-like forms. Laccoliths were first described from mountains in Utah.

Lace. Authorities differ regarding what constitutes a lace fabric, whether we adhere strictly to the technical distinction of an ornamental open work fabric made with threads by knotting, twisting or stitching, or sewing with a needle, or include fabrics that resemble embroidery, made in combination with something woven. In some statements on the subject prepared for the writer some years ago by the late Dr. Thomas Wilson, one of our highest lace experts, it was set forth that lace is not a textile, because not woven, and that it was not embroidery, its peculiarity, and its principal difference from these being that it is made a mesh or loop at a time, each one being complete in itself, and not made on any previously prepared foundation. There are, however, netted fabrics which would never be called lace although made in the same way, because they do not work out an ornamental design or pattern. All authorities agree that lace is an ornamental fabric, the word ornamental being the one characteristic that distinguishes a lace fabric proper from a fine fishing net, or a Yucatan hammock, in which the threads are netted or twisted precisely as some forms of lace are made, though these articles are not lace. On the other hand, there are fabrics made with threads which have the appearance of lace, embodying in their fabrication artistic, graceful, or ornamental designs, but which are not lace, such as drawn-work, where the design is wrought in a woven fabric by drawing out certain threads forming the fabric, as well as other manipulation.

It is impossible to say when or where lace was first made. We know that the art of weaving is older than any written records, and that flax threads were wrought into fabrics by rude weaving processes in the early Stone age in Europe; and that the art was brought to a high degree of perfection in the later Bronze age. We know that attempts at ornamentation, in the form of more or less elaborate fringes are found in some of the delicate Egyptian linens of 4,000 years ago. The art of embroidering is likewise ancient, for it had reached a high state of perfection before the period of the Pharaohs, and has been practised by all countries and peoples from time immemorial. The art of lace making, however, must have developed, by a kind of evolution, from early attempts at the ornamentation of fabrics — possibly as early as the 12th century — these first attempts being mere loops of plaited or twisted threads in the form of small cords, attached to the hems of garments. In the earliest productions of lace there was a foundation of woven fabric, such as very fine linen, and the design was wrought by means of needle-point stitches, or darning, something after the manner of embroidery, the uncovered portion of the woven fabric being afterward removed, and a number of such designs skillfully joined together. Thus, from needlework or embroidery, which has come down from Bible times, we may imagine lacemaking was developed. The fabrication of the true laces, according to Dr. Wilson's definition of «a knotted or twisted fabric made one mesh or loop at a time,» dating back no farther than the latter part of the 15th century, and it has been said that it is extremely doubtful if any particular specimen can be identified as having been made prior to the middle of the 16th century, at which time lace first appeared as a perfected fabric. The point lace of the earliest period of manufacture came nearer being what might be termed a pure art creation than that which followed in a later period; that is to say, the motive or design having been worked out from a thought in the brain of the maker, and not from a set pattern, as was the case in the fabrication of the later or second period needlepoint laces. The earliest work is supposed to have been produced by nuns, and the patterns or motives not only give evidence of high artistic merit, with originality, but the practice of a patience on the part of the worker that would hardly be appreciated in this practical and rapid transit age. The designs from the period which followed were quite as beautiful, but were more set, and show the restrictive influence of copying rather than directly producing original forms as the work progressed.

Italy, France, Belgium, and Germany have all claimed the invention of lace-making, but the country to which the honor belongs is unknown. Dr. Thomas Wilson held it remarkable that lacemaking should have sprung up, or been invented at about the same period by two entirely distinct processes without relationship or evolution between them, and that the people of the countries wherein either of the inventions was made were not only unknown to each other, but apparently neither had any knowledge of the process of lace-making invented or employed in the other country. One of these processes is by the employment of the needle and a single thread, wherein the work was perfected mesh by mesh, each mesh being completed as the work progressed. The other process was by the use of many threads at once, each one attached to bobbins for the purpose only of separating them, the meshes being made by twisting the threads a greater or less number of times. When each mesh is only partially completed, the thread is carried on to the next, and so on from side to side the entire width of the fabric. While the countries in which these processes were invented are unknown, the evidence points to Venice as the seat of the former, and to Belgium as the seat of the latter. By these two totally distinct

POINT LACE.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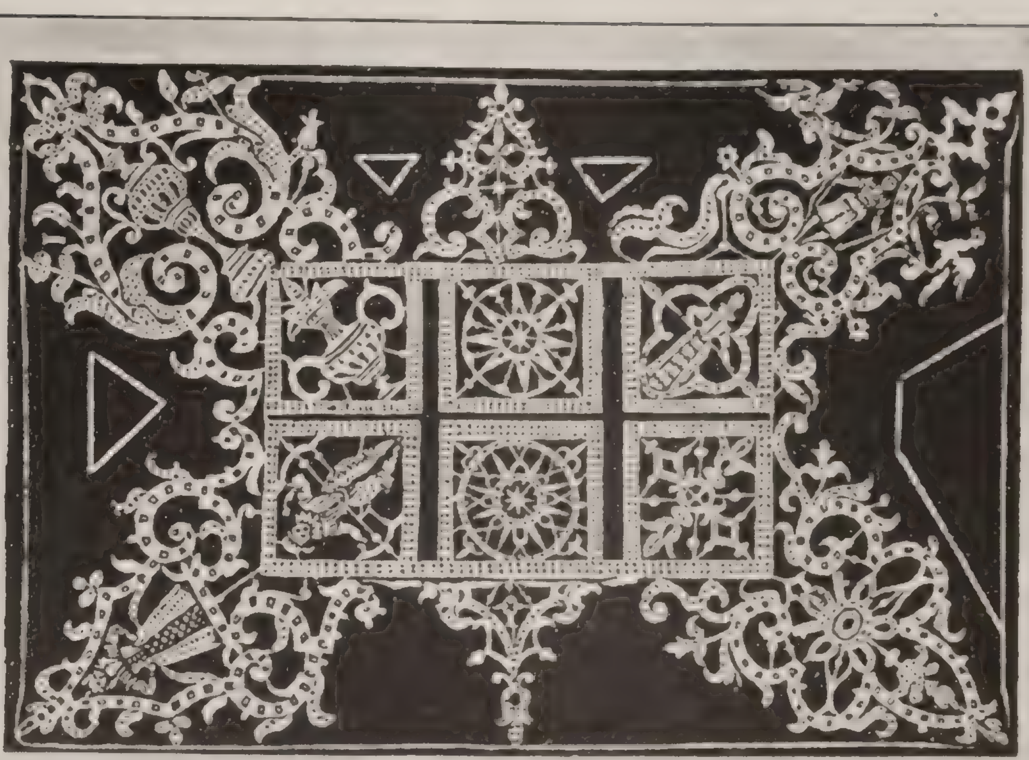
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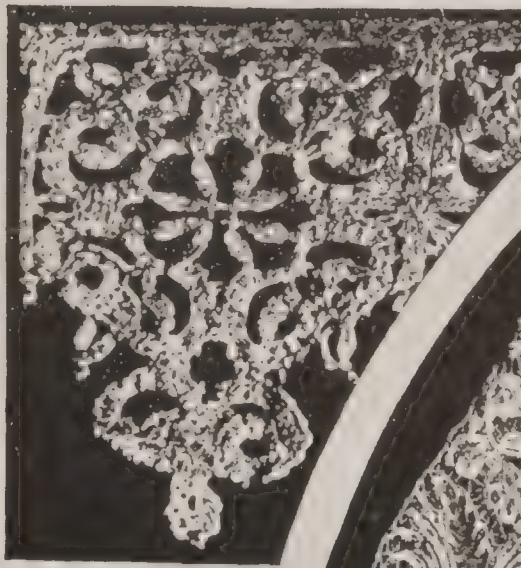
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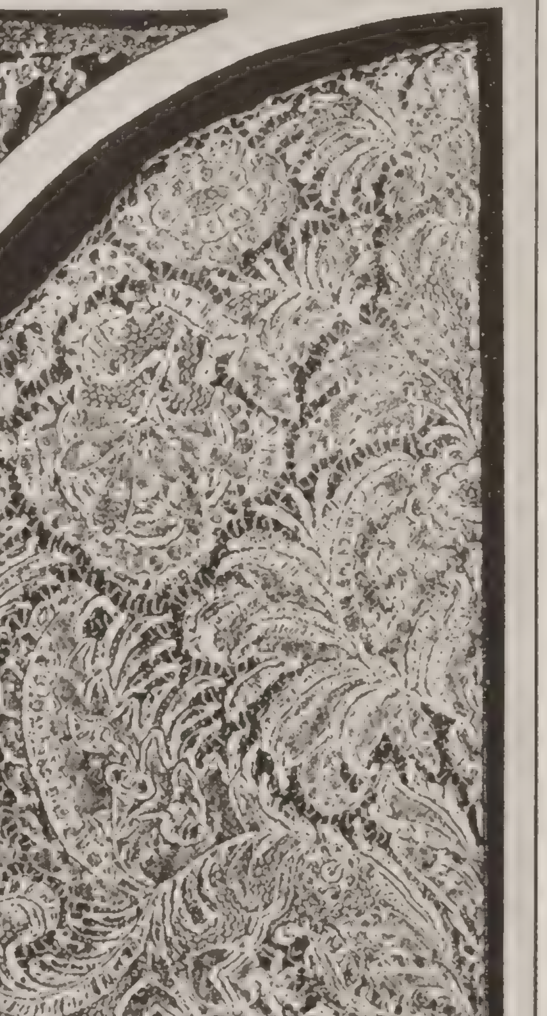
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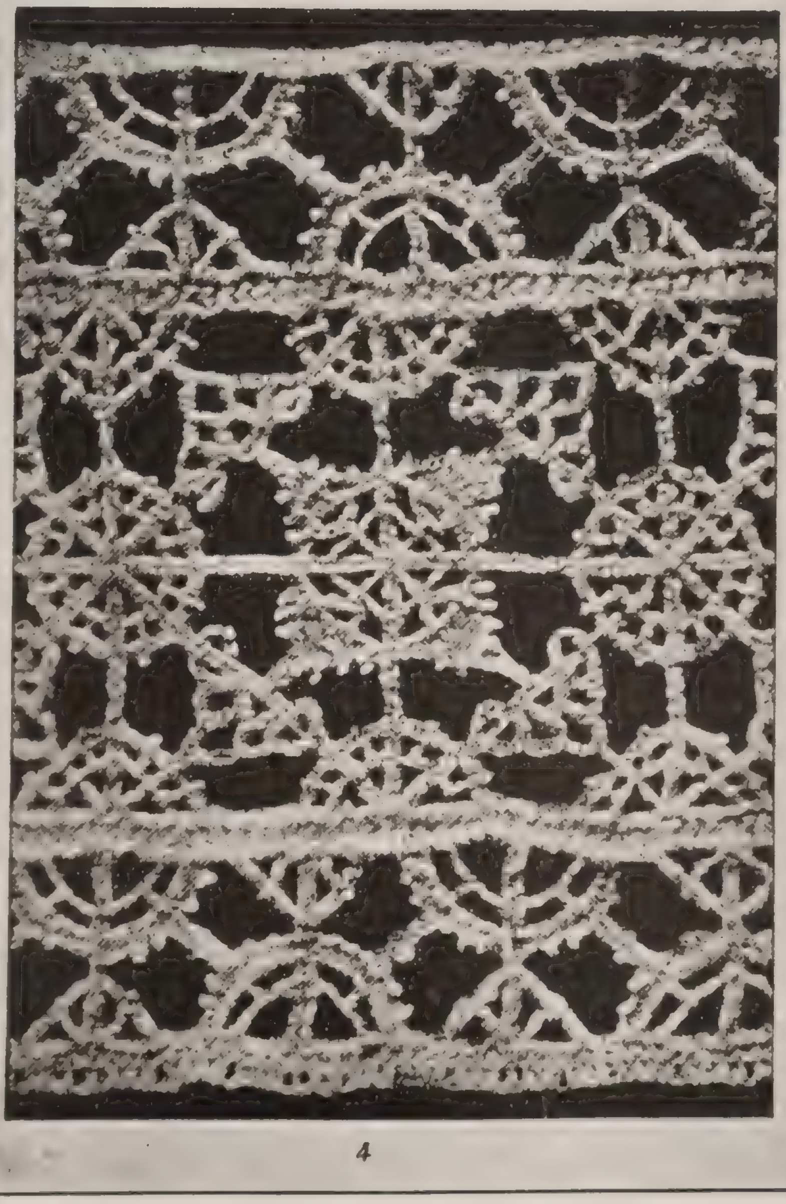
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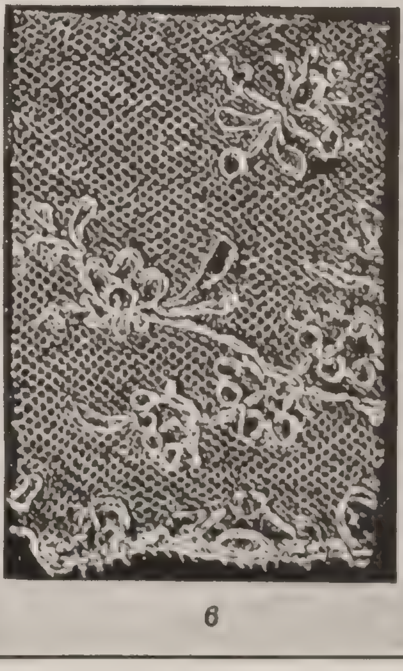
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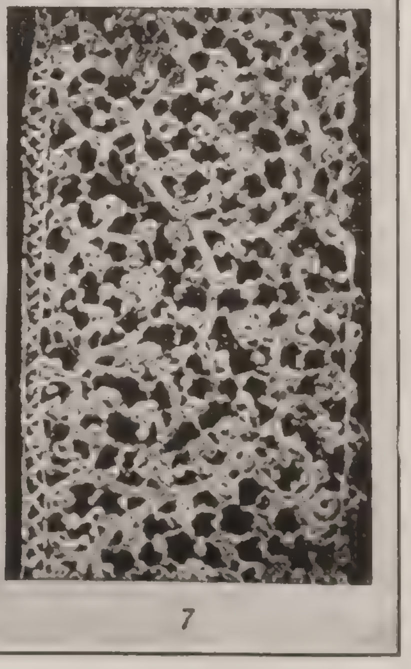
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1. Valenciennes.
2. Venetian chain lace.
3. Italian bobbin lace, 1691.
4. Double point lace.
5. Brussels guipure.
6. Mechlin point.
7. Relief point lace.

processes fabrics are produced so nearly alike as often to require an expert to distinguish the difference, which, though many times easily determined, yet not infrequently requires the aid of an expert.

It is seen, therefore, that there are two distinct classes of hand-made lace, though many varieties of each:—(1) needle-point lace, and (2) bobbin or pillow lace. Manufactured lace, a third class, is a recent invention, and while it has been the means of bringing a form of ornamental lace fabric within reach of everybody, it can never be compared with the exquisitely delicate and wonderful fabrications of hand-wrought lace, many examples of which are of priceless value.

Lace is chiefly made from linen, cotton and silk threads, usually of the finest numbers, and often specially prepared — some of the finest threads being spun in underground rooms where a damp atmosphere can be maintained, and where the only light is a single beam directed upon the work. Gold and silver threads have also been used, as well as other fibres than those named, such as aloe fibre, or ramie, which is now considerably used in machine-made laces. Mohair and fine wool have also been employed, and even horsehair has been used to stiffen portions of the work in some laces.

Point lace, or fabric made with the needle point, is the oldest known form, its most celebrated examples being the beautiful Venetian designs, and the exquisite French laces of Alençon and Argentan. The early French industry doubtless derived its inspiration directly from Venice, as Colbert, in the time of Louis XIV., is said to have brought from Italy 30 or more of the best lacemakers, and, encouraged by the king, this lace — also known as Point de France — soon became in such vogue that many establishments sprang up in other places in France to supply the demand.

In the oldest designs in point lace there was a foundation of delicate linen, as we have seen; there was also a reticulation of threads attached to a light frame, the patterns being worked over with the button-hole stitch upon these threads and into the linen foundation, which, as the work progressed, was completely hidden by the design. The portions of the foundation outside of the design were cut away, and a number of the design or patterns joined together by means of connecting threads. But sometimes no foundation was employed, the patterns simply wrought upon threads stretched upon the frame as above described, the button-hole stitch being employed. The Venetian point had attained a wonderful perfection by the middle of the 16th century, some of the examples in complexity of stitch, delicacy of design, and artistic merit being masterly conceptions.

Point d'Alençon and Brussels point are still manufactured, the former maintaining many of the distinctive characteristics for which it was so esteemed in the 17th century. Other varieties of needle-point or Guipure laces are Rose point, Portuguese point, and Maltese point. The first-named is especially characterized by the figures being worked in high relief.

Brussels point differs from the Venetian and French needle-point chiefly in the manner of making the stitch, a plain thread being used, and not overcast with the button-hole stitch. In early times Spanish point enjoyed a wide celebrity, but as much Flemish lace was imported into Spain, there was a decline in the industry, though point laces from the Spanish convents, in the early part of the last century, were very similar in character to the Venetian point. Point d'Espagne is said to have been merely a commercial name used in the 17th century, for which the French manufacturers were responsible. Point d'Angleterre owes its name to an effort on the part of the Flemish lace-makers to evade the restrictive measures which were adopted by Great Britain in the latter part of the 15th century, to encourage the home lace industry. The prohibition worked effectively, smuggling was difficult, and in time Flemish lace-makers were induced to settle in England, whereby some of the characteristics of Flemish laces have been perpetuated in the English pillow laces.

It has been claimed that pillow lace manufacture was the invention of Barbara Uttman, of St. Annaberg, Saxony, about 1561, though some authorities assert that she only introduced the manufacture, probably from Flanders. At any rate, paintings from an earlier period give evidence that lace was manufactured in Flanders at least half a century before her time. Pillow lace is made by working the design over a parchment pattern upon a pillow or cushion, the threads being wound upon bobbins. The method was to attach the pattern to the pillow, pins being inserted at regular intervals following closely the lines of the pattern or design. The figure is then wrought by twisting the threads around the pins to form the netted or open-work effect, which characterizes this form of lace. The Flemish laces of the 16th century became quite as famous as the Italian, and the art, as practised in Flanders, was early introduced into many countries of Northern Europe. Among the more important laces that are made with the pillow and bobbins, may be mentioned Brussels (both Saxony and Flemish), Mechlin, Lille, Chantilly, Valenciennes, Honiton, Buckinghamshire, and Limerick or Irish lace.

The Mechlin laces — sometimes called the queen of laces, and which formerly enjoyed a wide celebrity — are products of Mechlin, Antwerp, and Lierre. Ordinary Mechlin is made with a hexagonal mesh, as is also Brussels pillow. The Lille laces embody a simple pattern, marked by a thick thread, and are said to be «the finest, lightest, most transparent, and best made of all grounds.» The Chantilly silk laces were also very simple in character, particularly in regard to their meshed grounds. The black laces were especially noted, and at one time were in high favor. Valenciennes is probably the most important pillow lace now manufactured in Belgium, the cities of Courtrai, Bruges, Ypres, Ghent, and Alost furnishing the larger part of the supply. That made at Ypres especially is the finest quality. Its predominant characteristics are richness of design, beauty of ground, and evenness of tissue. In this lace the mesh is diamond shaped and closely plaited, without twisted sides to the mesh.

The English laces are chiefly made in the counties of Buckinghamshire, Devonshire, and Bradford. Honiton is the best known of the pillow laces of Great Britain, and the most beautiful. It embodies original characteristics that give it an individuality, although it bears some resemblance to Brussels. British point is an imitation of Honiton. Patronized by the late Queen and by other members of the royal family, Honiton soon became popular and its manufacture for many years has been important. Buckinghamshire is said to be an adaptation of the Mechlin, and the patterns to have been used since the 18th century. Laces are made in other places in England, and in Scotland, for the most part as household industries. As has been said, the Irish lace is made at Limerick; it is justly popular, and holds a high position. The lace industry of Russia is said to have been promoted through court patronage after the visit of Peter the Great to Paris. These laces are especially noted for the uniformity of their designs, or patterns.

We have been considering chiefly lace-making in Europe. In more modern times the art has been introduced into many countries, the European nations especially extending the manufacture into their colonies, the natives being the lace-makers. Even the natives of some of the South American countries practise the art, which was taught them by the missionaries of an earlier period, and which, handed down from generation to generation, has become identified with the people. The peasant women of Fayal have for many years produced an exquisite lace, with designs in high relief, the fibre used being finely prepared filaments of the *Agave Americana,* or «Aloe fibre» as it is known. This lace was formerly sold in Paris at very high prices; and it was claimed a few years ago that there were only 25 women on the island who were skilled in its manufacture. Among the beautiful peasant laces should be mentioned those of Russia, Germany, and Crete, though the Cretan lace manufacture has not survived. Malta produces a pillow lace in white and red threads which is noted, and pillow lace is made in Ceylon which somewhat resembles both the Malta and the Buckinghamshire. The natives of Madagascar, under French tuition, make a fabric resembling antique lace, which is an article of export. Wm. E. Curtis is authority for the statement that the women of Paraguay make a very fine pillow lace which is called Nanduty (Nanduti), the art having been taught them by the Spanish nuns. A native fibre is used which is described as soft and lustrous as silk. The designs are beautiful and the fabric indestructible. The lace is made in small squares and these joined together. In Dr. Thomas Wilson's valuable collection there are also some fine examples of aloe fibre lace from Corfu and Zante.

The third class of lace manufactured is that produced by machinery, the chief centres of the machine lace industries being Nottingham, England, and Calais, France. Nearly every kind of lace can be made by machinery, and the manufacture has been brought to so high a state of perfection, that some of the lace is difficult to distinguish from the fabrics produced by hand processes. While the enormous output and cheapness of machine lace has placed the fabric within reach of all classes, it is claimed that the demand for hand-made lace has not diminished, though prices have been affected.

It would be a hopeless task to endeavor to describe the complicated machines in use to-day, to make them understood, in so brief an account as appears in this place, and the student is therefore directed to the ‹History of Machine Wrought Lace,› by Mrs. Bury Palliser, London, 1865–9, and to the ‹History of Machine Wrought Hosiery and Lace Manufacture,› W. Felkin, 1867. The first attempt at the invention of a lace machine dates back to 1758 when a stocking weaver was able to produce upon a machine a lace in imitation of Brussels. The really practical machine, however, did not appear until 1809, the invention of Heathcote, which is said to have been suggested from machinery employed in the manufacture of fishing nets. A year or two later there were improvements by several inventors, Morley, Leaver, Clark, and others, which with subsequent improvements, have brought the lace machinery of to-day to such perfection. Machine lace is largely made from cotton, though the new fibre ramie has been employed to some extent, and with best results. This textile is very strong, with the lustre of silk, and takes color well. Some machine-made black ramie lace, a fourth of a yard wide, in the writer's collection of textiles, is an exquisite fabric.

Gold and silver lace, strictly speaking, is not a lace fabric, but rather a woven fabrication resembling in the finished state some kinds of embroidery. It is either made from fine filaments of gold and silver (threads), or from textile yarns or threads wound or otherwise covered with the metal.

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Lace Bark, is derived from the inner bark of several species of trees, and is readily detached in sheets or layers like birch bark, each layer being a delicate network of fibre, which when gently stretched a pentagonal or hexagonal mesh is formed which resembles lace. The most commonly known species is the lace bark of Jamaica, *Lagetta lintearia.* It is said that Charles II. was presented by the governor of Jamaica with a cravat, frill, and pair of ruffles made from this substance. The fibre can also be twisted into strong ropes, and in past time thongs and whips were made from it, with which the negroes were beaten. The lace bark tree of New Zealand is an Australian species, *Plagianthus betulinus,* more commonly known as the ribbon tree; its layers of bark showing the same beautiful lace-like texture as the Jamaica form. Another species producing a delicate, white lace-like tissue is the Birabira of South America *Daphnopsis tenuifolia.*

Lacedæmon, lăs-ẹ-dē'mȯn. See SPARTA.

Lacépède, Bernard Germain Etienne de la Ville, băr-năr zhăr-măṅ ā-tē-ĕn dė lä vēl lä-sā-pād, COUNT DE, French naturalist: b. Agen, France, 26 Dec. 1756; d. Epinay, France, 6 Oct. 1825. He abandoned the military profession, for which he was destined, and devoted himself to the study of natural history. His teachers and friends, Buffon and Daubenton, procured him the important situation of keeper of the collections belonging to the department of natural history in the Jardin des Plantes. In 1791 he was elected member of the legislative assembly, and belonged to the moderate party. Napoleon made Lacépède a member of the conservative senate, and conferred on him the dignity of grand-chancellor of the Legion of Honor. After the restoration he was made peer of France. He continued Buffon's ‹Historie naturelle' with the titles 'Histoire des quadrupèdes ovipares et des serpents' (1788–9) and 'Histoire naturelle des reptiles' (1789), and published also 'Histoire naturelle des poissons' (1798–1803); 'Histoire des cétéces' (1804); etc.

Lacertilia, lăs-ėr-tĭl'ĭ-ạ, or **Autosauri,** the order of saurian reptiles which contains the lizards. These are distinguished from the serpents (*Ophidia*) to which they are most nearly allied by the fact that the right and left halves of the mandibles (lower jaws) are connected by a sutural symphysis, whereas those of serpents are connected by a more or less distensible cartilage. The great majority possess well-developed limbs, movable eyelids and cutaneous scales, covered by a horny epidermis, usually thin, but sometimes thick and rising into pointed projections. In a few degraded and burrowing forms the limbs have been greatly reduced, or one pair or even both pairs completely lost, while the eyes may have become buried beneath the skin and the scales nearly or wholly obsolete. The vertebræ are procœlous, except in some of the geckos, where they are amphicœlous; the ribs of the trunk articulate by their capitular heads only, the reduced tubercula being attached to the vertebræ by ligaments. The limbs are typically formed after the pentadactyl pattern; and the shoulder girdle and sternum are complete. The hyoid apparatus resembles that of birds. In the skull the quadrate bone is movable except in a few degraded forms. The skin is covered with scales formed within it, and the epidermis is horny, and is periodically shed in flakes; but in many cases these scales do not overlap and look like scales, but are represented by bony granules, giving a «pebbly» aspect to the surface; or these osteoderms (which never occur in snakes) may form in the ordinary scales. The skin contains no glands; but in many lizards abounds in chromatophores (q.v.) controlled by muscles whose action causes the variations in surface color of which many lizards are capable, and of which they avail themselves as an aid in hiding from their enemies. The group possesses strong power of regenerating lost parts and especially of renewing the tail, which in many families breaks off under a very slight strain.

The *Lacertilia* are a comparative development of the reptilian race, not traceable beyond the beginning of the Tertiary. Fragmentary remains of several existing families occur in the Eocene and Miocene rocks; and the Pleistocene river-deposits of Queensland, among which was a monitor-lizard 30 feet long. The line probably originated in the *Prosauria* (q.v.), represented by a single living form,— the tuatera (q.v.). Lizards are now scattered over all the warmer parts of the world, and seem to be increasing and developing. They are said by Hoffman to include 434 genera and 1,925 species.

The *Lacertilia* are divided into three suborders: (1) *Geckones*, equivalent to the family *Geckonidæ;* (2) *Lacertæ*, typical lizards, including the families *Agaenidæ, Iguanidæ, Zonuridæ, Anguidæ, Helodermatidæ, Varanidæ, Tejidæ, Lacertidæ, Scincoidæ* and others of minor importance; (3) *Chamæleontes*, with a single family.

For more particular descriptions see CHAMELEON; GECKO; LIZARD; and the names of various lizards, as AGAMA; GILA MONSTER; etc.

Lace'wing, a neuropterous insect of the families *Hemerobiidæ* and *Chrysopidæ*. About 40 species are found in the United States, the most common perhaps being the golden-eyed flies of the genus *Chrysopa*. These are greenish, ill-smelling, gauzy-winged creatures usually less than two inches long and feeding little or not at all in the adult state. The females lay their eggs upon the summits of silky threads, by which means they are protected from predaceous enemies. The larvæ, as soon as hatched, crawl down the threads and feed upon the first soft-bodied insect they reach — perhaps a brother. They are considered useful in destroying plant-lice, hence the name «aphis-lions» (q.v.), but in California they attack the larvæ of the useful ladybirds.

Lachaise, François d'Aix de, frăṅ-swä dā dė lä-shāz, French Jesuit confessor of Louis XIV.: b. Château d'Aix 25 Aug. 1624; d. Paris 20 Jan. 1709. He was the provincial of his order when Louis, on the death of his former confessor, appointed Lachaise to that office. The new confessor with admirable tact kept himself clear of the innumerable meshes of court intrigue. Jansenism was at the time a powerful factor in ecclesiastical and political circles, and the Jesuits were its most formidable adversaries, but Lachaise knew how to conduct himself under all circumstances with address, coolness, and sagacity; and never allowed himself to be drawn into violent measures against his opponents. That Louis XIV. married Mme. de Maintenon was owing principally to the counsels of his Jesuit confessor. Lachaise retained the favor of his monarch till his death, and Louis had a country-house built for him to the west of Paris, on an eminence which had received the name of Mount-Louis. Its extensive garden now forms the cemetery of Père Lachaise, the largest in Paris.

La Chaussée, Pierre Claude Nivelle de, pē-ār klōd nē-vĕl dė lä shō-sā, French dramatist, founder of the so-called «pathetic comedy» or melodrama: b. Paris 1692; d. there 14 March 1754. 'Le Préjugé à la Mode' (1735) by him, was the first French pathetic comedy. Of 18 dramas by him, among the best are: 'School of Friendship' (1737); 'Melanide' (1741); 'Love for Love' (1742); 'Pamela' (1743); 'School of Mothers' (1745); 'The Governess' (1747). His plays were all written in verse and followed strictly the rules of the classic drama.

Lachesis, lăk'ĕ-sĭs, in classical mythology, one of the three FATES (q.v.).

Lachine, lä-shēn', Canada, town in Jacques Cartier County, Quebec; on the Grand Trunk railway, eight miles southwest of Montreal; on Montreal Island, which is here connected with Caughnawaga, on the south bank of the Saint Lawrence, by a bridge. It is a popular resort for pleasure parties in the winter, and in summer is largely a residential place for Montreal business men. It has fine residences, churches, schools, a convent, etc. It is best known as the terminus of the Lachine Canal, nine miles long, connecting it with Montreal and built to carry steamers around the Lachine Rapids. All the commerce of Montreal by the Great Lakes passes through this canal. Lachine is also the terminus of the Ottawa line of steamers, and daily at noon in summer a steamer of the Royal

Mail Line leaves the town for Toronto, Hamilton, and Kingston. Lachine has some manufactories, and here are the electric works of the Lachine Power Company (1894–7) with a plant of 21,000 horse-power, designed to furnish power and light for the city of Montreal. The name was given to the site in 1669. In 1689 the Indians burned the town and massacred all the inhabitants. Pop. (1901) 5,561.

Lachlan, läk′lăn, a river of East Australia, rising in New South Wales, to the west of the Blue Mountains. The river makes a semicircular sweep north of about 240 miles, when, pursuing a generally southwest course, it is joined by the Murrumbidgee; the united stream afterward falling into the Murray. The total course is about 700 miles.

Lachmann, Karl Konrad Friedrich Wilhelm, Teutonic and classical philologist: b. Brunswick 4 March 1793; d. 1851. As a student at Leipsic and Göttingen his work lay in Italian, English, and Old German poetry, as well as in Greek and Latin. As a teacher he passed from various gymnasium positions to professorships in the universities of Königsberg and Berlin. His work in textual criticism, both in the early German and the classics, was epoch-making. Editions of Walther von der Vogelweide, Wolfram von Eschenbach, Lucretius (his greatest achievement), Catullus, Tibullus, Propertius, the New Testament, and Shakespeare's sonnets and Macbeth deserve mention among his numerous publications.

Lachrymal (lak′rĭmạl) **Organs.** See Eye.

Lachute, lạ-shoot′, Canada, town in Argenteuil County, Province of Quebec, on the Ottawa River; 44 miles from Montreal. It is an important shipping centre for farm and dairy products and has large paper mills, pulp mills, and wood-working industries. Pop. (1901) 2,024.

Lacinaria, lă-sĭn-ā′rĭ-ạ. See Liatris.

Lackawanna (lak-ạ-wŏn′ạ) **River,** a considerable stream which runs through the northeast part of Pennsylvania and flows into the Susquehanna at Pittston; length about 50 miles. Great quantities of the best anthracite coal are mined in the valleys adjacent to this river. The greatest thickness of strata belonging to the coal measures amounts in the central portion of the basin to nearly 1,800 feet. On each side they dip toward the central axis at angles sometimes exceeding 30°, gradually lessening till they are found in horizontal and undulating positions near the centre. Toward each extremity of the basin they gradually shelve upward till replaced by the outcrop of the older rocks.

Lacmus. See Litmus.

Lacon, lā′kȯn, Ill., town and county-seat of Marshall County, on the Illinois River, and on the Chicago & Alton railroad, 35 miles north of Peoria and 128 miles southwest of Chicago. Steamboats ascend the river as far as this point and there are a number of grain elevators and other shipping facilities here; manufactures of wagons, carriages, and woolen goods; a national bank, several newspapers and numerous churches. Pop. (1890) 1,649; (1900) 1,601.

La Condamine, Charles Marie, shärl mä-rē lä-kôṅ-dä-mēn, French scientist: b. Paris 28 Jan. 1701; d. there 4 Feb. 1774. He entered the military profession, but soon renounced this career, and devoted himself to the sciences. In 1736 he was chosen, with Godin and Bouguer, to determine the figure of the earth, by measurements to be made in the equatorial regions of South America, and remained abroad for eight years. In 1748 he was elected a fellow of the Royal Society of London, and in 1760 a member of the Academy of Sciences of Paris. His principal works are his account of his travels (1745), his work on the figures of the earth (1749), and that on the measurement of three degrees of the meridian in the equatorial regions.

Laconia, lā-kō′nĭ-ạ, formerly the name for a large tract of land granted by royal patent to Ferdinand Gorges and John Mason. It was located between the Merrimac and Kennebec rivers, the ocean, and the Saint Lawrence River of Canada. The present State of New Hampshire formed a considerable portion of Laconia.

Laconia, a territory in ancient Greece. See Sparta.

Laconia, N. H., city, county-seat of Belknap County; on the Winnipesaukee River, and on two divisions of the Boston & Maine railroad; about 28 miles north of Concord, the capital of the State, and 100 miles north of Boston. It was settled in 1780–2 by English people from the southern part of New Hampshire. It was incorporated as a town in 1852 and chartered as a city in 1893. It is in an agricultural and manufacturing section, in a beautiful lake region. Its charming scenery, cool climate and opportunities for fishing make it a favorite summer resort. Its principal manufactures are hosiery, railroad cars, machinery, lumber, and paper boxes. The hosiery mills employ about 1,200 operatives; and the car shops employ about 600 men. The State Home for Feeble-Minded Children is located here, also the State Fish Hatchery. The educational institutions of the city are the public and parish schools and the Gale Memorial library. The prominent buildings are 12 churches, an opera house, and the court-house. The three national banks have a combined capital of $200,000. The government is vested in a mayor and 14 councilmen. Pop. (1890) 6,143; (1900) 8,042.

C. N. Vaughan,
Editor of ‘Democrat.’

Lacordaire, Jean Baptiste Henri Dominique, French preacher: b. Recy-sur-Ource 12 May 1802; d. Sorèze 22 Nov. 1861. After studying law in Paris he began practice in that city. He was in religion a deist of the Voltairian school, and it was only after reading the ‘Essai sur l'Indifference’ of Lamennais (q.v) that he came to the conclusion that Roman Catholicism was a primal factor in the development of political life. It was with this view that he determined to become a priest. Entering the Seminary of Saint Sulpice in 1824 he was ordained priest in 1827. In 1835, he was appointed preacher at Notre Dame, and always collected an audience that filled the building. He was, however, bent on a wider project, the revival of the Dominican order, the great order of preachers in France. With this view he revisited Rome in 1838, and after the usual novitiate became a Dominican. The Dominican is originally a Spanish order, and was never popular in France, and Lacordaire had little success in establishing it there. He was in 1848 elected a member of the National Assembly. He was, however, rebuked by his bishop for calling himself a republican and retired from politics, in 1852. His honest indignation against the *coup d'état* expressed in a sermon roused the animosity of Napoleon III., and he was driven from the pulpit, and became director of the Lycée at Sorèze. Consult: Lives by Montalembert (1862); Foisset, 2d ed. (1874); Chocarne (8th ed. 1894); Greenwell (1877); Lear (1882); D'Haussonville (1895); Nicolas, ‹Le Père Lacordaire et le Libéralisme› (1880); Fesch, ‹Lacordaire, Journaliste› (1897).

La Cosa, Juan de, Spanish navigator: b. about 1460; d. November 1509. He was the companion of Columbus in the discoverer's voyage to Hispaniola in 1493 and settling at Santoña, in Aranham, made his living and reputation as a draughter of charts (1496). He accompanied Ojeda in an expedition to the Pearl coast in 1499; and in 1501 explored the northern coast of South America from Venezuela to Panama. In the course of an expedition on which he accompanied Ojeda, the party on landing in the bay of Cartagena was attacked by Indians, and he perished with his companions, of whom Ojeda alone escaped. His map of the New World, beautifully illustrated on vellum, is in possession of the Spanish government, and is the earliest known, having been made in 1500.

Lacoste, la-kōst, Sɪʀ **Alexander,** Canadian jurist: b. Boucherville, Quebec, 12 Jan. 1842. He was educated at the College St. Hyacinthe and at Laval University and was called to the bar in 1863. He began practising his profession in Montreal and after a brilliant legal career was appointed Queen's Counsel in 1880. He sat in the Legislative Council of Quebec 1882–4, became a Dominion senator in 1884, and in 1891 chief-justice of Quebec. He was knighted in 1892.

Lacquering, lăk'ėr-ĭng, the art of polishing or veneering with various preparations of lac (q.v.). It is used in many ways. In Tonking where the abundant production is the object of an important trade with the Chinese, it is so used only for varnishing, while in China the same product from the same sources contributes to most artistic applications. When the Annamites propose to lacquer an object, a box, for example, they first stop up the holes and crevices, covering all the imperfections with a coating of diluted lac by means of a flat, close short brush. Then they cover the whole with a thick coating of lac and white clay. This clay, oily to the touch, is found at the bottom of certain lakes in Tonking; it is dried, pulverized and sifted with a piece of fine silk before being embodied with the lac. This operation is designed to conceal the inequalities of the wood and produce a uniform surface, which, when completely dry, is rendered smooth with pumice stone. If the object has portions cut or sunk the clayey mixture is not applied, for it would make the details clammy, but in its place a single, uniform layer of pure lac. In any case, after the pumicing, a third coating, now pure lac, is passed over the piece which at this time has a mouse-gray color. This layer, known under the name of *sou lot,* colors the piece a brilliant black. As the lac possesses the remarkable property of not drying in dry air, the object is left in a damp place. When perfectly dried the piece is varnished and the desired color imparted by a single operation. If the metallic applications are excepted, the lac is colored only black, brown, or red.

The following formulas are in use:

Black.— One part of turpentine is warmed for 20 minutes beyond the fusing point; then poured into three parts of lac; at the same time *pheu deu* (copperas) is added. The mixture is stirred for at least a day, sometimes more, by means of the *cai vay,* a large paddle.

Maroon.— This is prepared by a process similar to the preceding, replacing half of the copperas by an equal quantity of China vermilion.

Red.— The lac, previously stirred for six hours, is mixed with hot oil of *trau,* and the whole is stirred for a day, after which vermilion is added. The latter should be of good quality, so as to have it brilliant and unchangeable.

The operation of lacquering is then ended, but there are parts to be gilded. These are again covered with a mixture of lac and of oil of *trau.* When this layer is dry the metallic leaves are applied, which are themselves protected by a coating composed also of lac and oil of *trau.* All these lac and oil of *trau* mixtures are carefully filtered, which the natives effect by pressing the liquid on a double filtering surface formed of wadding and of a tissue on which it rests. It can only be applied after several months when the metallic leaf is of gold. In the case of silver or tin the protecting coat can be laid on in a few days.

The wood to be lacquered should be absolutely dry. In Japan when wood is well prepared and the faults have been corrected with pure lac it is dried, pumiced and covered with a coat composed of crushed flax mixed with glue. Then a layer of lac is applied and covered with a fine linen fabric which should perfectly adhere in all its parts. This first preparation, suitably dried, serves as a foundation for the successive applications of 33 layers. Each coating is rubbed with a fine-grained stone before drying in the moist chamber. This is done with the greatest precaution, so as to avoid impurities and dust. The last polish is obtained by rubbing with the powder of calcined deer horn. The piece is then ready to receive the application of gold or of silver, which is effected as follows: The design to be reproduced is drawn on very fine paper prepared with a mixture of glue and alum, and on the back of the paper the outlines are traced with a brush of fine rat's hair, dipped in lac previously boiled over a brisk charcoal fire. This paper is then applied to the object to be decorated, and it is made to adhere by rubbing with a spatula, either of minoki wood or of whalebone. When the paper is removed the design is found transferred damp and is rendered more distinct by the application of a white powder by means of a piece of wadding. With one of these transfer papers 20 reproductions can be secured, and the lines can be retraced with the boiled lac, it is said, so as to procure copies almost indefinitely. The outlines remain damp in consequence of the use of the boiled lac, and imperfections can be corrected. In this case the outlines are retraced with a pencil of hare's hair lightly charged with a preparation of lac not boiled. This operation is delicate and requires great care not to displace the lac from the original outlines. When ended the whole is covered with fine gold, silver, or tin powder, as desired; the powder is applied by means of a piece of wadding. If the object to be decorated is of large dimensions the process is conducted on separate parts, and at each step the piece is placed in a damp closet tightly closed, so as to exclude the dust. When the metallic coating has hardened sufficiently the piece is taken out, and the design is covered with a fine transparent lac laid on with a brush of hare's hair. The gilding or silvering of the succeeding part is never attempted until the preceding has been completely dried in the damp chamber. All the parts of the object are finally rubbed with a piece of camelia wood charcoal in order to equalize the thickness, and then polished with the fingers moistened with a mixture of calcined deer horn powder and oil.

La Crosse, Wis., city and county-seat of La Crosse County, on the Mississippi River and the Chicago, M. & St. P., the Chicago & N. W., and several other railroads; 200 miles northwest of Milwaukee, and 130 miles south of Saint Paul.

Industries, etc.— La Crosse is the centre of the farming, manufacturing and dairying trade of western Wisconsin, southern Minnesota and northern Iowa. There are manufactories of boots and shoes, sash, doors and blinds, plows, agricultural implements, boilers and heavy machinery, extensive carriage works, rubber mills, cracker and knitting factories, etc., large flour mills, pearl button factories, steel and corrugated roofing works, woolen mills, a large tannery, mammoth cooperages, five large breweries, affording a market for 150,000 bushels of barley and 100,000 pounds of hops per annum; extensive cigar manufactories and various other industries. The city has five banks with a combined capital of $1,102,700 and doing an annual business of $180,000,000.

Educational Buildings, Public Institutions, etc.— La Crosse has a public library, the Washburn, containing 25,000 volumes, two business colleges, a high school, public school buildings and several Catholic and Lutheran parish schools. The city has a fine city hall, a convent, asylum for chronic insane, Saint Francis and United States Marine hospitals, opera houses, etc.

History and Government.— La Crosse was first permanently settled in 1841 by Nathan Myrick, John M. Levy and others. It became a village in 1851 and was incorporated a city in 1856. Under a revised charter of 1891 the government is administered by a mayor, elected every two years, and a council of 20 aldermen, one-half elected biennially. The council appoints the minor officials. The city owns and operates the waterworks, and has electric light and street railroad plants. Pop. (1903) 30,038.

Robert Calvert,
Secretary Board of Trade.

La Crosse, a Canadian out-door game played with a ball and a stick of light hickory, bent at the top like a bishop's crozier. The stick is 5 or 6 feet in length. Strings of deerskin are stretched diagonally across the hooked portion of the crosse, forming a network. Only one ball is employed, made of india-rubber, and eight or nine inches in circumference. Posts or poles about six feet high, with a small flag at the top of each, complete the equipment. The players are usually 12 on each side, but their number as well as the distance of the goals apart, is nearly optional. The object of the game is for one side to drive the ball through their opponents' goal. The ball must not be touched with the hand or foot, but is scooped up from the ground with the bent end of the crosse, on which it is carried horizontally, while the player runs toward one of the goals, dodging his antagonists. The National La Crosse Association of Canada was organized in 1867.

Lactantius, Firmianus, often called the Christian Cicero on account of his pure Latin style, lived in the last half of the 3d century and at the beginning of the 4th. Constantine the Great made him tutor of his son Crispus. His most important work is the ‹Institutiones Divinae,› a manual of Christian doctrine written to defend the religion to which he had been converted. His works appear in Migne's ‹Patrologia,› and have also been edited by G. Laubmann and S. Brandt (Vienna 1891).

Lactarene, lăk'ta̤-rēn, the casein of milk as commercially prepared by being freed from fat, precipitated by an acid, thoroughly purified, dried, and powdered. It is insoluble in water, but is soluble in an alkali, such as ammonia, and in this form is used, like albumen, for fixing pigment colors in calico-printing. The cloth, after it has been printed, is steamed, the ammonia is driven off, and the pigment is thereafter able to resist the action of water.

Lactation. See Milk, Human.

Lacteals, lăk'tē-a̤lz, vessels which, together with the lymphatics, constitute one system for conveying a fluid or fluids from various organs of the body to the veins near their terminations in the heart. The fluid which the lacteals convey is milky after a full meal, and is called chyle, though during intervals of fasting it is a yellowish lymph, as in the lymphatics. The lacteal vessels commence on the intestinal villi, unite with one another in the mesentery and, after leaving the mesenteric glands, discharge their contents for the nourishment of the body into the receptaculum chyli, in front of the second lumbar vertebra. See also Lymph; Lymphatic Glands.

Lac'tic Acid ($C_3H_6O_3$). Scheele, in 1780, was the first to describe the acid present in sour milk. In 1832 Liebig and Mitscherlich showed it to be a distinct acid. Lactic acid is widely distributed; there are many modes of preparing it artificially; and its isomeric varieties, of which four have been described, have excited much attention. Its two principal kinds are fermentation lactic acid and paralactic or sarcolactic acid. The former is got from concentrated sour whey by removing the curd, adding lime, filtering, diluting with water, removing the lime with oxalic acid, evaporating, and extracting the lactic acid with alcohol. It is more usual, however, to get it by what is called the lactic fermentation, from sugar or saccharine substances. The sugar is dissolved in water; to the solution is added decaying cheese and a quantity of fine, well-washed prepared chalk, and the mixture is kept for some weeks at between 86° and 95° F. Fermentation begins, and much lactic acid is formed, which combines with the chalk, and forms lactate of calcium. This salt is then decomposed by sulphuric acid, filtered, and the fluid is boiled with carbonate of zinc. Lactate of zinc is formed, which is collected and decomposed by sulphuretted hydrogen. The fluid filtered from the sulphide of zinc is evaporated, and the syrupy fluid which remains contains the lactic acid. Lactic acid is a syrup (specific gravity, 1.215) which remains liquid even at very low temperatures. It deliquesces in moist air, dissolves in all proportions in alcohol and water; has no odor, and has a purely sour taste. It cannot be distilled, or even heated, without undergoing decomposition, lactic anhydrides being formed; at a higher temperature carbonic oxide is evolved, and a variety of products distil over, and charcoal is left in the retort. By oxidizing agents, such as bleaching-powder and nitric acid, it is converted into oxalic acid; by oxide of manganese into aldehyde.

The paralactic or sarcolactic acid was observed in flesh by Berzelius in 1806, and he considered it the same as that derived from milk. Liebig showed that they were not absolutely identical, but the nature of their differences is at present unknown. This acid is readily got from the cold aqueous extract of flesh by adding a solution of baryta, coagulating and removing albumen, concentrating the solution, precipitating the baryta, filtering, and evaporating. The syrupy residue contains the acid. The calcium salt of the fermentation acid contains more water of crystallization; when heated it retains it for a shorter time; and it is more soluble than the sarcolactate. Again, the zymolactate of zinc contains more water, loses it more quickly on heating, but itself endures a much higher temperature without decomposition than the sarcolactate. The zymolactate is much less soluble in water and in alcohol than the other; the crystalline forms of the two salts also are different. The other salts of lactic acid are for the most part crystalline, and soluble in water. Lactic acid forms compound ethers and substitution acids.

Lactic Ferment, a minute organism which, under the microscope, is seen to consist of small elliptical cells, generally detached, but sometimes occurring in chains of two or three. It is developed in milk when it is allowed to stand for some time, and is the cause of the milk becoming sour, the sugar of the milk changing into lactic acid. It is also developed when cheese is added to a solution of sugar, and kept at a temperature of 35° to 40°. See also FERMENTATION.

Lactom'eter, or **Galactometer,** an instrument for ascertaining the different qualities of milk. Several instruments of this sort have been invented. One consists of a glass tube 1 foot long, graduated into 100 parts. New milk is filled into it and allowed to stand until the cream has fully separated, when its relative quantity is shown by the number of parts in the 100 which it occupies.

Lac'tose, sugar of milk ($C_{12}H_{22}O_{11}$), a substance obtained by evaporating whey, filtering through animal charcoal, and crystallizing. It forms hard, white, semi-transparent trimetric crystals, which have a slightly sweet taste, and grate between the teeth. It is convertible like starch into glucose by boiling with very dilute sulphuric acid.

Lactuca'rium, the brown viscid juice of the common garden lettuce, obtained by incision from the leaves and flowering stems, and dried in the air. It is a mixture of various substances, including lactucone, lactucin, lactucic acid, mannite, albumin, etc. Lactucarium is hypnotic, anti-spasmodic, and sedative, and has been recommended in cases in which opium is inadmissible, particularly for children. It has been administered with advantage in chronic rheumatism, diarrhœa, and asthma, in doses of two to five grains.

Ladd, George Trumbull, American educator: b. Painesville, Lake County, Ohio, 19 Jan. 1842. In 1864 he was graduated from Western Reserve College, and after spending the next two years in business, entered Andover Theological Seminary, where he was graduated in 1869. In 1869–71 he preached in Edinburg, Ohio; and was pastor of Spring Street Congregational Church, Milwaukee, Wis., 1871–9. He was called to the chair of philosophy at Bowdoin College in 1879 and held that position until he became professor of philosophy at Yale College in 1881. After the death of President Porter he was made Clarke professor of metaphysics and moral philosophy, which position he held till 1906 when he accepted a similar chair in Western Reserve University, Cleveland, Ohio. While still a student at Andover he prepared and published two important articles on the origin of the Synoptic Gospels in the 'Bibliotheca Sacra.' His published works include: 'Principles of Church Polity' (1882); 'Doctrine of Sacred Scripture' (1884); 'Lotze's Outlines of Philosophy' (translation, 5 vols. 1887); 'Elements of Physiological Psychology' (1887); 'What is the Bible?' (1888); 'Introduction to Philosophy' (1889); 'Outlines of Physiological Psychology' (1890); 'Philosophy of Mind' (1891); 'Primer of Psychology' (1894); 'Psychology Descriptive and Explanatory' (1894); 'Philosophy of Knowledge' (1897); 'Outlines of Descriptive Psychology' (1898); 'Essays on the Higher Education' (1899); 'A Theory of Reality' (1899); 'Lectures to Teachers on Educational Psychology' (in Japanese); 'Philosophy of Conduct' (1902). Besides his work as an author he has achieved remarkable distinction as a lecturer. During the academic year of 1895–6 he was chosen a member, for the year, of the Faculty of Harvard University and conducted a graduate seminary in ethics. Twice he has been invited by the Imperial Educational Society of Japan to deliver courses of lectures. In the summer of 1892 and again in 1899 he visited and lectured at Doshisha, Kyoto, Tokyo, Hakone, and Kobe. For his distinguished services to the cause of education he was admitted into audience with the emperor of Japan and by him decorated with the third degree of the order of the Rising Sun. In 1899–1900 he lectured on philosophy before the University of Bombay, India, and on the philosophy of religion at Calcutta, Madras, Benares, and elsewhere. His writings have been adopted as text-books in Russia, India, Japan, and other countries.

His contributions to the science of psychology have been recognized by all experts. He was one of the founders of the American Psychological Association, was its second president and its delegate to the International Congress at Paris in 1900. He is a member of the American Society of Naturalists, American Oriental Society, of the Connecticut Academy of Science, American Philosophical Association, and of the New Haven Historical Society. Among the most permanent of his achievements is the founding of the psychological laboratory at Yale University, which, under his guidance, has become one of the best equipped in the world. From Yale there has proceeded a continuous stream of teachers of philosophy, whose success has been largely due to the teaching and influence of Professor Ladd.

Ladd, Herbert Warren, American journalist and politician: b. New Bedford, Mass., 15 Oct. 1843. After obtaining a high school education he secured a position on the staff of the New Bedford *Mercury*, and went to the field with the 43d and 44th Massachusetts regiments; his report of Gen. Foster's Tarboro march was published in the Boston *Journal* before the New York papers had news of it. He issued a Sunday edition of the *Mercury* to announce the battle of Fredericksburg, the first Sunday paper published in New England outside of Boston. In 1864 he entered the dry goods business and in 1871 formed the firm of Ladd and Davis in Providence, which in 1887 was incorporated as the H. W. Ladd Company, of which he was president. He founded the Commercial Club in Providence, was vice-president of the board of trade for two years, was a generous patron of Brown University, and in 1891 presented to the University a fully equipped astronomical observatory. In 1889 he was elected governor of Rhode Island, was a candidate for that office in 1890 and was defeated, but was re-elected in 1891.

Ladd, William, American philanthropist: b. Exeter, N. H., 1778; d. Portsmouth, N. H., 9 April 1841. He was graduated at Harvard College in 1797, and subsequently took an active part in organizing the American Peace Society, of which he was for many years president, and in behalf of which he labored efficiently until the close of his life. In the interests of this society he edited the ‹Friend of Peace,› commenced by Dr. Noah Worcester, and the ‹Harbinger of Peace,› and published a number of essays and occasional addresses on the subject of peace. He carried his views to the extent of denying the right to maintain defensive war, and caused this principle to be incorporated into the constitution of the American Peace Society.

Ladies' Catholic Benevolent Association, a fraternal society of Roman Catholic women organized at Titusville, Pa., in April 1900. The object of the society is the payment of death benefits. In 1903 there was a supreme council, 780 subordinate branches and 77,000 members. The amount of benefits paid during 1902 was $408,500.

Ladies of the Maccabees of the World, a fraternal beneficiary association, composed exclusively of women and officered and managed by women. It exists solely for the benefit of its members and not for profit, having a lodge system with ritualistic work and representative government, and granting life protection upon satisfactory medical examination. Its jurisdiction is world-wide, but its growth until 1904 has been in North America. It is now entering Great Britain and will extend to other foreign countries where conditions are favorable.

Name.—The name is derived from the Biblical Maccabean Dynasty, upon whose history and achievements the beneficial laws and ritualistic work are founded.

Founders.— The first Supreme Record Keeper was Miss Bina M. West. She established the association in the original 16 States of its jurisdiction, revised and developed its ritualistic work, assisted in combining the separate State jurisdictions under one central government, and instituted the system of general management. Hers was the responsibility of entering new States and unifying the forces of the old. To her efforts were joined in 1895 those of Mrs. Lillian M. Hollister, present Supreme Commander. The success of the Order is due largely to the combined efforts and executive ability of these two leaders. Miss West was born in Saint Clair County, Mich., the daughter of Alfred J. and Elizabeth Conant West, a descendant of Roger Conant, first governor of Massachusetts Colony. In 1891, when there were but 3,000 members in the State jurisdiction of Michigan, she was so signally successful as State organizer that she was made a member of the Great Executive Committee. When the Supreme Hive was instituted 1 Oct. 1892, with world's jurisdiction, she was one of its incorporators and founders. Serving continually as Supreme Record Keeper she has seen the association rise to a position of preeminence. The certificates in force amounting to $100,000,000 bear her signature, and in disbursing the Order's benefits she has signed warrants for nearly $4,000,000.

Mrs. Hollister entered the State jurisdiction of Michigan in 1891, and in 1893 became Great Commander of the Great Hive. Its membership then numbered 13,339, which increased to 30,418 during the two years and eight months of her administration. In 1895, while the Order was in its infancy with only 5,770 members, when representing the Great Hive of Michigan at the Supreme Hive Review, she was elected Supreme Commander and has managed the interests of the association with great success and ability.

History.— The origin of the Order dates back to 1886, when the first hive was organized in Muskegon, Mich. It maintained a social existence until 1890, when the benefit feature was introduced. The first hive in New York was organized at Grand Island, 11 March 1891; in Ohio, at Cleveland, 15 July 1892.

The Supreme Hive of the Ladies of the Maccabees of the World was organized in order to establish unity, its incorporators being members of hives in Michigan, New York, and Ohio. No attempt was made to work in the States where Great Hives were already established, but hives were instituted in States not yet organized. Direct representation in the World's Association was soon accorded Michigan, New York, and Ohio, all branches thereby becoming recognized as parts of the Ladies of the Maccabees of the World. In 1898, Ohio transferred its benefit certificates and consolidated wholly with the World's Order. In 1899, New York took the same action, the total membership then reaching 72,424.

With uninterrupted success and prosperity, with 150,000 members and protection of $100,000,000 in force, this association is one of the greatest financial institutions among women of modern times. There is probably no other organization of women to-day, having the direction of business of such magnitude or so valuable to the individual member.

Government.—The government is representative. Business is conducted through the Supreme Hive, Great Hives, or State bodies and subordinate Hives or local branches. The subordinate Hive works under a charter issued upon the application of 20 ladies. Great Hives are composed of representatives of subordinate Hives, and meet triennially, amending State laws and electing State officers. The Supreme Hive is composed of representatives from each State. It meets triennially, and amends Supreme Hive laws, elects Supreme officers, and transacts other business of the Order. The business management is in charge of the Supreme Board of Trustees during the recess of the Supreme Hive. The Order is a representative organization of women, making its own laws, transacting its own business, and making and paying assessments and death benefits involving thousands of dollars, and doing other legitimate acts as outlined by its laws.

Nomenclature.— The officers are commander or president, record keeper or corresponding and financial secretary, finance keeper or treasurer, past commander, lieutenant commander, chaplain, sergeant, sentinel, picket, banner bearers, color bearers, and guards. Lodges are called hives, and meetings, reviews. Strict parliamentary procedure obtains, and the mode of address is formal. The ritualistic work is dramatic, forms, ceremonies, garb, mottoes, and emblems being based upon ancient Maccabee history, and typical of the purposes of the Association.

Statistics.—On 1 July 1904 there were 149,060 members gathered in 2,679 hives in 51 States, provinces, and countries. The total receipts of the Association since organization amount to $5,056,519.33; disbursements in death benefits, relief, and general expense, $3,982,272.21; balance on hand, $1,074,247.12, of which $829,070.27 is invested in government and municipal bonds, the securities required by the laws of the Order. No account is kept by the Supreme Management of the property and funds of Subordinate Hives, or the substantial amounts they expend in relief. The benefits are given upon the National Fraternal Congress Table of Rates, which is based upon the death experience of the older societies and leading life companies. The mortality rate of the Order itself is considerably below this experience. An annual valuation is made, the mortality experience computed, and the protective feature handled along scientific lines. Management expense is reduced to the minimum on a per capita basis of ten cents monthly. The Society prepares its own literature and supplies and also edits the 'Review,' a 16-page monthly sent free to its members. It is incorporated under the laws of Michigan, and authorized by the insurance departments wherever it operates.

BINA M. WEST,
Supreme Record Keeper.

Ladies of the Modern Maccabees, a fraternal beneficial society exclusively for women, founded in 1886, as a social organization, auxiliary to the Knights of the Maccabees. In 1890 it became a life benefit society. The name of the society is derived from the same source as that of the Knights of the Modern Maccabees (q.v.), and although bearing the name «Maccabees,» is entirely distinct in its management and is governed by a different code of laws. The term «Modern» was only recently adopted to distinguish it from another organization bearing a similar name.

The society for a number of years after incorporation confined its work entirely to the State of Michigan, but when the membership had exceeded 70,000 the Great Hive voted to extend its jurisdiction and on 1 June 1905 the society was operating in 24 States and Territories, with a membership of 84,952 and 967 subordinate bodies or «hives.» The order admits as life benefit members all white women, of good moral character and socially acceptable to its members, between the ages of 18 and 50 years, of course subject to the approval of the Great Medical Examiner. The social members, eligible between the ages of 16 and 70 years, pay the same membership fees, dues, and tax, as life benefit members, but are exempt from death assessments.

Certificates are issued for $250, $500, and $1,000, payable to the designated beneficiaries in event of death, or in case of permanent and total disability, they are payable one twentieth semiannually to the member herself. Five per cent from every assessment is placed in an «Emergency Fund» to be used when the interests of the order demand. On 1 June 1905 this fund amounted to over $115,000. Since the organization of the society there has been paid to beneficiaries of deceased members over $3,000,000, and in disability benefits over $75,000. A fund of $10,000 was voluntarily contributed for the endowment of two beds, one each in Grace Hospital, Detroit, and in Butterworth Hospital, Grand Rapids. Funds are now (1905) being raised to endow a third bed to be located in some city in the Upper Peninsula. The order has an official organ, edited monthly and containing the various reports of business transactions.

Ladoga, lä'dō-gä, the largest lake of Europe, situated in Russia, between the governments of St. Petersburg on the south, Olonetz on the east, and Viborg on the north and west; greatest length, north to south, 130 miles; average breadth, about 75 miles; area, 7,156 square miles. It receives no fewer than 70 streams, the principal of which are the Volkhov and Sias, which enters it on the south, and the Svir, which enters it on the east, bearing the surplus water of Lake Onega. It contains numerous islands, and its shores are generally low. Peter the Great Canal (1718–31) and the Alexander II. Canal (1861–6) connect the Neva and the Volkhov; Sias Canal (1764–1802) and the Empress Maria Feodorovna Canal (1883) connect the Volkhov and the Sias; the Svir Canal and the Alexander III. Canal connect the Sias and the Svir. These canals form a navigable chain around the south of the lake.

Ladrones, lạ-drōnz′, or **Marianne** (mā-rĭ-ăn′) **Islands,** a group of 16 islands in the North Pacific Ocean, north of the Caroline Islands. Guahan is the southernmost and largest of these islands; and next in importance is Rota. The islands have a total area of 420 square miles. The inhabitants are tall, robust, and active, and naturally acute, lively, and ingenious. Their huts are constructed of palm-trees, and divided by mats into different apartments. The islands were discovered by Magelhaens in 1521, and were settled by the Spaniards. Magelhaens called them Islas de Ladrones (Thieves' Islands), because the Pacific pirates had a rendezvous here. Toward the end of the 17th century they received the name of Mariana or Marianne Islands, from the Queen of Spain, Marianne of Austria, the mother of Charles II., at whose expense the Jesuit missionaries were sent over, who settled here in 1667. The chief inhabitants are settlers from Mexico and the Philippines. The bread-fruit tree was first discovered here. Guahan (Guam) was ceded to the United States in 1898, and the rest sold by Spain to Germany in 1899. Pop. (1850) 65,000; (1900) 10,175.

Lady-birds, beetles of the family *Coccinellidæ*. This is a very large family of small beetles of rounded, convex form, usually shining and hairless. The head is retracted beneath the pronotum, the legs are short and hidden, and the elytra are usually brightly colored and marked with dark spots. These colors vary much in the same species, especially in the English *Coccinella septempunctata*,— the pet of children. The most widely known American species is the black one with two red spots (*C. bipunctata*), common all over the United States. These beetles live upon plants, shrubs, and trees, depositing their eggs in little bunches on the lower sides of the leaves. The worm-like maggots are active, searching the leaves for plant-lice, which are eagerly devoured, each kind of beetle choosing a special kind of aphid for its food. In this habit the ladybirds, which are sometimes extremely numerous, perform a valuable service, since their minute prey is highly injurious to the plants. See Scale-Insect.

Lady Chapel, a chapel dedicated to the Virgin Mary, and when attached to cathedrals, generally placed eastward from the altar. The lady chapel of Westminster Cathedral is that usually known as Henry VII.'s.

Lady-day, one of the quarter-days in England and Ireland, on which rent is made payable. It falls on 25 March in each year. In the Roman Catholic Church it is held as a great festival under the title of the Feast of the Annunciation. In the English Church it is observed as a feast. In France the day is termed Notre Dame de Mars.

Lady of the Lake, The, a poem by Sir Walter Scott, the most popular of his long narrative poems. The name is derived from the heroine, Ellen Douglas, who lived on an island in Loch Katrine.

Lady of Lyons, The, a play, by Bulwer-Lytton, originally called ‘The Adventurer.’ It was first produced in 1838.

Lady of Mercy, Our, Order of, a Spanish order dating from 1218. It was founded by James I. of Aragon, in compliance with a vow made during his captivity in France. Pope Gregory IX. approved the order in 1230. It was instituted to redeem Christian captives from the Moors. The order was extended to women in 1261. A branch order instituted in France was suppressed at the time of the Revolution.

Ladyfish, Banana-fish, or **Bone-fish,** the name of several different marine fishes conspicuous for elegance of outline and handsome coloring. They are found mainly in the tropical regions.

Lady's Fan, The. See Giants Causeway.

Lady's or **Fairy's Fingers, Glove, Thimble,** etc., are some among many gardener's names for the purple foxglove (*Digitalis purpurea*), in regard to which much provincial folk-lore might be cited. See Digitalis; Fox-glove.

Lady's Slipper, or **Moccasin Flower,** an orchid of the genus *Cypripedium,* several species of which grow both wild and cultivated in the United States. See Orchids.

Lady's-Smock. See Cuckoo-flower.

La′dysmith, South Africa, town of northern Natal, near the Klip River, 119 miles by rail north by west of Pietermaritzburg, and 322 southeast of Pretoria. It is situated in a hilly region about 30 miles east of the Drakensberg Mountains. During the South African war of 1899–1901 Ladysmith was besieged by a strong force of Boers. The complete investment began on 2 Nov. 1899 and the relief was not effected till 28 February of the following year, or 118 days after the Boers succeeded in isolating the town. The town was held by a garrison of about 10,000 men under Sir George White, and during the siege much damage was done by the shells of the Boer artillery. Disease also carried off many of the garrison and the inhabitants. The relief was effected by Gen. Buller after a hotly contested march by way of Pieters and Nelthorpe, to the east of the railway. Three previous attempts by the same general to relieve the town had to be abandoned owing to the strength of the Boer positions and to their superiority in long-range guns. The population numbers about 4,000.

Laennec, René Théophile Hyacinthe, rė-nā ta-ō-fēl ē-ä-sănt lĕn-nĕk, French physician: b. Quimper, France, 17 Feb. 1781; d. near Douarnenez, France, 13 Aug. 1826. He took his degree of doctor of medicine in 1814, and his professional reputation was already so high that in the same year he was appointed principal editor of the ‘Journal de Médecine.’ In 1816 he was appointed chief physician to the Hôpital Necker, and soon after made the notable discovery of mediate auscultation, that is, of the use of the stethoscope. The original discovery, however, is claimed for Auenbrugger (q.v.). In 1819 he published his ‘Traité de l'Auscultation Médiate,’ having read a memoir on the subject to the Academy of Sciences in the previous year. The remainder of his life was devoted to the perfecting of this new system of diagnosis, and so far as diagnosis is concerned his treatise has produced an effect not attained by any other work. The special study of Laennec was diseases of the chest, and by means of auscultation, either by the direct application of the ear, or of the stethoscope as an auxiliary, he elucidated the pathology of these diseases, which were previously involved in the greatest obscurity.

Laertes, king of Ithaca and father of Ulysses. He had been one of the heroes engaged in the chase of the Calydonian boar, and in the expedition of the Argonauts. The absence of his son in the Trojan war plunged him into melancholy; but the return of Ulysses restored his energies, and he took part in the fight with the suitors of Penelope.

Lætare (lẹ-tā'rē) **Sunday,** called also MID-LENT, the fourth Sunday in Lent. The introit for the day in the Roman Catholic Church begins with the words ‹Lætare, Jerusalem,› from Isaiah lxvi. 10; hence the name. On this day the music of the organ, suspended throughout Lent, is resumed.

La Farge, lạ färj, **Christopher,** American architect: b. Newport, R. I., 5 Jan. 1862. He studied at the Massachusetts Institute of Technology 1880–1, and in the office of H. H. Richardson (q.v.), and in 1884, with G. L. Heins, took charge of the architectural works of his father, John La Farge (q.v.). Since 1886 he has been a member of the firm of Heins & La Farge, whose principal work is the Cathedral of St. John the Divine, New York. Other works that may be named are the Houghton Chapel at Wellesley College; the Roman Catholic Chapel at West Point; and St. Matthew's Church, Washington, D. C.

La Farge, John, American artist: b. New York 31 March 1835. He was the son of Jean Frédéric de la Farge, French midshipman, who escaped imprisonment at San Domingo, 1806, and eventually settled at Philadelphia. John La Farge began life in a lawyer's office in New York, became much attracted by the Arundel prints of Giotto, turned away from the commonplace of the Hudson River School, and with a deep appreciation of Japanese art found a friend and master in William Hunt. He originally developed a taste founded on Japanese literalism, Pre-Raphaelite conventionality and imaginative conventionalism. Japanese art has certainly determined the line of his success, and his windows in the palaces of New York and elsewhere are beyond criticism. The great ‹Battle Window› in Memorial Hall, Harvard, the wall painting in Ascension Church, New York, are evidences of his skill as a colorist, however much we may criticise his inadequate conception, and weakness in drawing. Among his published works are ‹Lectures on Art› and ‹An Artist's Letters from Japan.›

La Farina, Giuseppe, joo-sĕp'pĕ lä fä-rē'nä, Italian statesman and historian: b. Messina, Sicily, 20 July 1815; d. Florence 5 Sept. 1863. He studied at the University of Catania; entered the law; implicated in a revolutionary conspiracy, was compelled to flee from Sicily (1837); and finally settled in Florence (1841), where he devoted himself to historical composition. Having returned to Sicily in 1848, he was there successively member of parliament, and minister of education, public works, and the interior. After the suppression of the revolution in Sicily (1849), he resided in France and Italy, was secretary of the National Italian society, and strongly advocated Italian unity. Following the war of 1859, he reorganized the National Italian society, of which he became president; in 1860 was sent to Sicily to represent Victor Emmanuel; and from 1861 sat for Messina in the Italian parliament. His chief work is ‹Storia d'Italia dal 1815 al 1850› (2d ed. 1860). He wrote other historical studies, such as ‹Storia della Revoluzione Siciliana nella 1848 e 49› (1851), dramas, and works of fiction.

La Fayette, Marie Madeleine Pioche de la Vergne, mä-rē mäd-lĕn pē-ōsh dė lä vĕrny lä-fä-yĕt, COMTESSE DE, French novelist: b. Paris 16 March 1634; d. there 25 May 1693. All her life she was in the foremost literary circles, after marriage her house being a noted rendezvous of wits and scholars, including Mme. de Sévigné, La Fontaine, and La Rochefoucauld. Her first novel was ‹The Princess de Montpensier› (1660); followed by ‹Zaïde› (1670), which among her works ranks next after ‹The Princess of Cleves› (1678), her most celebrated work, and one of the classics of French literature. She wrote also a ‹History of Henrietta of England› (1720), and ‹Memoirs of the Court of France for the Years 1688 and 1689› (1731). Consult Haussonville, ‹Madame de la Fayette› (1891).

Lafayette, or **La Fayette, Marie Jean Paul Roch Yves Gilbert Motier,** MARQUIS DE, French soldier and statesman: b. Chavagnac, near Brioude, Auvergne (in the present department of Loire), 6 Sept. 1757; d. Paris 20 May 1834. He belonged to an eminent family of France. He was educated in the College of Louis le Grand in Paris, in 1774 entered the army as an officer of the Guards, and on hearing of the declaration of independence by the American colonists determined to lend them his assistance. In 1777 he left France for America with 11 companions, among whom was Baron De Kalb, set sail from Pasages, Spain, in a yacht equipped by himself, and arrived at Georgetown, S. C., 14 April. He proceeded to Philadelphia, and to the Congress there in session volunteered his services without pay. On 31 July he was commissioned major-general, and not long after became a member of Washington's staff. He was severely wounded at Brandywine (11 September), while rallying the American forces from a retreat; was appointed to the command of an expedition for the proposed invasion of Canada, never executed owing to lack of means; and in April 1778 was ordered to join Washington at Valley Forge. On 19 May he was surprised by General Grant with 5,000 troops at Barren Hill (12 miles from Valley Forge), where he had taken post with 2,100 troops and five cannon. Though nearly surrounded by a superior force, he succeeded in extricating himself, recrossing the Schuylkill and reaching Valley Forge in safety. He received the thanks of Congress for his conduct at Monmouth (28 June), where he fought brilliantly under Lee. War between France and England having broken out, Lafayette returned (January 1779) to place himself at the disposal of the French government; obtained for the American cause financial assistance, and the reinforcement of a fleet and 6,000 troops under Rochambeau; and 11 May 1780 rejoined the American army. He was shortly afterward stationed at Tappan with a light infantry corps of observation, and was a member of the court of general officers by which Major André was tried and condemned to death (29 Sept.). On 20 Feb. 1781 he was sent by Washington with 1,200 New England and New Jersey troops to aid in the defense of Virginia. Reinforced, he pursued Cornwallis from near Charlottesville to Yorktown, thus materially contributing to the decisive operations by which the war was virtually concluded. He sailed from the United States in December 1781, but again returned in 1784, when he was enthusiastically received. He was called to the Assembly of the Notables in 1787, and was elected a member of the States-General, which took the name of National Assembly (1789). Two days after the attack on the Bastille he was appointed (15 July) commander-in-chief of the National Guard of Paris, and gave them the tricolor cockade. It was through his means that the lives of the king and queen were saved from the mob that had taken possession of the palace at Versailles (5–6 Oct.). After the adoption of the constitution of 1790 he resigned all command, and retired to his estate of La Grange. He had previously resigned his title, the abolition of titles having been decreed by the National Assembly. The first coalition against France (1792) soon called him from his retirement. Being appointed one of the three major-generals in the command of the French armies, he established discipline, and defeated the enemy at Philippeville, Maubeuge, and Florennes, when his career of success was interrupted by the factions of his country. During the Reign of Terror commissioners were sent to arrest him, but he escaped to Flanders. Having been captured by an Austrian patrol (19 August), he was delivered to the Prussians, by whom he was again transferred to Austria. He was carried with great secrecy to Olmütz, where he was subjected to much privation and suffering, and whence he was not released until 25 Aug. 1797. He returned to his estate at La Grange, and taking no further part in public affairs, devoted himself to agricultural pursuits. In 1818 he was chosen member of the Chamber of Deputies, where he was a constant advocate of liberal measures. In August 1824 he landed at New York on a visit to the United States, upon the invitation of the President at the request of Congress, and was received in every part of the country with the warmest expression of delight and enthusiasm. Congress voted him $200,000 and a township of land, his own fortune having been mostly lost by confiscation during the Terror. In 1827 the Chamber of Deputies was dissolved, and Lafayette was again returned a member by the new elections. During the revolution of July 1830 he was appointed general-in-chief of the National Guard of Paris, and though not personally engaged in the event, was, through his activity and name, of the greatest service. When the National Guard was established throughout France, after the termination of the struggle he was appointed their commander-in-chief. Of Lafayette, Edward Everett said: «Who, I would ask, of all the prominent names in history, has run through such a career, with so little reproach justly or unjustly bestowed?» Consult: ‹Mémoires et Manuscrits de La Fayette› (1837–40); Tuckerman, ‹Life of Lafayette› (1889); Tower, ‹The Marquis de La Fayette in the American Revolution› (1895).

Lafayette, lä-fā-ĕt′, Ala., town and county-seat of Chambers County, on the Central Railroad of Georgia, 85 miles northeast of Montgomery. Here is the seat of Lafayette College (q.v.), founded in 1885. There is a large trade in cotton and other products, the town being a distributing point for a large section of country. Pop. (1890) 1,369; (1900) 1,629.

Lafayette, Ind., city and county-seat of Tippecanoe County, on the Wabash River, and the Cleveland, C., C. & St. L., the C. I. & L. (Monon), the Lake E. & W., and the Wabash R. R.'s.; 64 miles northwest of Indianapolis. The Indianapolis & N. W. traction lines also connect the city with outside points.

Industries.— Lafayette derives its chief business from agriculture, being the farming and manufacturing centre for the surrounding country. Other industries are: carpet mills, breweries, soap factories and flour mills.

Banks, Churches, Public and Educational Institutions.— There are five National, two State, and one savings banks, and two loan and trust companies, having a combined capitalization of $965,000 and deposits of about $10,000,000. There are 24 church edifices. Lafayette is the seat of Purdue University, embracing the State Agricultural College, contains a high school, supplemented by an excellent public school system, a public library, containing over 20,000 volumes, and the Indiana State Soldier's Home.

History, Government and Population.— The city stands six miles above the site of the old French fort, built in 1720 and called Post Oniatanon. In 1760 the fort was surrendered to the British, but later in the same year was captured by the Indians. Lafayette was first settled in 1826 and chartered as a city in 1853. It is governed, under the General Indiana Charter which went into effect in April 1905, by a board of public works composed of three members, and a city council composed of 10 members elected for four years. The city owns and operates the waterworks, has electric lights, electric street railway and a well-equipped fire department. The foreign element in the population is small. Pop. (1890) 16,243; (1900) 18,116; (1905) Lafayette and West Lafayette combined 28,000.

Lafayette, La., town in Lafayette Parish; on branches of the Southern Pacific railroad; about 120 miles west by north of New Orleans. It is 41 feet above the level of the Gulf, and has a healthy climate. It is the commercial centre of a region noted for its sugar, cotton, and rice, and it is near extensive oil fields. It is the seat of the Southwestern Louisiana Industrial Institute (q.v.) and the Mount Carmel Academy (q.v.). It has good church buildings and public and parish schools. The town has a municipal ownership of the electric-light plant and waterworks. Pop. 3,500.

Lafayette, a fish. See Goody.

Lafayette College, a Presbyterian college at Easton, Pa.; founded in 1832. In 1902 it had 30 professors and instructors; 426 students; 20,600 volumes in the library; $258,250 in productive funds; grounds and buildings valued at over $1,000,000; benefactions, $408,000; income, $68,000; number of graduates, 1,811. It was originally chartered in 1826, but owing to the failure of the legislature to make any appro-

MARQUIS DE LAFAYETTE.

priation the college was not opened until 1832. Since the Civil War the college has had a notable growth. Ario Pardee of Hazleton endowed a scientific department in 1866. There are now 30 buildings, including Pardee Hall, a memorial library and the Gayley Laboratory of Chemistry and Metallurgy.
MARCUS W. KRATZ,
Registrar.

Laf'fan, Bertha Jane, “MRS. LEITH ADAMS,” English novelist. She has been on the staff of ‘All the Year Round’ from 1878. She was married to Surgeon-General Leith Adams, and subsequently to Rev. R. S. de Courcy Laffan. Her novels have been popular and among them are: ‘Winstowe’ (1879); ‘Bonnie Kate’ (1892); ‘Accessory After the Fact’ (1898). She has published several songs.

Laffitte, Jacques, zhäk lä-fet, French banker: b. Bayonne 24 Oct. 1767; d. Paris 26 May 1844. He entered the banking-house of the senator Perregaux, and in 1809 became the head of the firm, which he made one of the first houses in France. In the same year he was appointed director of the Bank of France, and in 1814 governor of the same establishment. When the credit of France, in 1815, was at a very dangerous crisis, Laffitte advanced 2,000,000 francs in ready money, by which means a necessary article in the capitulation of Paris was settled. He was elected to the Chamber of Deputies in 1816. In 1819 he was deprived of the presidency of the bank, which was bestowed on the Duke of Gaeta; yet he was in 1822 unanimously re-elected to the office of *régent de la banque* (director). Laffitte was again elected to the Chamber of Deputies in 1827, and took an active part in the revolution of July 1830, being one of the deputies who signed the protest, and declared themselves deputies of France, in spite of Polignac's order to annul the election. He became bankrupt in his latter days, and was obliged to sell all his property to pay his debts; but his Paris hôtel was preserved to him by a national subscription.

Lafitau, Joseph François, zhō-zĕf fräṅ-swä lä-fē-tō, French missionary and writer: b. Bordeaux 1670; d. there 3 July 1740. He belonged to the Society of Jesus, and was for some years attached to their missions in Canada. On his return to France, he published: ‘Mémoire concernant la précieuse plante ging-sang de Tartarie’ (1718), the plant here noticed, which was highly valued by the Chinese, having been found by Lafitau in the Canadian forests; ‘Mœurs des Sauvages Américains comparées aux Mœurs des premiers Temps’ (1723); ‘Histoire des Découvertes et des Conquêtes des Portugais dans le Nouveau Monde’ (1733).

Lafitte, lä-fēt', **Jean,** American pirate and smuggler: b. France 1780; d. Silan, Yucatan, 1826 (according to some authorities, at sea 1817). He was at one time a privateer in the employ of Cartagena for the destruction of British and Spanish commerce. Soon he turned to piracy, and by 1812 was leader of a band of desperadoes who maintained headquarters on the island of Grande Terre in Barataria Bay, and thence plundered traders in the Gulf. During the War of 1812, Commodore Percy, commanding the British naval force in the Gulf waters, unsuccessfully endeavored to obtain Lafitte's co-operation in the expedition against New Orleans. Lafitte later offered his services to the governor of Louisiana and General Jackson, on condition of full pardon for himself and followers. He assisted in the construction of the defenses of Barataria Bay, and in command of a detachment of his band participated most creditably in the battle of New Orleans (8 Jan. 1815). President Madison by proclamation confirmed the amnesty granted to the outlaws. Lafitte was a bold smuggler, and brought to Louisiana cargoes of negro slaves. He was associated with a brother, Pierre, with whom he is often confounded. He is the hero of J. H. Ingraham's story, ‘Lafitte.’

Laflamme, lä-fläm', **Toussaint Antoine Rodolphe,** Canadian jurist: b. Montreal 15 May 1827. He was educated at St. Sulpice College, in 1849 was admitted to the bar, became an editor of ‘L'Avenir,’ and was a member of the ‘Rouge’ or liberal reform element in Quebec province. At the same time he continued his legal practice, and was appointed professor of the law of real property in McGill University. In 1872–8 he sat in parliament for Jacques Cartier County, in 1876 was minister of inland revenue, and in 1877–8 minister of justice.

La Follette, lä fŏl-lĕt, **Robert Marion,** American lawyer and politician: b. Primrose, Wis., 14 June 1855. He was graduated from the University of Wisconsin in 1879, and the next year was admitted to the bar. He became district attorney of Dane County in 1880, retaining that position till 1884, when he took up the regular practice of his profession. In 1887 he was elected to Congress, serving till 1891; he won reputation as an orator, and as a member of the committee of ways and means took a prominent part in the framing of the McKinley Tariff Bill. At the close of his service in Congress he resumed his practice, and remained active in politics, becoming one of the leaders of the younger men in the Republican party. He was elected governor of his State three times, 1900, 1902, and 1904, but in 1905 he was elected to the United States Senate and resigned the governorship.

La Fontaine, lä fŏn-tān', Fr. lä fôṅ-tān, **Jean de,** French poet: b. Chateau-Thierry, Champagne, 8 July 1621; d. Paris 13 April 1695. He studied for a time without much seriousness for the priesthood, turned to literature, found a patron in the minister Fouquet and later in others of prominence, and was in habits of intimacy with Molière, Boileau, Racine, and all the first wits of Paris. The candor and simplicity of his character acquired for him the title of *le bon homme*. But he was no favorite with Louis XIV., and was the only writer of merit of the time who did not share in the royal bounty. In 1683 he was elected to the Academy. He is best known for his ‘Fables,’ which abound in keen analysis, wise lessons, and skilful descriptive passages. Both the ‘Tales’ (1665) and the ‘Fables’ of La Fontaine have been superbly printed. Of the former (the license of which keeps them out of many libraries) the best edition is that of 1762, with Eisen's designs and vignettes. Of his ‘Fables’ innumerable editions have been printed; but the most magnificent is that in four volumes folio (1755–9), in which each fable is adorned with a plate. Gustave Doré also executed illustrations for these poems. La Fontaine wrote further works, including ‘Les Amours de Psyche,’ a romance, and ‘Le Florentin’ and ‘L’Eunuque,’ comedies; and he edited a collection of religious verse. The best edition of his works is that by Regnier in the ‘Grands Ecrivains’ series (9 vols. 1888–92). Consult also the study by Lafenestre (1885).

Lafontaine, Sir **Louis Hippolyte,** Canadian lawyer and politician: b. Boucherville, Lower Canada, October 1807; d. Montreal 26 Feb. 1864. He achieved prominence at the bar and in Dominion politics, but in 1838 was charged with high treason as implicated in Papineau’s rebellion, and though not convicted, withdrew to England, thence to France, and returned to Canada only after the end of the rebellion. In 1848–51 he was premier, and in 1853 became chief justice of the Queen’s bench.

La Fourche, lä foorsh, a bayou in Louisiana, and an outlet of the Mississippi River, which begins at Donaldsonville, on the right bank, and flows southeast to the Gulf of Mexico. It has a total length of 150 miles and is navigable by steamboats 100 miles from its mouth.

Lago Maggiore, lä′gō mäd-jō′rĕ, or **Lake of Locarno** (anciently Verbanus), a large lake in northern Italy, and Switzerland, extending from Sesto to Locarno, about 39 miles long and 7 broad. It is 621 feet above the level of the sea, and at the northern end in some places as deep as 2,500 feet. On all sides it is surrounded by hills, planted with vineyards and plantations of chestnuts, interspersed with villas. There are several islands, two of which, Isola Bella and Isola Madre, called Borromean Islands, are laid out in gardens and pleasure grounds.

Lagonegro, lä-gō nā′grō, a small town 38 miles south of Potenza, Italy, noted as having been the scene of a great French victory in 1806.

Lagoon′ (from the Latin *lacuna,* a gap or hollow), shallow lakes or creeks connected with the sea, which are found along low-lying coasts. It is also applied to the expanse of water in the interior of those coral reefs which present to view above the surface of the water nothing but an external fringe. See Coral.

Lagos, lä′gōs, Mexico, city in the State of Jalisco, on the Mexican Central railroad. It lies 6,000 feet above the sea; was founded in 1563 by Francisco Martel, and after the war of independence was named Lagos de Moreno after its defender, Pedro Moreno, who died here in battle against the Spaniards in 1817. Pop. (1900) 14,000.

Lagos (lä′gōs) **Colony,** a British possession in West Africa, consisting of Lagos Island and the coast between Dahomey and southern Nigeria; area, 985 square miles. The principal products are palm oil and kernels, ivory, gum copal, cotton, rubber, cocoa, and coffee. There is a railway from Lagos to Abeokuta 60 miles inland. The government consists of a governor and executive and legislative councils. The town of Lagos, the largest on the West African coast, has a population of 35,000. Pop. of colony 85,607.

La Grande, lạ-gränd′, Ore., city in Union County, on the Grande Ronde River, and on the Oregon railroad; 300 miles east of Portland. It is the commercial and trading centre of an extensive live-stock, grain and fruit growing region, and has flour mills, brick works, lumber mills, beet sugar, and other factories. Pop. (1890) 2,583; (1900), 3,000.

Lagrange, Joseph Louis, zhō-zĕf loo-ē lä-gräṅzh, Comte, French mathematician: b. Turin 25 Jan. 1736; d. Paris 10 April 1813. His great-grandfather was a cavalry officer in the French army, who afterward passed into the service of Sardinia. When scarcely 19 Lagrange was made mathematical professor in the artillery school at Turin. In 1764 he obtained the prize of the Academy of Sciences in Paris for a treatise on the libration of the moon, and in 1776 for another on the theory of the satellites of Jupiter. About this time he made a visit to Paris, where he became personally acquainted with D’Alembert, Clairaut, Condorcet, and other savants. Soon after his return he received an invitation from Frederick the Great to go to Berlin, with the title of Director of the Academy. Here he lived for 20 years, and wrote his great work ‘La Mécanique analytique.’ After Frederick’s death (1786) the persuasion of Mirabeau and the offer of a pension induced him to settle in Paris. He was the first professor of geometry in the Polytechnic school, and the first inscribed member of the Institute. He took no active part in the revolution, and the law for the banishment of foreigners was not put in force against him. In 1794 he was appointed professor in the newly-established Normal School (Ecole Normale Supérieure) at Paris (1794), as well as in the Ecole Polytechnique. Napoleon bestowed upon him distinguished tokens of his favor, and he became member of the senate, grand officer of the Legion of Honor, and count of the empire. The most important of his works are his ‘Mécanique analytique’ (1788); ‘Théorie des Fonctions analytiques’ (1797); ‘Résolutions des Equations numériques’ (1798); ‘Leçons sur le Calcul des Fonctions’; and ‘Essai d’Arithmétique politique.’

La Grange, lạ-grānj′, Ga., city and county-seat of Troup County, on the Macon & Birmingham and on the Atlanta & West Point R.R.’s; 70 miles southwest of Atlanta. A Baptist Female college and a Methodist Female college are located here. The town was settled in 1826, and was incorporated two years later. Under a charter of 1891, the city is governed by a mayor elected annually, and a council elected every two years. It has numerous industries, including cotton and cottonseed-oil mills. Pop. (1890), 3,090; (1900), 4,274.

La Grange, Ill., town in Cook County, on the Chicago, Burlington & Quincy railroad; 15 miles from Chicago. It is a suburban and residential town largely populated by Chicago business men, and has numerous churches, public and private schools, and two weekly newspapers. Pop. (1890), 2,314; (1900), 3,600.

La Grange, Ind., town and county-seat of La Grange County, on the Grand Rapids & Indiana railroad; 45 miles northwest of Fort Wayne. It is the centre of a considerable agricultural section and has numerous manufacturing industries, including flour and lumber mills, chair factories, agricultural implement works, etc. Pop. (1890), 1,784; (1900), 1,703.

La Grange, Texas, city and county-seat of Fayette County, on the Colorado River, and on the Southern P. and the Missouri, K. & T. R.R.’s; 80 miles southeast of Austin. It has a cotton trade of 15,000 bales annually, and is an important shipping point for grain and livestock. There are cotton gins and cottonseed-oil mills and other industries here. Pop. (1890) 1,626; (1900) 2,392.

La Grange College, an educational institution in La Grange, Mo.; founded in 1858 under the auspices of the Baptist Church. It had in 1901 12 professors and instructors; 161 students; 7,000 volumes in the library, and productive funds of $12,500. Its grounds and buildings were valued at $20,000; income, $3,000.

La Grita, lä grē'tä, town in Venezuela, in the state of Los Andes; located in a beautiful mountain region 5,000 feet above the sea, and surrounded by coffee, sugar, and tobacco plantations. It lies 75 miles south of Lake Maracaibo. The town, which has a most delightful climate, was founded in 1576 by Francisco de Càceres. Pop. (1900) 9,700.

La Guayra, lä gwī'rä, or **La Guaira,** city and seaport in Venezuela, about 5 miles from Caracas, on the Caribbean Sea. It was founded in 1588 and is the most important commercial city in the republic. The harbor which was formerly an open roadstead has been improved by a breakwater, and is well protected by a fort. La Guayra exports coffee, cocoa, and skins, and imports chiefly manufactured goods. There is a railroad from here to Caracas. The port was blockaded in 1903 by the British and German fleets, pending the settlement of claims against the government. Pop. 11,000.

Laguna, lä-goo'nä, N. Mex., pueblo town on the Atchison, Topeka & Santa Fé railroad; 40 miles from Albuquerque. The population, some 1,100, is composed largely of various branches of the Laguna Indians, who are industrious and self-supporting. The government granted them 17,000 acres, of which only 215 acres can be used for farming purposes.

Laguna, Philippines, a province of the island of Luzón, situated in the southern part of the island, on the south and east shores of the Bay Lagoon (q.v.); area, including dependent islands, 752 square miles. The province is mountainous in the north, and in the southwest is Mt. Maquiling, 3,666 feet high; there are a number of rivers, and the soil is very fertile. All varieties of tropical plants and trees found in the Philippines grow here; the staple products are sugar, rice, corn, cotton, tobacco, indigo, cocoanut, betel nut, and fruit and vegetables. There are a number of industries, including mills for the extraction of cocoanut oil, furniture manufacture, the manufacture of cheese, and stock raising; there is considerable export trade, products being sent to all parts of the archipelago. Civil government was established in the province in July 1902. The inhabitants are mostly Tagalogs; pop. 170,000.

La Habana, Cuba. See HAVANA, PROVINCE.

Lahee, Henry Charles, American writer on musical topics: b. London, England, 2 July 1856. He was educated at St. Michael's College, Tenbury, Worcestershire, where he was chorister 1865–9, and was in the English mercantile marine 1871–9. Coming to the United States he was secretary of the New England Conservatory of Music at Boston 1891–9, and since the last named date has conducted a musical agency in Boston. He has published: 'Famous Singers of Yesterday and Today' (1898); 'Famous Violinists of Yesterday and To-day' (1899); 'Famous Pianists' (1900); 'Grand Opera in America' (1901); 'The Organ and its Masters' (1902).

Lahore, lä-hōr', India, city and capital of the Panjab, on the left bank of the Ravi, 265 miles northwest of Delhi. The city proper covers an area of 640 acres, and is surrounded by a brick wall 16 feet high, flanked by bastions. The streets are extremely narrow, and the houses have in general a mean appearance. Here are the fort, the palace of Jehanghir, the Pearl Mosque, the Great Mosque, the mausoleum of Runjeet Singh, and other attractive structures. The European quarter and the Meean Meer cantonment (at a distance of several miles) lie outside the walls on the south and southwest. Among the modern buildings and institutions are the Panjab University, the Oriental College, Medical School, Law School, Mayo Hospital, Victoria Jubilee Hall, school of art, cathedral, railway station, etc. In 1524 Lahore became the seat of the Mogul empire, under which it reached its greatest splendor. Before passing into the hands of the British it was the capital of the Sikhs. Pop. 176,854. Lahore division (commissionership) has an area of 24,872 square miles, and pop. 4,579,794. The Lahore district has an area of 3,648 square miles; pop. (1900) 1,075,379.

Laing, lāng, **Alexander Gordon,** British African explorer: b. Edinburgh, Scotland, 27 Dec. 1793; d. near Timbuktu, Africa, 26 Sept. 1826. After serving for several years in the English army, he entered on his career as an African traveler in 1822, when promoted to the command of a company in the Royal African Corps. An opportunity having presented itself of proceeding on the discovery of the course of the Niger, it was arranged that he should accompany the caravan from Tripoli to Timbuktu. He left Tripoli in July 1825, in company with the Sheik Babani, and after a tedious journey of nearly 1,000 miles arrived at Ghadames; and on 3 December reached Ensala. He quitted Ensala on 10 Jan. 1826, and on the 26th entered on the sandy desert of Tenezaroff. After some fighting with the Tuaregs he arrived at Timbuktu on 18 August, the first European who had ever reached that city. After a short stay he set out on his return, but was assassinated on 26 Sept. 1826. The murder was committed by the order of the son of the prime minister of Tripoli, whose agent Babani was. He prepared for the press a work published in 1825, under the title 'Travels in the Timmannee, Kooranko, and Soolima Countries of Western Africa.'

Laing, Malcolm, Scottish historian: b. Mainland, near Kirkwall, Orkney, 1762; d. there November 1818. He is the nephew of Samuel Laing (1780–1863). He was a lawyer by profession, and later a member of Parliament, but devoted himself principally to historical investigation. He wrote a continuation of Henry's 'History of Great Britain' (1785), and 'History of Scotland' (1800), which may be regarded as supplementary to Robertson's history. In the preliminary dissertation he presents an elaborate argument to prove Queen Mary's participation in the murder of Darnley.

Laing, Samuel, Scottish author: b. Kirkwall, Orkney, 4 Oct. 1780; d. Edinburgh 23 April 1863. Entering the army in 1805 he served in the Peninsular War and in 1834 traveled in the Scandinavian countries. He published 'Journal of a Residence in Norway 1834–6' (1836); and 'A Tour in Sweden' (1839), but is best known by his important translation of the 'Heimskringla or Icelandic Chronicle of the Kings of Norway,' with a 'Preliminary Dissertation' (1844).

Laing, Samuel, English statesman and philosophical writer: b. Edinburgh 12 Dec. 1812; d. Sydenham Hills, Kent, 6 Aug. 1897. He is the son of Samuel Laing (1780–1863). He was prominently identified with railway legislation in England, was for many years prominent in Parliament, and from 1861 to 1863 held the office of finance minister to India. Of his works, 'Modern Science and Modern Thought' (1886), and 'A Modern Zoroastrian' (1887), have occasioned some discussion. His other publications of a miscellaneous character include: 'India and China' (1863); 'A Sporting Quixote; or the Life and Adventures of the Hon. Augustus Fitzmuddle' (1886); 'The Antiquity of Man' (1890); 'Human Origins' (1892).

Laird, lārd, **David,** Canadian politician: b. New Glasgow, P. E. I., 1833. He was educated in the Presbyterian Theological Seminary at Truro, N. S., and subsequently established the 'Patriot' in Charlottetown, a journal which he edited for many years. In 1871 he became a member of the Assembly of Prince Edward Island, and after the admission of the province to the Dominion, was a member of the House of Commons, 1873–6. He was lieutenant-governor of the Northwest Territory 1876–81, and while minister of the interior 1873–6, concluded the Qu'Appelle treaty which extinguished by purchase the title of several tribes to 75,000 square miles of territory on the route of the Canadian Pacific railway.

Laird, John, English ship-builder: b. Greenock, Scotland, 14 June 1805; d. Birkenhead, Cheshire, England, 29 Oct. 1874. His ship yards were at Birkenhead, on the other side of the Mersey from Liverpool, and he was for a long time the head of the firm of John Laird and Sons. He was the first builder of iron steamships, and built the John Randolph, the Nemesis and the Alabama. The first was the earliest iron vessel that crossed the Atlantic; the second the first armed vessel of iron. The history of the Alabama is well known. He entered Parliament in 1861 when he retired from active business.

Lairesse, Gerard de, Dutch painter and etcher: b. Liège, Belgium, 1640; d. Amsterdam 11 June 1711. He was early a pupil of his father Regnier Lairesse and of Flemalles, and left them for Utrecht, and afterward Amsterdam, where he labored hard for perfection in his art. He first of all confined himself to models of the antique, and the classical ideals of Poussin. His work was thus distinguished by somewhat wearisome mannerism, and his pictures very frequently seem painted in an unnatural silvery, metallic tone. His masterpieces are to be seen in Amsterdam, Schleissheim, Cassel, and in the Louvre, Paris. His ideas on art, as dictated to his pupils and associates, together with his etchings, were published after his death in two volumes, under the title 'Het Groot Schilderboek' (1712). The work has been translated into German, French and English, and has had a great influence in the art education of the 18th century.

Lais, lā'ĭs, the name of two Greek hetæræ, celebrated for their remarkable beauty. The first lived at Corinth at the time of the Peloponnesian war; the most eminent and wealthy men of the time, including Aristippus the Cyrenaic philosopher, and Diogenes, the cynic, fell under her spell. The younger Lais was the daughter of Timandra and was born at Hyccara, Sicily, 422 B.C. She came to Corinth in her seventh year and was educated in her profession by the painter Apelles. Later in life she followed a certain Hippostratus to Thessaly, where she was stoned to death by women in the temple of Aphrodite. But it is impossible to sift the really historic from mere anecdotal tradition in the accounts of these women which have come down to us. Consult: Jacobs, 'Lais, die ältere und die jüngere' (1830); Wieland, 'Aristipp.'

Laity (Gr. λαός, the people). Those members of the church who are not included in the clergy. In the Roman Catholic Church the clergy are divided into eight orders: bishop, priest, deacon, sub-deacon, acolyte, exorcist, ostiarius, lector. By some authorities the episcopate and the priesthood are considered different degrees of the same order, and the lowest of the eight orders is said to belong to all who aspire to the priesthood, postulants or candidates, who are styled clerics. The Protestant Episcopal Church holds, as the prayer-book says, "that from the Apostles' time there have been three orders of ministers in Christ's Church, Bishops, Priests and Deacons." This does not deny the historic existence of other orders, and may be thought simply to interpret the sentence with which the pastoral letter of the first council of Jerusalem opens (Acts xv. 23): "The Apostles and Presbyters and brethren send greeting," the brethren being the laity. See CLERGY.

Lake (Lat. *lacus*), a body of water surrounded by land. Lakes are of two kinds — fresh-water and saline — and have been formed in various ways. Taking first the *fresh-water lakes,* these may be grouped as follows: (1) *Obstruction Lakes.*— Some of these are more or less temporary sheets of water, such as the lake-like expansions of certain rivers, and the deserted loops of river-channels. Other temporary lakes are due to the operations of the beaver; to the choking of the narrower passages of a river-channel by drifted vegetable debris or river-ice; or to the advance of a glacier across the mouth of a lateral valley. (2) *Crater Lakes.*— These occupy the craters of extinct or quiescent volcanoes. (3) *Sink Lakes.* — These lie in hollows caused by subsidence of the surface consequent upon the removal of underlying soluble rocks, such as rock-salt, and calcareous and gypseous rocks. (4) *Earth-movement Lakes.*— Unequal movements or warping of the earth's crust have occasionally originated hollows by direct subsidence. It is possible also that local elevation by affecting the lower ends of valleys may sometimes have obstructed the flow of rivers, and thus given rise to lakes. (5) *Glacial Lakes.*— These consist of (*a*) hollows of erosion or *rock-basins,* which have been excavated by glacier-ice, and (*b*) hollows caused by the unequal distribution or accumulation of glacial detritus during the glacial period. (6) *Subterranean Lakes.*— These are found chiefly in calcareous regions, where they occupy the underground channels which have been excavated by the chemical and mechanical action of water. *Fresh-water* lakes are very unequally distributed. They are most numerous in those regions which were overflowed by land-ice during the glacial period, as in the British Islands, Scandinavia, Finland, Canada, and the United States. Lakes occur at all heights above the sea; the most elevated being Lake Tsana in Abyssinia (7,500 feet), Lake Titicaca in the Bolivian Andes (12,500 feet, and Askal Chin in Tibet (16,600 feet). The largest lake in the world is Lake Superior, which covers an area of 31,200 square miles, and has a mean depth of about 475 feet. Lake Baikal, in central Asia, is the largest and deepest mountain lake, its area being 13,500 square miles, and its mean depth 850 feet, but in places it reaches a depth of more than 4,000 feet. Some of the mountain lakes of Europe also attain great depths; thus, Lake Geneva is 1,000 feet, Lago Maggiore 1,158 feet, and Como 1,358 feet.

Salt Lakes.— Two kinds are recognized: (*a*) portions of the sea cut off from the general oceanic area by epigene or hypogene agencies; (*b*) lakes, originally fresh-water, which have been rendered saline by evaporation and concentration. Those of the first group range in size from mere pools and lagoons up to inland seas, such as those of the great Aralo-Caspian depression. The Dead Sea and the Great Salt Lake of Utah are good examples of the second group of saline lakes, which might be defined shortly as lakes which have no outlet to the ocean. The Caspian Sea is 97 feet below the level of the Black Sea, has an area of about 170,000 square miles, and is from 2,500 to 3,000 feet deep in the deepest parts. A still more depressed area is that of the Dead Sea, the surface of which is 1,292 feet below the level of the Mediterranean Sea.

Lake. Pigments consisting of coloring matter combined with a metallic oxide are called *lakes.* They are obtained by mixing with the solution of the coloring matter a solution of alum or of a salt of tin, tungsten, zinc, or other metal, and then adding an alkali or alkaline carbonate. The precipitate which forms consists of the color combined with the oxide. Among the pigments prepared in this way may be mentioned *blue* lake, consisting of cobalt blue, indigo, or ultramarine and alumina; *madder* lake, of madder and alumina; *orange* lake, of turmeric and alumina; *carmine* lake, of cochineal and alumina, which is the finest and most important of all; *purple* lake, of logwood and alumina; and so on. The exact tint depends on the proportions of the ingredients and the mode of preparation, as the lakes do not appear to be definite compounds. Lake pigments are largely used not only in painting, but also in calico-printing, but in the latter the metallic oxide is put upon the cloth, and the color is afterward applied.

Lake Agassiz, ăg′ạ-sĭ, a glacial lake once covering a large area in the Red River Valley of Minnesota, North Dakota and Canada. The lake during its existence was larger than all the Great Lakes combined. The bed of this extinct lake is now a great plain, covered with till and silt, yielding its soil to the growth of wheat and other grain. Consult Upham, ‘The Glacial Lake Agassiz’ (1895). See also GLACIAL PERIOD.

Lake Bonneville, bon′vĭl. See GREAT SALT LAKE.

Lake Carp, a fish, *Carpiodes Thompsoni,* one of the carp-suckers (q.v.), inhabiting the Great Lakes.

Lake Charles, La., city and parish-seat of Calcasieu Parish, on the Calcasieu River, and Southern P. railroad, 216 miles west of New Orleans. Located on the banks of the picturesque Lake Charles it is one of the most attractive cities in the State. It has Acadia College, the Carnegie Library, Parish court house, high school and numerous churches. It was settled in 1849 and was first incorporated in 1860. Under a new charter of 1886, the city is governed by a mayor and common council, elected every two years. There are extensive cotton and rice mills here and a large trade in lumber. Pop. (1890) 3,442; (1900) 6,680.

Lake City, Fla., town and county-seat of Columbia County, on the Southern, the Florida C. and other railroads; 60 miles west of Jacksonville. Here is located the State Agricultural College and an agricultural experiment station. In 1901 the State legislature granted the town a new charter greatly enlarging its limits. The town has an important trade in cotton, lumber, turpentine, fruit, etc. Pop. (1890) 2,200; (1900) 4,013; (1902) 6,000.

Lake City, Minn., city in Wabasha County, on Lake Pepin and on the Chicago, M. & St. P. railroad, 57 miles southeast of St. Paul. It has a public library and high school, and numerous manufactures, including grain elevators, flour mills, wagon and carriage factories, foundries, machine shops, and an extensive nursery covering 1,400 acres. The city is governed by a mayor and council, and owns the waterworks and electric light plant. Pop. (1890) 2,128; (1900) 2,744.

Lake Cusk, or **Lake Lawyer,** the American cusk. See CUSK.

Lake Dwellings are those constructed on artificial or partly artificial islands in lakes. The use of habitations of this nature is a subject which has engaged the attention of archæologists and others very largely since the discovery of the remains of a lake dwelling in Ireland in 1839, of similar ones in Switzerland in 1854, and subsequently of numbers of others elsewhere. The archæological interest thus attaching to these remains has drawn attention to similar dwellings being still used in various parts of the world, in Russia, the Malay Archipelago, Venezuela, New Zealand, and in a modified form in some parts of Central Africa. The first who is known to have described lake dwellings is Herodotus, who mentions that the Persians in their invasion of Thrace and Macedonia in the beginning of the 5th century B.C. found certain tribes inhabiting Lake Prasias, whose dwellings were constructed on platforms supported above the surface of the lake by piles driven into its bottom.

The lake dwellings are built after two chief types, one of which has an Irish name, *crannogs*, given to it, from the fact that those of this type are chiefly found in Ireland; and the other of which has a German name, *Pfahlbauten*, because those of this type were first found in Switzerland. Crannogs are made in the following way: Great quantities of small stems, sticks, and the like, are collected and sunk by means of stones in the lake, so as to form an island. Very often advantage is taken of the existence of an island just level with the surface of the water, which can be raised a foot or two above the surface with comparatively little labor. Sometimes a few upright piles are driven in on the top after the chief part of the island has been made in the manner described. When the island is thus raised to a sufficient height it is frequently strengthened by an enclosure of stakes driven into the bottom of the lake perpendicularly. A platform of thin stems of trees, either round or split into boards, is then made on top of the island, and this supports the structures that are built on them. The crannogs of Ireland appear to have been rather used as strongholds than as dwellings.

Pfahlbauten or pile dwellings are made by driving piles into the lake bottom as a support for the platforms on which the dwellings are erected. The piles are sharpened at the lower end, and an examination shows the sharpening to have been performed partly by heat and partly by some cutting instrument, either of stone, bronze, or iron, as is proved by the fact of such instruments frequently being found on the dwellings. Greater solidity and compactness is sometimes given to the structure of vertical piles by means of stakes transversely inserted between them or notched on to them just below the top. In other cases heaps of stones are thrown down between the upright stakes, forming what is called in Germany a *Steinberg*. The upper ends of the vertical piles are brought to an exact level to allow a platform to rest on them similar to that of a crannog. Coarse gravel was frequently strewed over the platform to keep it dry, and the interstices were often filled up with mud. It was also common to make a hurdle wall round the whole artificial island by means of small branches and twigs interwoven between the outermost stakes. Huts were built on the platform in a similar manner to the rest of the structure. The walls were of stakes bound together by wattles, and covered over by a thick clay, and the roofs were probably thatched. A single platform was in many cases large enough to support a considerable number of huts. Among works on the subject consult: Munro, 'Ancient Scottish Lake-dwellings' (1882); Wood Martin, 'Lake-dwellings of Ireland' (1886); and Munro, 'Lake-dwellings of Europe' (1890).

Lake Forest, Ill., city in Lake County, on Lake Michigan, and on the Chicago & N. W. railroad, 28 miles north of Chicago. It is a suburban and residential town without industries or manufactories. There is here a seminary for young ladies, a public library, an academy for boys and Lake Forest University (q.v.). It was settled in 1859, and is governed by a mayor and council elected every two years. Pop. (1890) 1,200; (1900) 2,215.

Lake Forest College, a school for both sexes at Lake Forest, Ill. The history of the institution shows that in 1855 a number of citizens of Chicago, under the leadership of the Rev. Robert W. Patterson, formed an association for the purpose of establishing an educational institution near Chicago which, despite its proximity to the city, would always retain the advantages of a rural situation. In February 1856 the Lake Forest Association was organized, and the 1,300 acres of land along the shore of Lake Michigan, 28 miles from Chicago, were purchased by the association, which is now the site of the town of Lake Forest. Half of the land was to be association property, every alternate lot being set aside for the university, and 62 acres being left for an «inalienable campus.» The educational institution was chartered on 13 Feb. 1857, under the title Lind University. This name was changed in 1865 to Lake Forest University. The boys' department was opened first, and through the bequest of $35,000 from the Rev. W. W. Ferry the school for girls was founded 11 years later. The college department, known as Lake Forest College, was opened in September 1876. The institution was founded by Presbyterians, but it is not denominational in its character. It has 127 professors, 1,400 students, 21,000 volumes in the library, and an income of $120,000; productive funds $500,000; value of grounds and buildings $700,000. Lake Forest College is also attracting favorable notice from the literary world, owing to the fact that it has received a large endowment for a prize, a library and a lectureship, which, it is believed, will attract as much attention in the United States as the famous Bampton and Gifford lectures have done in Great Britain.

Lake of the Four Forest Cantons, a common name for the Lake of Lucerne. The city of Lucerne, and the towns of Küsnacht, Brunnen, and Flüelen are on its shores.

Lake Geneva, jĕ-nē'vạ, Wis., city in Walworth County, on the Chicago & N. W. railroad, 70 miles northwest of Chicago. Situated on Lake Geneva, the city has developed into a popular summer resort. The lake is 9 miles long and from 1 to 3 miles in width, and is fed entirely by springs. The Yerkes Observatory, belonging to the University of Chicago, is located here. There are numerous large hotels, churches, schools, a public library and other buildings. The city was incorporated in 1893 and is governed by a mayor and council elected annually. Pop. (1890) 2,290; (1900) 2,600.

Lake Herring, or **Lake Whiting**, a local name for certain whitefish of the Great Lakes, especially the cisco (q.v.).

Lake Lahon'tan, an extinct lake which once existed in the western part of Nevada. The pebbly beaches, and other shore-line marks are still quite distinct. It, like Lake Bonneville, in Utah, belonged to the glacial period, when what is known now as the Great Basin had much larger bodies of water than exist now in the same section. The place occupied by

Lake Lahontan is at present a saline waste, with here and there small salt lakes. Consult: U. S. Geological Survey, Monograph 11 (1885); Russell, 'Geological History of Lake Lahontan.'

Lake School, or **Lakists,** a name formerly given to certain British poets who came forward conspicuously at the beginning of the 19th century, and endeavored to substitute a natural and simple taste for the classicism of which Addison and Pope furnish leading examples. They received their name from the picturesque lakes of Cumberland and Westmoreland, where Wordsworth, Coleridge, Southey, Wilson, and others, had fixed their residence permanently or for a time.

Lake Silversides. See SILVERSIDES.

Lake State, The, a popular name given to Michigan. Its shores are watered by Lakes Superior, Michigan, Huron, and Erie. The Indian word Michigan signifies «great lake.»

Lake Sturgeon, the great sturgeon (*Accipenser rubicundus*) of the Great Lake region. See STURGEON.

Lake Trout, two salmonoid fishes of the genus *Cristivomer* inhabiting lakes in the northern United States and southern Canada, (1) the Great Lake trout (*C. namaycush*); and (2) the siscowet (*C. siscowet*). The former, and more important, occurs in most of the larger lakes and ponds from New Brunswick to Idaho and Vancouver Island, and throughout northern Canada and Alaska. The Canadians call it namaycush, and by other Indian names; in Maine and Vermont it is known as «togue» and «longe» respectively; and on the upper Great Lakes as Mackinaw trout. It is the largest of the trout family, sometimes exceeding 100 pounds in weight, but the average specimen weighs from 15 to 20 pounds; the biggest fish are found in the largest and deepest lakes. It is trout-like in form, thin-skinned, with little or no underlying fatty tissue, and dark gray spotted with round paler spots sometimes of a slightly reddish tinge. It is fierce and voracious, seizing and feeding upon «all fishes with soft fins» and anything else edible that falls in its way; and when mature it can hold its own against any other depredator, so that it may be regarded as ruler of the lakes. It spawns on the reefs in the late autumn, but otherwise dwells in the deeper waters; Jordan says that the usual number of eggs deposited at one spawning is only 5,000 or 6,000. As a game-fish it seems variable, in some waters affording good sport by trolling with a spoon-bait or live minnow, and in others having small repute among anglers. All agree, however, as to the excellence of its flesh on the table; and it furnishes a commercial fishery on the Great Lakes only excelled in importance by that for whitefish. These trout are usually caught by vast gill-nets operated by steam vessels, and three or four tons are sometimes taken in a single haul. About 1885 the supply in the Great Lakes was diminished to an alarming extent; but artificial propagation by the State and National governments soon restored the quantity, so that at the beginning of the present century more could be taken by fishermen than could profitably be sold. It is outranked in market-price and demand, however, by the whitefish.

The siscowet is very similar, but has a deeper body, thicker skin, beneath which is an excessive development of fatty tissue, and paler coloration. It is rarely seen outside of Lake Superior, where it is numerous in deep water. Consult: Goode, 'American Fishes' (1888); Jordan and Evermann, 'American Food and Game Fishes' (1902); Sage and Cheney, 'Salmon Trout' (1902).

Lake of the Woods, a boundary lake, partly in the Province of Ontario, Canada, and partly within the State of Minnesota, 220 miles west of Lake Superior, and 377 feet above its level. It is broken by one long promontory and several smaller ones into distinct portions, of which only the southern, containing Big Island, is properly designated the Lake of the Woods, while the eastern bears the name of White Fish Bay, the northern, which is studded with islands, being called Clear Water Lake, and the northwestern, Shoal Lake. The whole expanse of water forms a single lake of very irregular shape about 70 miles in length and 60 in breadth, the water area being about 1,500 square miles. Rainy River, the principal feeder of the lake, enters it at its southeastern extremity, just below Fort Louise; its discharge is at the north by the Winnipeg. It abounds with sturgeon. The boundary between Canada and the United States follows the Rainy River to its mouth in the lake, and then proceeds across the lake in such a way as to leave Big Island to Canada, whilst giving most of the Lake of the Woods proper to Minnesota. A little west of the meridian of 95° the boundary strikes due south to meet the parallel of 49°, which is then followed, the result being that the United States owns an isolated portion of the land on the northwest shore. There are gold mines in the neighborhood.

Lake-to-Sea Commission. In 1903 President Roosevelt appointed three commissioners to act in behalf of the United States in co-operation with a similar body representing Great Britain, to investigate the question of water routes from the Great Lakes to the Atlantic Ocean. The authority for the President's action is contained in the River and Harbor bill. The commissioners are particularly required «to report upon the advisability of locating a dam at the outlet of Lake Erie.» The project which this commission is charged to examine is so vast, not only in its bearing upon the inland commerce of the North American continent, but in its possible effect upon the political relations between the United States and Canada, that its serious consideration by a body of official experts representing the two governments directly concerned becomes a matter of international interest. The idea of an international commission to inquire and report upon the effect of the diversion of the waters of the Great Lakes originated several years since with the Hon. Andrew H. Green of New York, who for nearly 20 years from its organization was a member of a Commission of the State Reservation at Niagara Falls.

Lake'wood, N. J., township and village of the same name in Ocean County; the town is a famous health and winter resort, surrounded by an extensive pine forest, in which are numerous lakes. Here are numbers of large hotels and many cottages owned by residents of New York and Philadelphia. Known for more than a score of years to a few, discovered and originally promoted by men who found here the conditions which were a necessity of long life, and developed and made successful by the presence of manifold advantages, Lakewood is known on both sides of the ocean, among the most critical and intelligent travelers from Canada to the Gulf and from the Atlantic to the Golden Gate, in Europe and on the Continent, as the most popular resort in America's Middle East. Lakewood has grown steadily in its normal population, as well as its taxable inventory. Its streets and avenues, carefully laid out and well built of stone, are kept in perfect repair during the season, and afford one of the chief charms of the place in an almost endless variety of drives. The lakes of the place, among its great charms, are protected carefully from contamination, and at once furnish an adequate water supply for fire purposes, are points of much attraction at the infrequent times when skating is available, and throughout the season a picturesque viewpoint, admired by thousands. Pop. (1900) 3,094.

Lakey, Emily Jane, American artist: b. Quincy, N. Y., 22 June 1837; d. Cranford, N. J., 24 Oct. 1896. She received her art education at the National Academy of Design in 1873 and in Paris, and made a specialty of cattle pieces. Among her paintings of this character are: ‘The Leader of the Herd’; ‘An Anxious Mother’; ‘The Right of Way’; ‘From Pasture to Pool.’

Lakshmi, lăksh′mē (Prosperity), in Hindu mythology, the wife of Vishnu and the goddess of fortune. She is the female or creative energy of Vishnu, and hence is in many cases regarded as an expression of the attributes of Vishnu. She is said to have been produced from the ocean of milk when churned by the gods to obtain the beverage of immortality. She was thus born in the full flush of beauty, adorned with a diadem, and with gems on her neck and arms, bearing in her hand a lotus. As soon as she was born she betook herself to the bosom of Vishnu, to whom she was ever faithful. According to a later view, that of the worshippers of Vishnu, this god produced three goddesses, Brâhmî, Lakshmî, and Chandika, the first his creative, the second his preserving, and the third his destroying energy.

Lala, Ramon Reyes, American author: b. Manila, Philippine Islands, 1 March 1857. He was educated in Hong Kong, London, and Switzerland, and after traveling extensively, returned to Manila and engaged in business. By reason of Spanish oppression he came to the United States, and was the first Filipino ever naturalized here. He became widely known in the United States as a lecturer on his native country and has published ‘The Philippine Islands’ (1898), and many magazine articles on allied topics.

Lalande, Joseph Jérome le Français de, zhō-zĕf zhā-rōm lė fräṅ-sā dė lä-läṅd, French astronomer: b. Bourg-en-Bresse, Ain, 11 July 1732; d. Paris 4 April 1807. He devoted himself to mathematics and astronomy, and was sent by the Academy in 1751 to Berlin to determine the parallax of the moon, while Lacaille went with the same object to the Cape of Good Hope. After having finished his operations at Berlin, he was chosen member of the Academy of Sciences in Paris in the year 1753. Thenceforward no volume of their ‘Transactions’ appeared which did not contain some important communications from him. In 1762 he was appointed professor of astronomy in the Collège de France, where he lectured with great success to the end of his life. His chief works are his ‘Treatise on Astronomy’ (1764); ‘History, Theory, and Practice of Navigation’; and ‘Astronomical Bibliography.’ He wrote all the astronomical articles for the great ‘Encyclopédie,’ and re-wrote them for the ‘Encyclopédie Méthodique,’ and contributed to various scientific periodicals, besides editing the ‘Connaissance des Temps’ from 1760 to 1775, and from 1794 till his death.

Lalande's Dog. See Cape Fox.

Lalemant, läl-mäṅ, **Gabriel,** French Jesuit missionary in America: b. Paris 1610; d. Huron mission, New France, 1649. He was a nephew of Jérôme Lalemant (q.v.). In 1630 he entered the Jesuit Order, in 1646 went to New France, and was appointed to the mission among the Hurons. During the fatal invasion of the Huron country by the Iroquois he was taken prisoner, tortured, and killed.

Lalemant, Jerôme, zhā-rōm, French Jesuit missionary in America: b. France 1593; d. New France 1673. In 1609 (or 1610) he entered the Jesuit Order, then taught in educational institutions of the order, and in 1638–45 was superior of Huron Jesuit mission in New France. In 1645–50 he was superior of all the missions at New France. After a sojourn in France (1650–9), he returned to America to resume his post. Letters and reports by him appear in the great compilation of the ‘Jesuit Relations’ (1896–1901). Consult also Parkman, ‘The Jesuits in North America’ (new ed. 1898).

Lalita-Vistara, lă-lĭ-tạ-vĭs′tạ-rạ, one of the most celebrated works of Buddhistic literature, of unknown origin and antiquity, existing only in a Sanskrit version. It contains a narrative of the life and doctrine of the Buddha Sakyamuni, and is considered by the Buddhists as one of their chief works treating of religious law.

Lalla Rookh, lăl′ạ-rook, the greatest and most complete of all the poetic works of Thomas Moore. It consists of four narratives, of which ‘Paradise and the Peri’ is the finest and most popular. The scene is laid in the Far East, and the learning and ingenuity of the poet, as well as his brilliant imagery and musical versification combine to produce an oriental romance unequaled in the English language. The four stories are told to Lalla Rookh by her lover who attends her on a journey in the disguise of a minstrel. ‘Lalla Rookh’ was first published in 1817.

L'Allegro, läl-lā′grō, the title of a famous lyrical poem by John Milton, written about 1632.

Lally-Tollendal, lä-lē-tŏ-lŏṅ-däl, **Thomas Arthur,** Comte: b. Romans Dauphiné 1702; d. 9 May 1766. He was of Irish parentage, his father having followed the fortunes of James II. Trained to arms, he was made brigadier on the field of Fontenoy for distinguished bravery. He accompanied the Pretender to Scotland in 1745, and in 1756 was selected to restore the French influence in India, for which purpose he was made governor of Pondicherry. He failed in this, surrendered Pondicherry in 1761, and was brought prisoner to England. The following month he was allowed to return to France, where, after a long imprisonment, he was condemned and executed (1766) for treachery, etc. His son (Trophime Gerard, 1751–1830), supported by Voltaire, obtained in 1778 a complete authoritative vindication of his father's conduct.

Lamaism, lä'mạ-ĭzm, an Asiatic religious belief, which is a mixture of Buddhism (see BUDDHA), Sivaism (see SIVA) and Shamanism (q.v.). It prevails from the borders of Tibet to the banks of the Volga. It is the religion of Manchuria, Mongolia and Siberia, and is found in various localities in China proper. Its adherents number more than 10,000,000.

History.— Lamaism was not known in Tibet before the 7th century A.D., when two Buddhist princesses, one from India, the other from China, shared the throne of King Sron Tsan, who adopted their religious belief. One of his successors, Thi Sron Detsan, invited Padma-Sambhava, a Buddhist monk, to preach the doctrine of the «Enlightened One» throughout the kingdom. Padma-Sambhava accordingly set about with royal authority to check witchcraft and devil worship. He established, moreover, an order of Lama priests. Lamaism, however, did not reach its culmination of power until Nag-wan Lozang, the fifth Grand Lama, was in 1640 made Dalai Lama (Ocean wide Lama), and united the authority of church and state in one individual. The modern period of this Asiatic cult dates from this epoch.

Doctrine and Religious Belief.— When Padma-Sambhava first preached Buddhism to the Tibetans he took great pains to adapt it to the capacity of his hearers, and even to their prejudices. He therefore accepted their assent or conformity as sufficient evidence of their belief. It was impossible to drive out their ancestral mysticism, practice of magic, and devil worship, and all of these continued to form elements in Lamaism. In this system the cosmogony of Buddhism is preserved intact with the Buddhistic conception of heaven and hell, and the Buddhistic canon of morality, and, like the system of the «Enlightened One,» Lamaism knows no worship but that of saints. Its essential creed comprises «the three most precious jewels,» namely, «the Buddha-jewel,» the «doctrine-jewel,» and the «priesthood-jewel.» Buddha is not god nor creator; but merely the founder of a doctrine, saintly, preeminently wise, powerful, virtuous and beautiful. The doctrine is the embodiment or incarnation of Buddha, all that remained of him on earth after his absorption in Nirvana. The priesthood comprises the incarnate and non-incarnate saints, among whom are the five Buddhas of Contemplation, and myriads of solitaries who attain perfection without Buddha, besides men of supreme holiness, destined to be canonized after death. In an inferior position to these saints stand spirits, whose kings are Indra (q.v.), god of the firmament; Yama (q.v.), god of death and hell; Yamantaka or Siva as the avenger; Vaisravana (q.v.), god of wealth; besides numerous guardian and other demons who receive worship. The worship of Lamaism is conducted with prayer, reading, hymn-singing, accompanied with loud music. The clergy are summoned by the sound of a bell; the shrines and altars are brightly adorned on festivals, and offerings are made of tea, flour and milk, etc., offerings of flesh being forbidden. Rosaries, prayer wheels, amulets, charms and symbols are employed by the priests, while sometimes a part of public worship is taken up with rites of magic; charms are recited, spells are cast, incantations made, while the worshippers consult those who are reputed to be diviners, necromancers, or astrologers.

Religious Festivals.— The three principal are the New Year, in February, when the return of spring is celebrated as the triumph of Buddha, the «Enlightened One,» over six heretical teachers. The second festival is held in commemoration of the incarnation of Buddha and marks the day of his mundane conception; it is the most ancient of these holy days. Third in order comes the Water Festival, marking the approach of autumn and the fall of fertilizing rain.

Religious Rites.— The two principal rites in Lamaism are baptism, and admission to discipleship, the former administered the 3d or 10th day after birth; the latter, as soon as the child can walk and speak. Marriage is a civil contract, but the lama fixes the day, and is feed accordingly; he also receives gifts for rescuing the dead from Yama by religious rites and incantations. It is the lama or priest that attends the dying man or woman, to see that dissolution between body and soul is properly accomplished, and to guide the soul to the western paradise.

Hierarchy.— There are two hierarchs, or spiritual heads, to the followers of Lamaism, Dalai-Lama (Ocean wide Lama), whose seat is at the hill of Potala, near Lhasa, who is really the head and chief of the hierarchy, and all Lamaists in Tibet, Mongolia and China are his children and subjects; the other is Teush-Lama. His official title is «the great teacher-jewel.» There are two ranks below these. These orders are supposed to be the reincarnations of the Buddhist saints. The subject of reincarnation plays a prominent part in Lamaism. When the Grand Lama dies his soul is reborn in some child whose birth is coincident in time with his death. Who this child may be out of the many born at that moment used to be decided by lot, unless the deceased had announced before his death the name of the family in which he was about to reappear. At present the emperor of China has great influence in deciding the point.

There are four orders of inferior clergy who generally live in lamaseries or convents and make no claim to be reincarnations of the saints. The lamasery consists of a central temple surrounded by buildings — cells, library, refectory, etc. There are nunneries also where women live in prayer, study and celibacy, but these are few in number.

The Scriptures.— The sacred books are very numerous and make up from 222 to 228 volumes. First is the canon, a collection of the commands or sayings of Buddha. Second is the commentary. The canon contains 1,083 works, which fill more than 100 volumes of 1,000 pages each. It comprises the following subjects: (1) Discipline, (2) Sermons, or homilies of the various Buddhas, (3) Philosophy and metaphysics. There are also treatises on Nirvana (q.v.), ethics, ritual, etc. Consult: Rockhill, ‘The Life of Buddha, and the Early History of his Order’ (1884); Köppen, ‘Die lamaische Hierarchie und Kirche’ (1859); Waddell, ‘The Buddhism of Tibet’ (1895).

Lamar, lä-mär′, or **Lamar y Cortezar,** lä-mär′ ē kōr-tā-thär′, **José,** hō-sā′, Spanish-American general: b. Cuenca, Ecuador, 1778; d. San Jose, Costa Rica, 11 Oct. 1830. He went to Spain in his youth, and entering the army there fought against the French at Saragossa. He was ordered to Peru in 1815, and was governor of Callao Castle at the time of its surrender, 21 Sept. 1821. He then joined the revolutionists and in 1824 became marshal. He was elected president of Peru in 1827, caused the deposition of Sucre, president of Bolivia; provoked a war with Colombia, in which he was defeated, and on 29 June 1829 was deposed by his own officers and exiled.

Lamar, Lucius Quintus Cincinnatus, American jurist: b. Eatonton, Putnam County, Ga., 1 Sept. 1825; d. Macon, Ga., 23 Jan. 1893. He was graduated from Emory College (Oxford, Ga.), studied law at Macon, was admitted to the bar in 1847; removed in 1849 to Oxford, Miss., was there professor of mathematics in the University of Mississippi (1850–2), in 1852–5 practised at Covington, Ga., was elected to the Georgia legislature in 1853, and having returned in 1855 to Mississippi, was there elected representative in Congress in 1857 and 1859. In 1860 he resigned his seat in Congress; drafted Mississippi's ordinance of secession; and was a member of the State convention that passed it (9 Jan. 1861). Chosen lieutenant-colonel of the first Confederate regiment organized in Mississippi, he resigned from military service in October 1862, and in 1863–4 was in Europe, whither he had gone as commissioner to Russia, though he did not proceed to his post. After the war he held the chairs of ethics and metaphysics (1866–7) and of law (1867–70) in the University of Mississippi; was a representative in Congress (1873–7) and a United States senator (1877–85); and secretary of the Interior (1885–8). From 1888 he was an associate justice of the United States Supreme Court. On 27 April 1874 he pronounced before the House a eulogy on Charles Sumner, highly praised for its eloquence and generally for its liberal tone, but so displeasing in that respect to many of his constituency that they endeavored to defeat his re-election. His strong opposition to the debasement or inflation of the national currency caused the Mississippi legislature formally to direct him to renounce either his views or his seat in the Senate, both of which he declined to do. He was re-elected to the Senate by an increased majority. His oration at the dedication of the monument to John C. Calhoun at Charleston, S. C. (1887), was one of the best of his public addresses. Consult the study by Mayes, including Lamar's speeches (1896).

Lamar, la-mär′, **Mirabeau Buonaparte,** American politician, second president of the republic of Texas: b. Louisville, Ga., 16 Aug. 1798; d. Richmond, Texas, 19 Dec. 1859. After being employed a number of years in mercantile business and farming, he established in 1828 the ‘Columbus Inquirer,’ a journal devoted to the defense of State rights, and was actively engaged in politics until his removal in 1835 to Texas. Arriving there at the outbreak of the revolution, he at once sided with the party in favor of independence, and participated in the battle of San Jacinto, to the successful issue of which the charge of the cavalry under his command greatly contributed. He was soon after called into the cabinet as attorney-general, a position which he subsequently exchanged for that of secretary of war. In 1836 he was elected the first vice-president of Texas, having for some months previous held the rank of major-general in the army. In 1838 he was elected president, in which office he remained until 1841. Upon the breaking out of war between Mexico and the United States in 1846, he joined Gen. Taylor at Matamoras, and fought at the battle of Monterey. He subsequently stationed himself with an armed force at Laredo, where for two years he was engaged in constant conflicts with the Comanches, whose depredations on the frontier he greatly curtailed. The last public position which he held was that of United States minister to Nicaragua and Costa Rica, from which he had but lately returned when he died. He published ‘Verse Memorials’ (1857).

Lamar, William Bailey, American politician: b. Jefferson County, Fla., 12 June 1853. He was educated at the University of Georgia and was graduated from the Lebanon Law School, Tenn., in 1875. He was admitted to the bar in that year, practised in Tupelo, Miss., 1875–6, and then returning to Florida was clerk of the circuit court of his native county 1877–81, and county judge 1883–6. He entered the Florida legislature in 1886, was attorney-general of his State 1888–1902, and became a member of Congress from the 3d Florida district in 1903.

Lamar, Mo., city and county-seat of Barton County, on the Spring River and the Missouri P. and the Kansas City, Ft. S. & M. R.R.'s; 39 miles north of Joplin. Lamar College is located here. The city has extensive coal mining and lumbering interests and is the centre of a large agricultural district. It has a large flour trade. Pop. (1890) 2,860; (1900) 2,737.

Lamarck, Jean Baptiste Pierre Antoine de Monet, Chevalier de, French scientist: b. Bazentin, Picardy, 1 Aug. 1744; d. Paris 18 Dec. 1829. He was of noble family, entered the army in 1760, but was compelled on account of an accident, to abandon active military service, after which he devoted his attention to study, first to medicine; afterward, after hearing Jussieu's illustrations of botany, he turned to the study of that science. Jussieu had intimated that the old method of classification in botany was defective and Lamarck determined to remedy the deficiency. He labored with great diligence on a treatise in which he showed the defects of the old classification, and proposed a new one, which met with general approval. He then applied his new system to the plants of France, and delivered to the Academy his ‘Flore

L. Q. C. LAMAR.

LATE JUSTICE OF THE UNITED STATES SUPREME COURT.

Française, ou Description succincte de toutes les Plantes qui croissent naturellement en France.› This work was printed, by the recommendation of the Academy, at the expense of the government, for the benefit of the author (1780). Lamarck now turned his whole attention to botanical research, and made several excursions to Auvergne, and into Germany, in the last of which he was accompanied by the son of Buffon. On his return to Paris he undertook the botanical department of the encyclopædia which Panckoucke was publishing, and applied himself to this task with such assiduity that, in 1783, he produced the first half of the first volume, with an introduction, containing a sketch of the history of the science. He published the second volume in 1788. But a dispute between him and the publisher brought the undertaking to a stand, and ended Lamarck's botanical career. At the breaking out of the Revolution he was the second professor in the royal Jardin des Plantés, but in consequence of new arrangements he received a chair in the department of zoology, in which he was soon as much distinguished as he had been in botany. In his writings he shows himself a real forerunner of Darwin. Lamarck's comprehensive mind was also directed toward physics, and he published in 1794 ‹Recherches sur les Causes des Principaux Faits Physiques,› in which he exposes many false theories. With the same view he also wrote his ‹Refutation de la Theorie Pneumatique,› etc., which appeared in Paris in 1796.

The most permanently important work of Lamarck is his ‹Philosophie Zoologique,› although at the time it was published, it excited little attention. He was doubtless familiar with Erasmus Darwin's ‹Love of the Plants,› which in spite of its many absurdities contained some premonitions of the great discoveries to be made by the author's greater grandson. The essence of Lamarck's theory may be stated in the following propositions: (1) Every considerable and sustained change in the conditions of life produces a real change in the needs of the animals involved; (2) change of needs involves new habits; (3) altered function evokes change of structure, for parts formerly less used become with increased exercise more highly developed, other organs in default of use deteriorate and finally disappear, while new parts gradually arise in the organism by its own efforts from within (*efforts de son sentiment intérieur*); (4) gains or losses due to use or disuse are transmitted from parents to offspring. The main point is of course contained in the last proposition, which is controverted by Darwin and Weismann, and their adherents in England and Germany. There is, however, a Lamarckian school of considerable influence in Paris, and the Neo-Lamarckians of the United States, including Cope, Hyatt and Packard, have much to support their "laws of growth" as involving the inherited effects of use, disuse and new environments. See DARWIN; EVOLUTION; HEREDITY.

Consult: Butler, ‹Evolution, New and Old› (1879); Claus, ‹Lamarck als Begründer der Descendenztheorie› (1888); Haeckel, ‹Die Naturanschauung von Darwin, Goethe und Lamarck› (1882).

Lamarckism, la-mär'kĭzm. The theory of organic evolution which, in brief, accounts for the origin of life-forms by change of environment, the exercise or use, and the disuse of organs, and the transmission of characteristics acquired during the life-time of the individual. It differs from Darwinism in lacking the principle of natural selection.

History of the Rise of the Theory.— Lamarck in 1801, after 25 years' experience as a botanist, and when as a systematic zoologist he had devoted 10 years of labor in classifying the invertebrate animals of the Paris Museum, then the most extensive zoological collection in the world, published a lecture, delivered in 1800, in which he claimed that time without limit and favorable conditions of life are the two principal means or factors in the production of plants and animals. Under the head of favorable conditions he enumerates variations in climate, temperature, change of habits, variation in means of living, of preservation of life, of means of defense, and varying modes of reproduction. As the result of the action of these different agencies or factors, the faculties of animals, developed and strengthened by use, become diversified by the new habits, so that by slow degrees the new structures and organs thus arising become preserved and transmitted by heredity. Although Lamarck did not discover the principle of natural selection, he recognized the fact of competition, of a struggle for existence, but did not dwell on them to the extent that Darwin and later observers did. In 1802, 1803, and 1806 he reiterated and somewhat extended these views, which were published in final form in 1809, in his ‹Philosophie Zoologique,› and again in 1815, in the introduction to his ‹Animaux sans Vertèbres.› By this time Lamarck had become the greatest zoologist of the period between Linné and Cuvier. He was expert in detecting the limits between species, and has given us the best definition extant of a species.

Lamarck's Factors of Organic Evolution.— These in their essential form are contained in his famous two laws:

First Law.— In every animal which has not exceeded the term of its development, the more frequent and sustained use of any organ gradually strengthens this organ, develops and enlarges it, and gives it a strength proportioned to the length of time of such use; while the constant lack of use of such an organ imperceptibly weakens it, causes it to become reduced, progressively diminishes its faculties, and ends in its disappearance.

Second Law.— Everything which nature has caused individuals to acquire or lose by the influence of the circumstances to which their race may be for a long time exposed, and consequently by the influence of the predominant use of such an organ, or by that of the constant lack of use of such part, it preserves by heredity (*génération*) and passes on to the new individuals which descend from it, provided that the changes thus acquired are common to both sexes, or to those which have given origin to these new individuals.

Lamarck also insisted that animals are modified in accordance with the diversity of their surroundings; that local causes, such as differences in soil, climate, etc., give rise to variations and that the whole surface of the earth affords a diversity in localities and habits, one region differing from another, that though the environment remains the same for a long time and species remain constant for that period, yet there is a slow, gradual change, and species are modified in adaptation to such changes. Moreover such changes induce alterations in the wants or needs of animals; this necessitates other movements or actions to satisfy the new needs, and hence they give origin to new habits, and this leads to the use or exercise of some organ or organs in a new direction, with the result that different parts or organs are modified in adaptation to the new surroundings and necessities of existence. All this is perfectly true. We now know that by geographical changes or from lack of food animals are compelled to migrate into new regions, and are there obliged to adopt new habits and become transformed into new species or types. Thus whales have descended from terrestrial forms; the baleen whale has in its embryo stage rudimentary teeth showing that it is a descendant of toothed whales. Lamarck refers to Geoffroy's discovery in embryo birds of the groove where teeth should be situated, and subsequently fossil birds with teeth were unearthed. The mole with its functionless eyes, due to underground life, the blind *Proteus* of Austrian caves, the headless and eyeless bivalve mollusks, these parts lost by disuse; the evolution by atrophy of the limbs of the snake, due to their lack of use in passing through narrow places; wingless insects whose wings have been lost by disuse; the webs between the toes of ducks, geese, as well as those in the feet of the frogs, sea turtles, otter and beaver, are mentioned by Lamarck as examples of the effects of use and exercise. Other examples of use results are the origin of horns in ruminants; the long neck of the giraffe, which by the absence of herbage was obliged to browse on the foliage of trees «and to make continual efforts to reach it,» the shapes of the carnivores, of the kangaroo and of the sloth, which are accounted for by the necessity of their adopting new habits, and, by exercise in new directions, becoming adapted to the new conditions of life. Although Lamarck gave few illustrations, it may be doubted whether any one has since his day more satisfactorily explained the origin of such forms or modifications. Lamarck also accounts for the origin of man, suggesting in a tentative way his rise from an arboreal or apelike creature, with a detailed hypothesis of the gradual process of his transformation, into a being with an upright posture, an enlarged brain, powers of reason, and other human qualities. But besides these special cases Lamarck was broad and comprehensive in his views of nature and creation. He was the first to show that the animal series was not a continuous chain of being, but rather should be compared to a tree, with its branches. In fact he was the first to construct a genealogical tree, the first attempt at a phylogeny of the animal world. He demanded unlimited time for the process of evolution. He anticipated the uniformitarian views of Lyell. He pointed out that where, as in Egypt, the climatic conditions have remained the same for many centuries, species have remained constant, but that under a varying environment they become modified. He writes of the struggle for existence, shows that the stronger devour the weaker; he refers to the principle of competition in the case of the sloth. He repeatedly insists on the fact that vestigial structures are the remains of organs which were actively used by the ancestors of existing forms. He shows, what is much insisted on at the present day, that change of functions in organs leads to their transformation or recreation, and that the assumption of new habits precede the origin of new, or the modification of organs already formed. A great deal is now said of the effects of migration and consequent geographical isolation in the origination of new species; Lamarck invoked this factor in the case of man, and he also pointed out the swamping effects of intercrossing. Lamarck's theory of use-inheritance is denied by some, but by others is regarded as an important factor in evolution. He does not, however, refer to the inheritance of mutilations, etc.

All these views lie at the foundation of the theory of organic evolution; yet Lamarck's opinions were set aside, misunderstood, and ridiculed. Some crude and ungrounded hypotheses were mingled with them. In his time the sciences of palæontology, embryology, and bionomics were undeveloped. Lamarck collected but few facts, and he lacked the experimental skill of Darwin; so that it was reserved for the latter naturalist, half a century later, to convert the world to a belief in evolution. At present, however, it is acknowledged that Lamarckism affords the fundamental principles on which rests the theory of organic evolution, and many of the most eminent naturalists have worked and are working along Lamarckian lines.

Consult: Packard, ‹Lamarck, the Founder of Evolution: His Life and Work, with Translations of his Writings on Organic Evolution› (New York, 1901); H. Spencer, ‹Factors of Organic Evolution› (New York, 1895); Cope, ‹The Primary Factors of Organic Evolution› (Chicago, 1896). ALPHEUS S. PACKARD,

Late Professor of Zoology, Brown University.

Lamartine, Alphonse de, French poet and statesman: b. near Macon, Burgundy, 21 Oct. 1790; d. Paris March 1869. After being educated at the Jesuit College, at Belley, he spent some years without any definite occupation, devoting himself chiefly to poetry. By his first production, ‹Méditations poétiques› (1820), he at once obtained a high place among the poets of the day. The ‹Nouvelles Méditations poétiques› (1823) and the ‹Harmonies poétiques et religieuses› (1828) established his poetic fame, and obtained for him admission into the French Academy (1830). In 1837 he was elected a member of the Chamber of Deputies. He still continued to write poetry, but his ‹Jocelyn› (1835), ‹La Chute d'un Ange› (1838), and ‹Recueillements Poétiques› (1839), exhibited a marked falling off from his earlier performances. In the Chamber, where he represented Bergues, Le Nord, till 1848, his fame as a political orator steadily increased. Holding liberal-conservative views, he was for a time the head of a small independent party calling itself «Le parti social,» which aimed at the elevation of the people by a system of legislation based on philanthropic and religious principles. In the beginning of his political career he usually voted with the government, but at last was driven over to the opposition by the reckless obstinacy with which the government opposed all reforms. In 1847 he published his ‹Histoire des

Girondins.' After the February revolution of 1848 he became minister of foreign affairs in the provisional government. He was elected by ten departments a member of the constituent assembly, by which he was chosen a member of the executive committee. His alleged collusion with Ledru-Rollin gave the first blow to his favor with the people, which the disturbances of June converted into hatred. The tracts which he published in defense of his conduct were of no avail, and on the occasion of the elections to the Legislative Assembly in 1849 he was rejected. The place which he obtained in the last republican assembly was due to an after-election at Orleans. In consequence of the *coup d'état* of 2 Dec. 1851 he withdrew from public life. He further wrote some hasty works of small worth, including: 'Histoire de la Restauration' (1851-3); 'Histoire de la Turquie' (1854); 'Histoire de la Russie' (1855); 'Le Conseiller du Peuple' (1849-50); etc. His 'Mémoires' appeared in 1871. His biography has been written by Pelletan (1869); Janin (1869); Maynet Domville (1888); and E. Deschanel (1893).

Lamb, Charles, English poet, critic, and essayist: b. The Temple, London, 10 Feb. 1775; d. Edmonton, England, 27 Dec. 1834. Lamb was the youngest of three surviving children, among seven, of John Lamb, a clerk in the Inner Temple, and Elizabeth [Field] Lamb. Both parents were of humble and rural origin. Charles passed the first seven years of his life in the Temple, where he received some instruction, and in 1782 went to Christ's Hospital, where he remained the next seven years. Here he met his life-long friend and counsellor, S. T. Coleridge (q.v.). Lamb was known as a gentle and amiable boy, whose natural shyness and sensitiveness were increased by a trick of stammering of which he never succeeded in completely ridding himself. Aside from these traits, there is to be noted the strain of mania in Lamb's family which in the boy expresses itself as excitability and nervousness. Other important determinants in Lamb's career were the influence of Coleridge, which tended to develop thoughtfulness and a love of poetry, his own liking for early English authors, particularly the Elizabethans, and his genuine and unfailing delight in the life of the city. Though a fair scholar at school, Lamb was really more of a reader, and his reading had a great effect on his literary career and the quality of his work.

Shortly after leaving Christ's Hospital, Lamb entered the South Sea House. In 1791, he got a clerkship in the East India Company at £70 and there remained, with gradual increase in salary, until he was retired, in 1825, on a pension of £441. From the time he entered business to his death, his life was singularly uneventful. The critical year, 1795-96, was marked by his father's falling into imbecility, his own solitary attack of mania, and (Sept. 1796) his sister's stabbing of their mother in a fit of insanity. The nature of the hereditary complaint and his sister's need of a guardian determined his mode of life. He turned his back on an inchoate love affair, put aside all thought of marriage, and devoted himself to his sister, as she to him in her sane moments. In 1797, on the death of their father, the two began their long life in London, unbroken except for one short trip to Paris. In the period their local home was changed but six times.

Lamb began his literary career in 1797 by the addition of three sonnets to a volume of Coleridge's. His poetical production was small; altogether during the course of his life his known poems number about 110, of which the best known are 'The Old Familiar Faces,' 'Hester,' and 'On an Infant Dying as Soon as Born.' In 1798 he wrote 'Rosamond Gray and Old Blind Margaret,' a prose tale of sentiment. Though praised by Shelley and others for a charm that it undoubtedly possesses, the story, as a composition, is very incoherent and shows the writer's lack of technical skill. Structural defects equally great, because of lack of adequate motive in characterization, abound in Lamb's next attempt, 'John Woodvil,' a very undramatic drama, which was refused by Kemble in 1799 and published by Lamb in 1802. Nor was Lamb's third attempt at imaginative literature more successful: the farce, 'Mr. H.,' ran one night in 1806, and is probably one of the least dramatic pieces ever put on any stage. The truth of the matter is that Lamb had very little constructive ability in narrative and dramatic forms, that his attempts in them were due to the influence of the early dramatists, of whose work he was very fond and whose vogue he did much, later, to restore. His liking for them rested on their poetry rather than their dramatic ability.

In the next kind of work that he took up, Lamb had much better success. These were stories retold, and they stand in three chief volumes, 'Mrs. Leicester's School,' 'Tales from Shakspeare' (both of 1807), and 'The Adventures of Ulysses' (1808), in many of which his sister was his co-worker. Lamb had here his material made for him, and therefore his own quality was less trammelled. The 'Tales from Shakspeare,' of which Charles wrote the tragedies and Mary the comedies, quickly went into a second edition, and has since become an English classic of a minor order. The stories are retold with much simplicity and with a very happy emphasis on the characters and the moral of the main situation; less is proportionately given to the under-plots. Next to the 'Essays of Elia' the 'Tales' are Lamb's best known work.

In 1808 Lamb entered the field of criticism, and for the next decade his published writings indicate that his interests were, broadly, of a critical nature. His chief motive for this change seems to have been his desire to express in the form of comment the admiration for the early writers which he had expressed, by imitation, in his own dramas, and, by transcript, in such works as the 'Tales.' In 1808 appeared his 'Specimens of English Dramatic Poets Contemporary with Shakspeare,' with his valuable notes thereon. Other important essays are 'On the Tragedies of Shakspeare,' and 'On the Genius and Character of Hogarth,' both of which appeared in Leigh Hunt's *Reflector* in 1811, an essay on Wordsworth's 'Excursion' in the *Quarterly* in 1814, and 'On the Poetical Works of George Wither' published in the collected works of Lamb, issued in 1818. There are also a few minor pieces of criticism, but the amount of Lamb's critical work is exceedingly small in view of its high reputation and its form is fragmentary. Its place is probably due to the fact that Lamb did very much to restore to their rightful heritage those old writers from whom he drew much of his own inspiration, and to the fact that, in an age of critical dogmatism, Lamb insists constantly, though not always with an eye to logic or historical fact, on broad appreciation.

Lamb's fame chiefly rests on the next important work, or rather kind of work, which he attempted. Having practically failed in creative narrative and drama, and having achieved only a moderate contemporaneous success in fields of retold stories and criticism and poetry, he turned his attention to the literary essay, and found it a proper vehicle for his peculiar genius. Lamb had from time to time during his earlier life as well as his later written miscellaneous essays of a quaintly humorous quality, like 'The Inconvenience of Being Hanged' (1811) and 'The Melancholy of Tailors' (1814), but the idea of regularly using the essay form did not occur to him until the famous 'Essays of Elia.' These were published as books in two series, in 1823 and in 1833, but they originally appeared in the *London Magazine*. For the first two or three years, from Aug. 1820 to Dec. 1822, they were published almost every month; after that they came out at very irregular intervals until 1833. Of the 51 essays and 16 'Popular Fallacies' in the two series only about 14 are really well-known; of these 'Imperfect Sympathies' and 'A Dissertation on Roast Pig' are probably the most famous, though such essays as 'The South Sea House,' 'Mrs. Battle's Opinions on Whist,' 'Dream Children,' and 'My Relations' are scarcely less well known and in no wise inferior. The essays have, in the main, come to be regarded as the best examples of the personal essay that English literature possesses. Certainly no English essays more completely reveal the personality of the author or reveal it in more winning terms. They are renowned for their quaintness, their wit, their sympathy, their humor, their serenity, and their reverence.

Between Lamb's retirement in 1825 and his death his work in literature was of rather a miscellaneous character. A few essays of the Elia type and some miscellaneous pieces of criticism, and a wholly undramatic and unsuccessful drama, 'The Wife's Trial, or, The Intruding Widow,' are about all that he produced after he «came home forever.»

Bibliography.—The best edition of Lamb's works is that by Canon Alfred Ainger, in six volumes. This does not include the 'Specimens,' which are most conveniently to be had in the Bohn Library. A full bibliography of Lamb's writing is to be found in B. E. Martin's 'In the Footprints of Charles Lamb' (New York, 1890). Canon Ainger's 'Life' in the English Men of Letters, is the most convenient biography of Lamb; it contains a short but excellent bibliography of the contemporary writers from whom we gain our knowledge of the author. To his list of titles may be added De Quincey's 'Recollections of Charles Lamb.' Of the many essays on the subject, that of Pater, in 'Appreciations,' is probably the nearest to finality.

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Lamb, Isaac Wixom, American inventor and Baptist clergyman: b. Hartland, Mich., 8 Jan. 1840. He is known principally by his invention of the Lamb knitting machine (1863-5), which can produce more than 30 kinds of knit goods, and make about 4,000 loops in a minute at ordinary speed. He entered the Baptist ministry in 1869 and continued in the active discharge of pastoral duties till 1899.

Lamb, John, American soldier: b. New York 1 Jan. 1735; d. there 31 May 1800. He at first worked in New York with the elder Lamb in the trade of optician and mathematical instrument maker, but in 1760 entered the liquor trade. He was one of the 'Sons of Liberty' (q.v.) and active in all the early Revolutionary scenes in New York. He was active in supporting the resistance of the colonies to the 'Stamp Act' and subsequently went to Philadelphia to urge a firm stand against any further oppression. Commissioned captain of artillery in 1775, he was authorized by Congress to remove the cannon from the Battery in New York on 23 August of that year; he subsequently took part in Montgomery's expedition against Quebec, where he was wounded and made prisoner. Later, he rose to be colonel, and at the time of Benedict Arnold's treason, commanded at West Point. After the Revolution he was elected to the state legislature of New York, and for some years previous to his death held the post of customs collector of New York port. Consult the biography by Leake (1857).

Lamb, Martha Joan Reade Nash, American historian: b. Plainfield, Mass., 13 Aug. 1820; d. New York 2 Jan. 1893. She was married to Charles A. Lamb in 1852 and removed with him to Chicago, Ill., where in 1863 she was secretary to the United States Sanitary Commission Fair. She made her home in New York from 1866, and was editor of the 'Magazine of American History' from 1883 till her death. Her publications include a scholarly 'History of the City of New York' (1877-81); 'The Homes of America' (1879); 'Wall Street in History' (1883); 'The Christmas Owl' (1881); 'Snow and Sunshine' (1882).

Lamb, Mary Ann, a sister of Charles Lamb (q.v.).

Lambayeque, läm-bä-yā'kā, Peru, capital of the department of the same name, which was created in 1874. It is situated on the Lambayeque River, about 6 miles from the Pacific Ocean, the outlets for its trade being the ports of Eten and Pimentel, with which it has railway connection. Cotton and woolen fabrics are manufactured on a small scale. Its inhabitants, mainly of mixed blood, number about 9,000. The department of Lambayeque, lying between the Pacific and the departments of Piura, Cajamarca, and Liberdad, has an area of only 4,614 square miles, but contains some fertile lands which produce good crops of cotton, rice, and sugarcane. The total population of the department was estimated to be 124,091 in 1896, but is probably much less.

Lambert, Alexander, American pianist: b. Warsaw, Poland, 1 Nov. 1862. He studied in early life with his father, and on the advice of Rubinstein was sent to the conservatory at Vienna, where he graduated in 1880. In 1881 he gave a series of concerts in New York, which he repeated the next season through Germany and Russia. After studying for a while under

Liszt he returned (1884) to the United States and in 888 became director of the New York College of Music, a position which he still holds. He is author of many compositions, but is best known as a teacher. He has written 'Systematic Course of Studies' (1892).

Lam'bert, Daniel, English citizen famed for his unusual corpulence: b. Leicester 13 March 1770; d. 21 June 1809. Up to his 19th year he gave no indications of the remarkable stoutness which he afterward attained, being an enthusiastic lover of field sports and athletic exercises. Having succeeded his father as keeper of the Leicester prison, he exchanged an active for a sedentary life, and from this time rapidly increased in size till he became an object of public curiosity, and attracted visitors from all parts of the country. He now resolved to turn his obesity to account, and in 1806 commenced an exhibition of himself in Piccadilly, London. He afterward exhibited himself in the principal towns of England. At the period of his death he was 5 feet 11 inches in height, weighed 739 pounds, and measured 9 feet 4 inches round the body, and 3 feet 1 inch round the leg. In diet he was remarkably abstemious, drank water only, and never slept more than eight hours.

Lambert, Johann Heinrich, yō'hän hīn'rĭн läm'bĕrt, German mathematician and philosopher: b. Mühlhausen 29 Aug. 1728; d. Berlin 25 Sept. 1777. His father was a tailor in humble circumstances, and he was obliged to follow his father's employment. In this situation he spent the greatest part of the night in study, and soon acquired a knowledge of mathematics, philosophy, and the Oriental languages. He afterward became tutor to the sons of Solis, president of the Swiss Confederation. In 1756 he accompanied his pupils to Göttingen, in the following year to Utrecht, and in 1758 to Paris, Marseilles, and Turin. In 1759 he was released from his duties, and in 1764 Frederick the Great appointed him to the head of the Architectural Council, and made him a member of the Academy of Sciences. He enriched the transactions of various societies with his papers and treatises, all of which bear the stamp of eminent and original genius. Most of his mathematical pieces were collected in three volumes by himself. Philosophy, and especially analytic logic, are greatly indebted to him for his 'Novum Organon, or Thoughts on the Examination and Relations of Truth' (1764); and his 'Architektonik, or Theory of the First Simple Principles in Philosophical and Mathematical Knowledge' (1771).

Lam'bert, John, English soldier: b. Kirkby Malhamdale, Yorkshire, 7 Sept. 1619; d. island of Guernsey 1686. He entered the army and had attained the rank of colonel in 1644, when he fought against the king at the battle of Marston Moor. He accompanied Cromwell into Scotland in 1650, where he distinguished himself by great gallantry, and took the lead in the council of officers who gave the protectorate to Cromwell. He subsequently opposed the Protector and was deprived by Cromwell of all his commissions, though a pension of £2,000 was allowed him for past services. When Richard attempted to assume the protectorate Lambert came forward, and became the head of the Fifth Monarchy Men, or extreme republicans. In 1660 he set out for the north to encounter Monk, but was deserted by his troops, seized, and committed to the Tower whence he soon escaped. At the Restoration he was excepted from the act of indemnity, brought to trial, and condemned, but his sentence was commuted to banishment to Guernsey.

Lambert, Louis A., American Roman Catholic clergyman: b. Charleroi, Pa., 13 April 1835. He was educated at St. Vincent's College, Pa., and the archdiocesan seminary, St. Louis, and was ordained to the priesthood in 1859. He was chaplain in an Illinois regiment during the Civil War, was pastor at Cairo, Ill., 1863–9, and subsequently at Seneca Falls and Waterloo, N. Y.; founded the 'Catholic Times' in 1874, and was its editor till 1880, and has been editor-in-chief of the New York 'Freeman's Journal' since 1894. He has published 'Thesaurus Biblicus'; 'Notes on Ingersoll'; 'The Christian Father'; etc.

Lam'berton, John Porter, American editor and author: b. Philadelphia 22 Oct. 1839. He was graduated from the University of Virginia in 1858, and after teaching, 1859–80, became an assistant in the library of the University of Pennsylvania. He was associate editor of the American Supplement to the Encyclopædia Britannica, 1881–90, reviser to Webster's Dictionary, 1891–5, and has edited 'Historic Characters and Famous Events' (12 vols. 1894–6); 'Literature of All Ages' (10 vols. 1897–9); 'Literature of the 19th Century' (1900).

Lam'bertville, N. J., city in Hunterdon County, on the Delaware River, the Delaware & Raritan canal and the Pennsylvania railroad; 16 miles northwest of Trenton. Water power is here furnished for extensive paper mills, rubber works, spoke factories, stone-quarries, flour mills and foundry and machine shops. The city was first incorporated in 1849, and under a charter of 1874 is governed by a mayor and council elected every two years. Pop. (1890), 4,000; (1900) 4,640.

Lamberville, Jean de, zhŏṅ dė läṅ-bär-vēl, French missionary. In 1671, as a member of the Jesuit order and under their direction, he settled in the Iroquois village of Onondaga. He had previously spent three years in Canada, and he now became active in cementing the alliance between the Indians and the French. Meanwhile Governor Dongan of New York was straining every nerve to win over the Iroquois League to the English, but without success. Lamberville was obliged to abandon his post by the risk he ran, when the Iroquois delegates were treacherously seized at a point in Ontario to which they had repaired on receiving pledges of a peaceable conference (1687). He died in France.

Lam'beth, a parliamentary and municipal borough in London, on the south of the Thames, opposite Westminster. See LONDON.

Lambeth Articles, in English ecclesiastics, a name given certain doctrines of predestination, justification and free-will, drawn up at Lambeth Palace in 1595 by William Whitaker and other Calvinists. They were approved by Archbishop Whitgift but disapproved by Queen Elizabeth.

Lambeth Conference, an assemblage of Anglican bishops at Lambeth Palace, in England in 1867, at which 67 bishops were present.

The second conference held in 1878 was attended by 100 bishops. In 1888 there were 145 present, and in 1897 over 190. The conference does not legislate or formulate church doctrines, but finds profit in discussing serious ecclesiastical problems. The conference will continue every 10 years. Consult ‘The Lambeth Conferences of 1867, 1878, and 1888’ (1889).

Lamb'kill, or **Calf-kill.** See SHEEP-LAUREL.

Lamb's Lettuce. See CORN-SALAD.

Lamb's-quarters, a roadside “pig-weed” (*Chenopodium album*). See GOOSEFOOT.

Lamech, name of two scriptural personages mentioned in the book of Genesis. (1) Descendant of Cain, and the first polygamist on record. (2) Son of Methuselah, and father of Noah, lived 777 years, and died five years before the Flood.

Lamennais, Hugues Félicité Robert de, üg fā-lē-sē-tā rō-bār dė lä-mĕ-nā, French religious and political writer: b. Saint Malo 19 June 1782; d. Paris 27 Feb. 1854. He was ordained priest in 1817. The same year appeared the first volume of his ‘Essay upon Indifference in the Matter of Religion’ (1807–20), a work of profound learning and of strict orthodoxy. He became the critic of Church policy, and his journal, ‘L'Avenir’ (The Future) was condemned by the pope. He bowed to Rome's decree; but after a year published his ‘Words of a Believer’ (1834), in which he repudiates all authority of popes and bishops. It was followed by ‘The Book of the People’ (1837), and ‘The Past and the Future of the People’ (1842), in the same tone. He wrote also: ‘Sketch of a Philosophy’ (1841). Consult: Newman, ‘Essays Critical and Historical’; Lilly, ‘Studies in Religion and Dogma.’

La Mesa, lä mā'sä, Colombia, a picturesque city, located on a high plain about 25 miles from Bogotá. Owing to its elevation above sea-level (4,225 feet), its climate is genial. The surrounding country is a fertile agricultural region. Pop. 14,000.

Lamia, a mythical queen of Libya, who, on being robbed of her own children by Hera, devoted her life to strangling and eating children. In later story Lamia was a vampire who seduced and then sucked the life-blood of young men. As a vampire she appears in Goethe's ‘Die Braut von Korinth’ and Keat's ‘Lamia.’

Lam'mas Day, in the calendar, the 1st day of August, so called perhaps from the custom which formerly prevailed among the tenants who held lands of the cathedral church in York, England, of bringing a live lamb into the church at high mass on that day.

Lammergeier, lăm-ėr-gī-ėr, the largest of European eagles (*Gypaëtus barbatus*), often called griffon-vulture because it frequently feeds on carrion, especially bones abandoned by other animals, which it has power to break, or carries to a great height in the air and then lets fall; it does the same with tortoises, which form an important part of its fare in some countries. The lammergeier is a bird of the mountains and deserts of southern Europe (where it has now been nearly exterminated), northern Africa and southern Asia; it builds a great rude nest on some mountain ledge and lays a single brown-blotched egg.

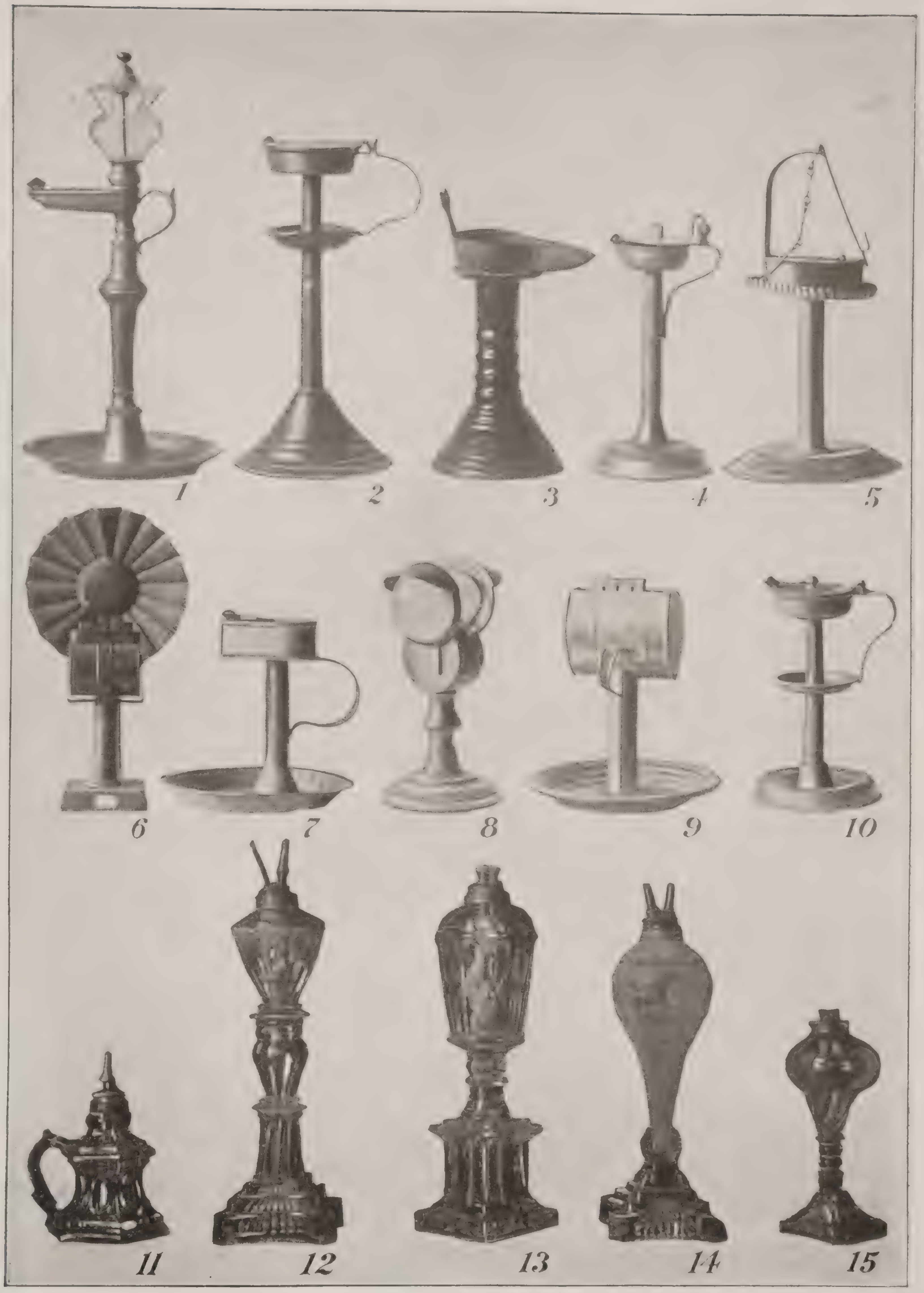
Lamon, Ward Hill, American biographer: d. Martinsburg, W. Va., 7 May 1893. He was the law partner of Abraham Lincoln [illegible] Springfield, Ill., and after the latter's election as President became his private secretary and was appointed by him marshal of the District of Columbia. He published: ‘Life of Abraham Lincoln, from His Birth to His Inauguration as President’ (1872); ‘Recollections of Abraham Lincoln.’

Lamon, lä-mōn', **Bay of,** a landlocked bay on the eastern (Pacific) coast of Luzon, Philippines, dividing the southeastern peninsula from the main part of the island. The island of Alabat and smaller islands make an inner bay on the south. The bay is bounded by the provinces of Infanta, Laguna, and Tayabas, on the south and west, and by the provinces of Tayabas and Ambos Camarines (Norte) on the south and east. On the northwest coast of the bay is the port of Lampón, Infanta, which was important in the latter part of the 16th century and the 17th century as the harbor of the Spanish galleons between Manila and New Spain, it being thought a safer way of communication than the straits of San Bernardino.

Lamont, Daniel Scott, American politician; b. Cortlandville, N. Y., 9 Feb. 1851; d. Millbrook, N. Y., 23 July 1905. He was educated at Union College, entered journalism at Albany, became a political correspondent, in 1883–9 was private secretary to Grover Cleveland, was later in business, and in 1894–7 was secretary of war in Cleveland's second administration. In 1897 he was elected vice-president of the Northern Pacific railway company.

Lamp, any contrivance which through the formation of its parts affords a means of producing light, and sometimes heat, by the combustion of oils, fats or inflammable fluids, with the aid of a wick, which, by capillary attraction, conveys the substance burned to the flame point. By modern adaptation of the word many appliances for producing light by gas or electricity are designated as lamps. Man ignorant of fire is unknown, therefore, the use of the burning brand as a torch may be regarded as coeval with the race, and the torch as the progenitor of the succeeding lamp. Considered archaically the primitive lamp was a very simple device. An unworked stone, having a natural concavity, a sea shell, or the skull of an animal, constituted the earliest forms. A bit of moss, or a twist of vegetable fibre served as a wick. Fat, grease, or fish oil furnished the illuminant. The introduction of the lamp marked the first stage of man's advancement towards civilization, and may, therefore, be appropriately considered as a figure or symbol on the dial of time pointing to the dawn of his intellectual awakening. When, or where, or by what people the first lamps were made cannot now be determined. Recent archæological discoveries in the ruins of the long buried cities of the Mesopotayian plain, Assyria, have revealed many terra-cotta lamps of a variety of forms, and of good workmanship, that were in common use 7,000 or 8,000 years B.C. It would be an unwarranted assumption to assert that these well developed creations denote the beginning of the lamp. Stone lamps have been found that are undoubtedly of great antiquity, but this fact alone does not necessarily class them as palæolithic, they are simply prehistoric, and of an age that cannot be definitely determined. The so-called Stone Age

LAMPS.



1–10. Early English and American Colonial Lamps: 1. Horologic Lamp, Pewter, 1600. 2. Old Dutch Lamp, Copper, 1640. 3. Iron Slot Lamp Pottery Upright, Penn. Dutch, 1745. 4. Old English Pewter Lamp, dated 1708. 5. Tin Newburyport (Mass.) Betty, 1724. 6. Tin Lard-oil Lamp, with reflector, 1830. 7. Portsmouth (N. H.) Betty, Tin, 1760. 8. Old English Bulls Eye Lamp, Pewter, 1770. 9. Tin Lard-oil Lamp, 1840. 10. Old English Pewter Lamp, 1720.

11–15. Early American Glass Lamps: 11. Glass Camphene Lamp, 1845. 12. Glass Camphene Lamp, 1850. 13. Glass Whale-oil Lamp, 1830. 14. Glass Camphene Lamp, 1848. 15. Glass Whale-oil Lamp, 1760.

determines so little that is of real chronological value that classifications in archæology cannot always be wisely made upon data thus furnished. French archæologists have within a few years recovered from the lakes of Switzerland bronze lamps that were in use by the lake-dwellers at a period late in the Lacustrian Age. These are without doubt the most ancient metal lamps yet discovered.

Early Examples.— Whether the first emigrants from Asia into ancient Greece found the Pelasgic races using lamps, or whether the invaders brought the art of lamp making with them, neither legend nor tradition has left even a mythical answer. In our researches in lamp archæology we can at the best but work our way backwards, from the known to the unknown, from the ascertained facts to that dim, mysterious darkness of remote antiquity where all traces of chronology are lost, and where our conclusions must be largely sustained by deductions drawn from analogical reasoning. The poems ascribed to Homer, 950 B.C., contain all that we know of the manners and customs of early Greek society. He speaks of the «Festival of Lamps,» and makes frequent mention of the torch. The Greek and Roman torch was often simply a terra-cotta, or bronze, lamp-shaped device secured to a staff. The so-called «grease-pot-lamp» of Egypt is without doubt more ancient than the oldest lamp of Greece, and the terra-cotta lamps of Babylonia are also thousands of years older. Egypt as a nation was on the decline when the history of Greece began. Assyrian records found on clay tablets proclaim a nation with a remoteness of antiquity as yet undetermined. Among the many ancient relics discovered in the ruins of the Babylonian cities have been terra-cotta lamps that closely resembled those of early Greece. This similarity of configuration between the earliest examples discovered and those of Greek make of a period that was perhaps mid-way between the first Olympiad, 776 B.C., and the beginning of the Christian era is remarkable. Only the simplest essentials are represented. A shallow, saucer-shaped oil or fat reservoir being the most primitive of terra-cotta lamps. Then comes the oval in shape, with a slight prolongation of the rim into a short, narrow rostrum, or wick support, and the formation of a rudimental handle. Then the oval-shape with the reservoir enclosed, and one or two wick supports. These constitute the types that were essentially common to all Eastern lands. The later Greek and Roman lamps, both terra-cotta and bronze, are remarkably rich in ornamentation, and artistically graceful in form. These constitute a division that separates the crude primitive from the finished product. The earliest terra-cotta lamps were made in one piece, and baked without glazing. Later Greek and Roman terra-cotta lamps were made in two principal parts, the «*crater,*» or oil reservoir, and the «*discus*» or covering for the reservoir. Each of these parts were joined together after being molded, and then baked. The ornamentations were generally confined to the «*discus,*» and were called the «*limbus.*» The «*nasus,*» or wick support, as well as the «*ansa,*» or handle, were most frequently made separately and carefully attached to the body of the lamp before baking. The «*discus*» had a small circular opening near the centre through which the lamp could be filled. Many of the better lamps had the maker's name, and often his private mark, stamped on the bottom. Large terra-cotta lamps were frequently made with two, three, and sometimes six or even 12 «*nasi.*» The lamp with «*nasus*» for one wick was called a «*monomyxos,*» and that for two wicks a «*dimyxos,*» and so on. The Greek and Roman bronze lamps were made in an almost endless variety of forms, and were often beautiful and artistic to a marked degree. Plain iron lamps were used by the common people at a later period. They were either cast or forged in a single piece, and were mostly ectypes of the more artistic and costly terra-cotta and bronze lamps, but were without decorations. The study of the ancient lamp maker was devoted alone to the external form of his wares. Grace, beauty and elegance, as expressed in outlines and decorations, were his chief concern. No attempt was made to improve the light. The pale, smoky, flickering flame continued to shed its uncertain light from the massive and costly silver candelabrum of the wealthy just as it had for untold ages from the simple stone and terra-cotta lamps of their ancestors. Etruscan terra-cotta and bronze lamps so closely resembled those of early Greek make that a separate description is not required in this article. The chief characteristic, however, that distinguished the true Etruscan pottery from that of Greece is the strong coloring that was applied to the former. What was true of the art of lamp making in Greece was also true of the rest of the civilized world, for it was more than 17 centuries after the Christian era before any real improvement was introduced in lamp construction.

The Inventive Age.— Prior to 1783 many lamps and illuminating appliances had been introduced, but there was little if any improvement in the light afforded, or marked advancement in the construction or mechanical arrangement of the parts designed to increase the brilliancy of the flame. The first real improvement was the introduction of the flat, woven, ribbon-like wick, and the securing the wick in a close-fitting support. This arrangement permitted only a small surface of the wick to be exposed to the flame, and the wick being narrow the flame came in contact with the centre as readily as the outward parts and thus most of the free carbon was consumed, consequently there was less smoke than in the old style of loose wick. M. Legers of Paris introduced this improvement in 1783. To this was attached for the first time a spur-wheel, which by rotating adjusted the wick, thus regulating the flame. The same year M. Argand, the Swiss chemist, introduced his improvement in burners, which consisted of a tubular wick attached to a tube which extended through the oil reservoir and opened into the base of the lamp, thus affording a means of centre draught, which supplied an abundance of oxygen to the flame and created sufficient heat to consume all of the carbon and so prevented the escaping of smoke. This was truly the beginning of a new era in lamp making, for the art now entered upon what may be designated as «the inventive age of the lamp.» Science and invention now came to the aid of the artisan. Principles involving an understanding of the laws of combustion and the science of light were applied to the construction of illuminating devices. The result was more light and better light. Argand's epoch making invention related wholly to his improved burner. His first lamps were simply huge oil reservoirs with his new burner attached to the top. He used sheet iron chimneys formed with a hood opening over the flame. The use of glass chimneys with the Argand burner came about purely by accident. A workman in attempting to heat a bottle over the flame cracked off the bottom, and because the glass had become too hot for him to hold he momentarily placed it over the burner. The result was surprising, the brilliancy of the flame was not only increased but the light became steady and in every way superior to that produced with a sheet iron chimney. The brilliancy of the light on the top of the huge reservoir made a wide shadow. To overcome this was a problem that was finally solved by a German lamp maker, who produced a model in which the burner was secured to the end of a long neck or rostrum, very much like the present so-called German student lamp. The removing of the light away from the great reservoir not only reduced the shadow but afforded a more ready means of supplying the oil to the wick uniformly. In 1800 Carcel introduced his ingenious lamp which was provided with a clock-work device, which operated a small pump, raising the oil from the base of the lamp to the wick-holder, thus keeping the wick uniformly submerged in the oil. This contrivance was too costly to come into general use, and was confined mostly to lamps used in halls and large rooms. Many lamps were offered by makers that were designed to burn crude, heavy whale oil, and others in which lard oil was consumed. Lard oil lamps were inconvenient in cold weather, for the oil would become solid. To overcome this several devices were invented. Perhaps the most successful was the lamp with a copper tube, the upper end of which was between two wick tubes, while the lower end passed through the oil to the bottom of the lamp. Copper being a good conductor of heat, the oil was thus kept in a liquid state while the lamp was burning. For many years lard oil was the only illuminant used in the great lamps of the lighthouses of the world. It was not until after 1880 that burners for lighthouse lamps had been constructed that would satisfactorily consume kerosene oil. Up to about 1800 but few small, portable lamps had been made. Nearly all the appliances so far introduced for domestic illumination were large, so-called, table lamps, and mural lamps. English manufacturers first made small hand lamps of tin, brass and pewter. These were mostly lard or whale oil burners, with a single wick tube. In the whale oil lamps the wick tube was round, in the lard oil lamps the flat, woven ribbon-wick was used, the wick being moved up and down in the lard oil lamps by a spur-wheel. In the whale oil lamps a small aperture in the upper part of the wick tube was provided, through which «a prick» could be inserted by which the wick was pricked up or down. In the large and important field of research and experiment in domestic illumination, American genius and skill very early took a prominent part.

Lamps in America.— Before proceeding to the introduction of a description of early American inventions relating to lamps and lighting appliances, it will be interesting to briefly notice what may be truly designated as the original American lamp. There has never been found among the remains of the mysterious mound-builders of the Western Continent any utensil that could be rightly regarded as a lamp. The North American Indians, who were found inhabiting the country on the arrival of the first Europeans, did not possess a lamp. The pine torch was their only means of artificial illuminating. The one lamp that can claim the distinction of being really American is the stone lamp of the Eskimo. This is usually a shallow vessel of stone, most frequently of soap-stone, sometimes bone, clay, wood, and the skull of an animal is used. The oil of the seal, walrus and whale is burned in these rude lamps, dry moss serving as a wick. These lamps also serve as stoves, for they are used for cooking and warming. Without these simple lamps human life could not be maintained in the inhospitable regions these strange people inhabit.

The first lamps used in the Plymouth Colony were of Dutch make, and were called by the English emigrants Betty lamps (German, *Besser-better*). The few lamps that the Pilgrim fathers brought with them in the Mayflower on her memorable voyage were of this class. They are of iron, either forged from a single piece or were cast of gray, coarse iron. The earliest of these were known as the open Betty, or «Slot lamp.» Then followed the Betty with a top, one part of which was formed as a hinged lid. The wick support was an angular, half round iron secured to the inside bottom of the lamp. There was an upright handle at the back, to which was attached, by a link, a pointed hook, the point of which extended beyond the crook. This was used to suspend the lamp from the high back of the rush-bottom chair, or the point was thrust into the crevice between the great stones of the side of the open fire-place. The Betty was pear shaped, flat on the top and bottom. This form was sometimes made in brass, but rarely was any attempt made at ornamentation. These lamps were in use in some parts of the New England colonies as late as 1790. Prior to 1680 all lamps used in the American colonies were imported, mostly from England. In 1680 a tinsmith of Newbury, Mass., began the manufacture of tin Betty lamps. These, after Newburyport was separated from Newbury, became known as Newburyport Bettys. Later these lamps were made in Rivermouth (Portsmouth, N. H.) and were called Portsmouth Bettys. In 1720 a few pewter and brass lamps had been made by small manufacturers at Salem, Mass., and Providence, R. I. These were heavy and extremely inconvenient to be carried about. Among the earliest makers of pewter lamps and candlesticks in the New England colonies was Richard Graves, a pewterer who came from England, where he had learned the trade, or, as it was then called, the art. He came first to Boston, but moved to Salem, Mass., where he long worked at his business, and brought out many fine goods in his line. Henry Shrimpton of Boston was also a maker of fine pewter lamps, and his beautiful lamps and candlesticks graced many of the grand old colonial homes. Among the earliest American experimenters in lamp construction, and inventors of improved burners, was that marvelous investigator, philosopher, statesman and inventor, Benjamin Franklin (q.v.). Not content with perfecting an improved stove known as the Franklin heater, he

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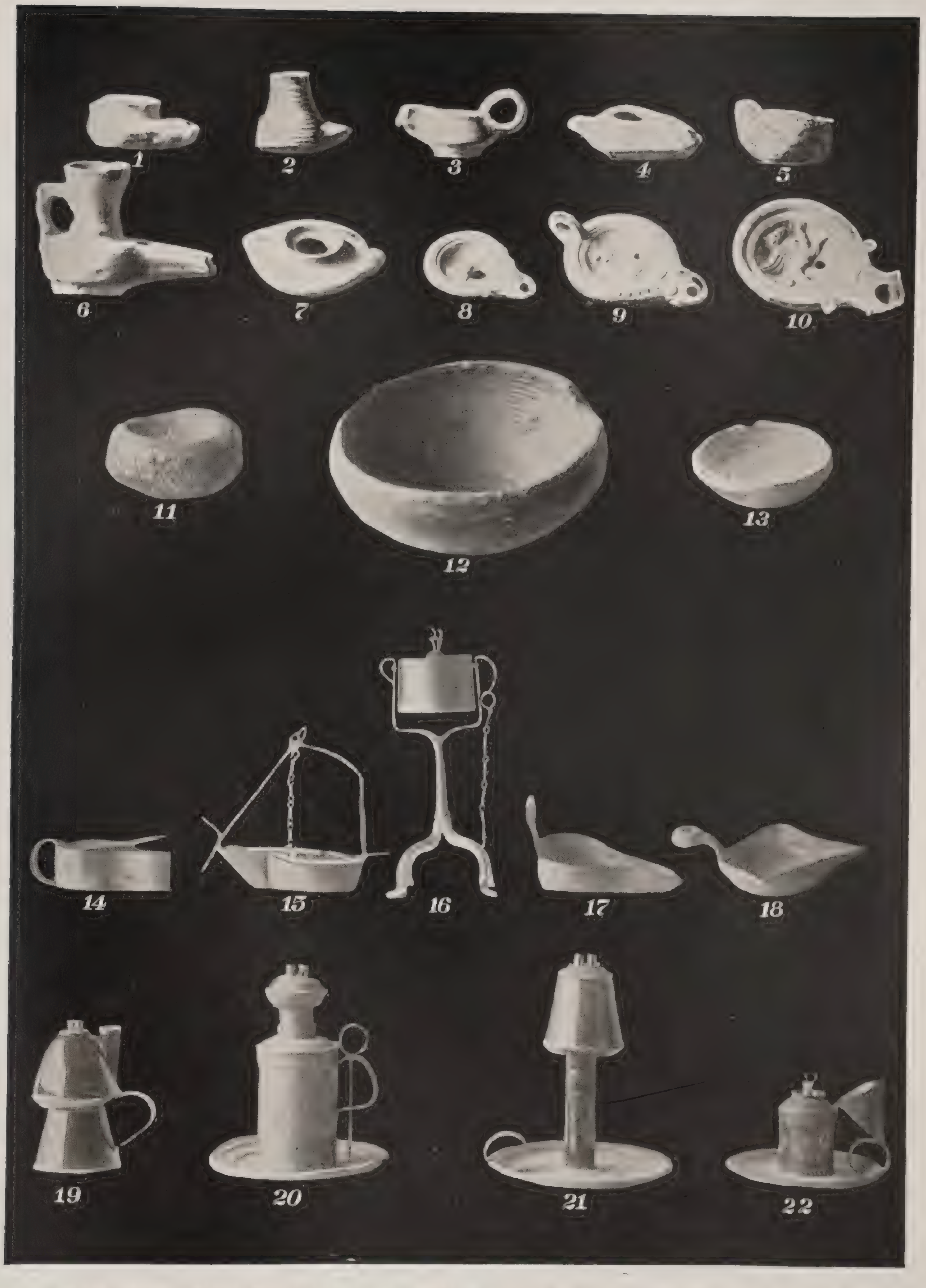

1-10. Pre-Historic Terra Cotta Lamps: 1. Assyrian, 8000 B. C. 2. Phenician, 3000 B. C. 3. Persian, 2000 B. C. 4. Egyptian, 1500 B. C. 5. Assyrian, 2000 B. C. 6. Egyptian, 2000 B. C. 7. Jewish, 200 B. C. 8. Etruscan, B. C. 9. Roman, B. C. 10. Grecian, 300 A. D.

11-13. Lamps of Arctic North America: 11. Eskimo Soapstone Lamp, North Greenland. 12. Eskimo Clay Lamp, Yukon Valley. 13. Eskimo Clay Lamp, North Alaska.

14-22. Early American Colonial Lamps: 14. Tin Betty, 1632. 15. Iron Betty, 1620. 16. Fat Lamp, Brass dish, iron upright, 1680. 17. Iron Slot Lamp, 1640. 18. Cast Iron Fat Lamp, 1700. 19. Tin "Petticoat" Lamp, Whale-oil burner, 1832. 20. Tin Whale-oil Lamp, 1812. 21. Tin Upright, Franklin burners, Whale-oil, 1750. 22. Guest Lamp, Tin, Whale-oil, used in old-time inns, 1820.

very early turned his attention to the improvement of domestic lamps. When we recall the fact that Franklin's first manual labor was cutting wicks in his father's chandler shop, it is not surprising that we find his versatile mind turning to the subject of improved illuminating appliances. Prior to 1742 candles were in general use in American colonies. The iron Betty lamps were used in a comparatively few families. The shallow, saucer-shaped clay cruise introduced from Scotland was still used for lighting among the poorer classes, but candles were the chief illuminators. Franklin's first invention consisted in devising two round wick tubes so arranged that, according to his directions given to the workmen who constructed the burner, the distance between the tubes should equal the diameter of one of them. His theory was that the proximity of the two flames created an upward draught that so increased the heat that the liberated carbon was consumed, thus adding to the light and preventing smoke. He observed that the introduction of the third burner, while it consumed a third more oil, and added a third more flame, did not give a corresponding increase in light. Franklin also suggested the improved cotton wick, loosely braided, which afforded a better medium for supplying oil to the flame by capillary attraction. Franklin did not secure patents on his inventions, but allowed manufacturers to freely introduce them, which they did on quite an extensive scale, and small portable lamps of tin and brass with Franklin burners soon became very common.

Another American of note, Benjamin Thompson, better known as Count Rumford (q.v.), in 1789 wrote an exhaustive essay on «The Management of Light in Illumination.» He constructed over 100 different lamps in his extended experiments. He invented the photometer to measure the relative intensity of light emitted by different illuminants. He found that the purest white light could be obtained by means of lamps properly constructed, using clarified vegetable or animal oil, at less than one eighth of the cost for the same degree of light produced by wax candles, and for about half the cost of tallow candles. He invented but one burner. In this he constructed a centre, flat wick tube, with two similarly shaped tubes placed at acute angles on either side of the wick tube, his design being to supply oxygen through the angular tubes impinging on the wick tube. This burner did not satisfy him, and its introduction did not become general. In his further experiments he confined himself to the Argand burner, and devoted his attention to the better construction of the lamp proper. His aim was to produce a lamp in which the shadow should be eliminated as much as possible. He invented what was known as the «Astral lamp,» which consisted of constructing the oil reservoir in the form of a flat, circular tube with radiating arms attached to the pedestal of the lamp, and securing the burner within the circle. He also introduced what he called the «Balloon Illuminator.» This was for use in halls, ball-rooms, and salons. He also made what he called a «Dining-room Illuminator,» and also a table or reading illuminator. All of Count Rumford's investigations and his extended experiments relating to lights and lamps, were carried on while he was in the public service of the Elector of Bavaria, who created him a count as a reward for his valuable services, and as a recognition of his great learning, and the importance of his researches and inventions.

Hundreds of patents have been granted to American inventors for lamps and lamp burners. One of the earliest patents on record in the United States Patent Office was for a device in which an adaptation was made of Franklin's two wick tubes by securing them to a perforated disk through which the tubes passed. Beneath the disk was a cork through which the tubes also passed, the cork being cemented to the under side of the disk. This could then be fitted into the top of the lamp the same as a cork fits the neck of a bottle. This was mostly applied to glass lamps, which were first introduced in America in 1810. In 1812 one J. Neal, secured a patent for a lamp provided with a telescopic sliding cylinder, the wick tubes were secured to the top of the cylinder, being screwed into a collar which formed the upper part of the tube. When the lamp was filled with oil, a float on the bottom of the tube extended the cylinder to its full length. The wicks were long, reaching to the bottom of the cylinder. As the oil was consumed the cylinder was correspondingly lowered, thus keeping the wicks uniformly submerged in the oil as long as any remained in the lamp. These lamps were made in tin, brass and pewter, and became quite popular. In 1839 one J. Price of Nashville, Tenn., obtained a patent on an arrangement for burning pine knots. According to the directions the knots were to be cut up into small pieces and inserted into a tube, which had a diameter of about an inch and a half, and a base not unlike an ordinary brass candlestick. A spring inside the upright tube was compressed as the pieces of pine knots were forced in. When the tube had been filled an oval cap or cover with a large opening was placed over the top and secured by a bayonet clutch. The spring forced up the wood to be burned through the opening in the cap, as it was burned away the ash fell into a circular receptacle secured on the upright pedestal. A sheet iron chimney with a broad hood partly surrounding the flame was provided as the specification says, «to convey the ascending smoke away from the face of the person using the lamp.» P. S. Moorhouse obtained a patent in 1830 for a lighting device in which balls of cotton or tow saturated with grease or fat were burned while held by an upright supporting claw secured to a pan base, in which the ash was collected. Between 1843 and 1845, S. Rust secured eight patents on lamps, and five on burners. These patents did not introduce any new features, and consisted mostly of the introduction of novelties relating to forms and supposed ornamentation. His inventions in the line of burners did not involve any new features and possessed but little real utility.

The so-called «Solar Lamps,» patented in 1843 by the Philadelphia firm of Cornelius & Company, were a great improvement over any table lamp so far introduced. They were constructed to burn lard oil. The burner proper was a modification of Argand's. The wick tube, over which the circular wick closely fitted, extended through the bottom of the oil reservoir, where itt was provided with openings for the admission of air. The heat conveyed through the lard oil by the wick tube served to keep the oil in a liquid state in cold weather. The burner was so constructed that the flame was diffused more generally than in other lamps, while the bulb-shaped glass chimney created a hot-air chamber in which all free carbon was consumed. The light was profuse, white and clear. This firm manufactured a large variety of elegant lamps, which were used extensively in the homes of the wealthy. Benkler's lamp, introduced in 1840, had a tube through which air was admitted to the flame, the angle of the tube being such that an upward movement of air was produced when the oxygen came in contact with the heat, and thus a forced draught was secured which made the light constant, and aided greatly in the consumption of smoke. Through the means thus adopted, cheap heavy oils could be burned without the offensive smell and excessive smoke produced by cheaper lamps when these low grade oils were consumed.

Coal Oil and Kerosene Lamps.— About 1845 was introduced in the United States, a compound that was known as burning fluid, or from its inventor's name, Potter's fluid. This was a highly explosive illuminating fluid, composed of a mixture of about three parts of wood alcohol to one of purified oil of turpentine. This was burned in lamps provided with long slender, tapering brass tubes, secured to a disk that screwed into a collar fitted to the upper part of the lamp. The wick was round, firmly woven cotton, which closely fitted the wick tubes. This was to prevent the escape of the vapor from the fluid. Little thimble-shaped caps, secured by small chains, were provided to cover the end of the wick tubes when the lamp was not in use. This was to prevent the evaporation of the highly volatile burning fluid. Camphene was the trade name of a burning fluid composed of oil of turpentine, purified by being distilled over quick-lime. This fluid was burned in lamps provided with the same class of burners as that described for burning fluid. The highly explosive nature of these dangerous compounds rendered them unpopular for domestic use, and they were soon displaced by the safer and cheaper kerosene oil, which came into general use about 1850. This was first called coal-oil, and in some localities mineral oil, while in others it was known as petroleum oil. Many hundreds of lamps and burners have been invented to use this cheap illuminant. In all successful kerosene burners a glass chimney is necessary. Many attempts have been made to produce a kerosene burner that would afford a clear, brilliant, steady, smokeless flame, without a chimney, but so far no good, practical lamp has been put on the market that successfully accomplishes this much desired result. A lamp was made and introduced in 1869 that burned a vapor of naphtha without a chimney. While the flame from this device was white and brilliant, the light was flickering, and when moved about emitted annoying smoke. The highly explosive nature of the fluid burned made its common use unsafe, so that the vapor lamp never became popular. What is known as the German student lamp, supplied with an improved Argand burner, and the so-called Rochester lamp, employing another modification of the Argand burner, are the best and most successful kerosene lamps so far introduced. There are hundreds, if not thousands, of different kerosene oil burners attached to an almost endless variety of lamps now on the market. These embrace hand lamps, table lamps, piano lamps, and a variety of library and parlor lamps that are remarkably rich in ornamentation and graceful in form and shape, but in the construction designed to assist the combustion of the oil in producing the illumination the same general principles are involved, and with the exception of the smaller hand lamps the original Argand burner principle is adhered to, with slight modifications and improvements. In the small hand lamps a perforated hood-shaped cap surrounds the wick making a dome-like chamber through which the air drawn from the outside is deflected into the flame, thus supplying the needed oxygen. The flat ribbon wick is used in most of the smaller lamps, the wick being moved up and down by a spur-wheel as before described.

Safety Lamps are lamps so constructed that the danger from the foul explosive air of mines, especially deep coal mines, may be lessened or prevented, by so protecting the flame of the miner's lamp that it will not come in direct contact with the mixed carburetted hydrogen and atmospheric air, which is often present in such quantities as to create an element of great danger. The first safety lamps were called "Steel-Mills," and were devices in which small steel wheels, with roughened edges, were rapidly revolved against a flint, securely held by a powerful spring. The sparks thus produced afforded an intermittent light which was sufficient to illuminate the more dangerous parts of the deep mines. But as this lamp necessitated the employment of a boy to revolve the wheel while the miner was engaged in his work, it proved too expensive for economic use. In 1813, Dr. Canny in England, introduced the first true safety miner's lamp. In his invention he produced a lamp in which the external air was admitted to the burner through a chamber containing water, while the flame was protected by a glass bulb, the product of combustion escaped through perforations in a flat support on which the glass bulb rested. This contrivance was so cumbersome, and so liable to breakage, that it never came into general use. In 1815, George Stephenson and Sir Humphry Davy, contrived a safety lamp that, with slight modifications, has continued in use up to the present time. The air to support combustion was admitted to the flame through small openings in the bottom of the lamp, while the flame was protected by a glass, upright cylinder, the top of which was covered with a wire gauze cap. Several forms introducing slight changes from the original Davy lamp have been made. The lamp in which the flame is protected by a wire gauze cylinder in the place of a glass one was a later invention of Sir Humphry Davy. Mackworth's safety lamp was an improvement over the Canny lamp, and introduced features common to that and the Davy lamp. A water chamber was provided through which the external air passed before reaching the flame. Immediately surrounding the flame was a thick, glass cylinder and above that a fine wire gauze cylinder, making a continuous protection about the flame. Outside of this was an additional wire gauze cylinder added as a means of protection against breakage. Lamps for jewelers, chemists and laboratory use are in reality miniature furnaces, and are generally provided with wide wick supports in which are large cotton wicks. Alcohol is the most common fluid used for generating heat in these lamps. Painter's lamps are contrivances in which naphtha is burned under pressure, the resulting heat being employed in the removing of old paint from surfaces which it is desired to repaint. Hand lanterns are simply lamps of various forms, surrounded by glass globes or cylinders to protect the flame from the wind. Ancient lanterns were provided with transparent protectors made of horn scraped thin to permit the light to be reflected through. The word lantern is a combination of lant-horn, and was employed to express a light which was protected with a transparent horn. Another form of early lantern, now designated by collectors as the «Guy Fawkes lantern» was of tin, perforated with small punctures through which the light shone. Early hall, or as they were called entry lanterns, were often massive and elegant ground glass globes, ornate and beautiful to a marked degree. Either candles or oil were used as illuminant. They were suspended by chains from the ceiling, and a glass smoke protector was provided in those of more elaborate make.

C. A. Quincy Norton, M.D.

Lamp′adrome, in ancient Greece, a running race with torches, customary at certain sacred festivals. The competitors were young men, to each of whom a lighted torch was given, and he who arrived first at the goal with his torch still alight was the winner.

Lamp, Electric. See Electric Lighting.

Lampasas, läm-päs′sạs, Texas, town and county-seat of Lampasas County, on a branch of the Lampasas River, and the Texas C. and the Gulf, C. & S. Fe R.R.'s; 80 miles northwest of Austin. There is a large trade here in agricultural produce, live stock, cotton, grain, wool, and has cotton gins, wagon and carriage factories, flour-mills and other industries. Sulphur springs in the locality have attracted many invalids here. Pop. (1890) 2,400; (1900) 2,107.

Lampblack, finely divided carbon or soot, produced on a commercial scale by the imperfect combustion of organic materials that are rich in carbon, such as tar, resins, pitch, and petroleum. The combustion is usually carried out in brick furnaces, or in cast-iron vessels, to which a smaller supply of air is admitted than would be required for complete oxidation. The dense smoke that results is led through a series of settling chambers, in which the lampblack is deposited, the finest grade being precipitated in the last chamber. Lampblack so prepared contains about 80 per cent of carbon, the remaining portion consisting of oily and resinous matters, together with moisture and certain inorganic substances, such as ammonium sulphate. The resinous and other organic constituents can be removed by heating to redness in a closed crucible, after which the soot is digested with hydrochloric or sulphuric acid, and finally washed to remove the inorganic constituents. Lampblack is used chiefly in the manufacture of paints and printers' inks and for these purposes the crude product is sufficiently pure. For the manufacture of Chinese ink «India ink») the purified soot is preferable. See also Carbon.

Lamper-eel, or **Lampern,** a lamprey (q.v.).

Lamp′man, Archibald, Canadian poet: b. Morpeth, Kent County, Ontario, 17 Nov. 1861; d. Ottawa, Ontario, 10 Feb. 1899. He was graduated from Trinity College, Ontario (1882), and after 1883 held an appointment in the Post-office Department of Ottawa. He published two collections of poems, ‹Among the Millet› (1888); and ‹Lyrics of Earth› (1895). His ‹Complete Poems› with ‹Memoir› by D. C. Scott appeared in 1900.

Lamprecht, Karl, German historian: b. Jessen, near Wittenberg, 25 Feb. 1856. He was educated at Göttingen, Leipsic, and Munich, and in 1885 became professor at Bonn; in 1890 at Marburg; and since 1892 has occupied a similar office at Leipsic. In 1905 he represented Germany at the Congress of Science held at Saint Louis. He founded in 1882 the ‹Wesldeutsche Zeitschrift für Geschichte und Kunst.› His writings include: ‹Beiträge zur Geschichte des französischen Wirtschaftslebens im elfen Jahrhundert› (1878); ‹Die römische Frage von König Pippin bis auf Kaiser Ludwig den Frommen› (1889); ‹Zur jungsten deutschen Vergangenheit› (1901); etc.

Lam′prey, an eel-like creature of the group *Cyclostomi* and family *Petromyzonidæ.* The anatomical characters are described under Cyclostomi. The lampreys feed principally on fishes, to which they attach themselves by their suctorial mouths, and then scrape away the flesh with their rasp-like teeth. There are about 7 genera and 15 species, living mostly in the north temperate zone. Lampreys inhabit both salt and fresh waters, but those of the sea ascend rivers and brooks to deposit their spawn on pebbly shallows, and great numbers die there. Most of them are plainly dark colored, but some of the fluviatile species are bluish or silvery, as the common one (*Ichthyomyzon concolor*), in the Upper Mississippi Valley and Great Lakes, which is about a foot long.

Lamp′ton, William James, American journalist: b. Lawrence County, Ohio. He was educated in public and private schools and at the Ohio Wesleyan University and Marietta College; edited a newspaper in Kentucky (1887–8); was reporter for the Cincinnati *Times,* writer for the Steubenville *Herald* and the Louisville *Courier-Journal,* editor of the ‹Merchant Traveler,› Cincinnati, and has been on the staff of the ‹Critic› and the *Evening Star,* Washington, and of the Detroit *Free Press.* He has also been a special writer for the New York *Sun* and the New York *Herald.* He has published ‹Yawps and Other Things.›

Lam′son-Scribner, Frank, American botanist: b. Cambridgeport, Mass., 19 April 1851. He was graduated at the Maine State College of Agriculture in 1873; served two years as clerk to the secretary of the Maine State Board of Agriculture; and was an officer of Girard College (1876–84). In 1887 he was made chief of the Section of Vegetable Pathology in the United States Department of Agriculture, and from 1888 to 1894 was professor of botany in the University of Tennessee, and director of the agricultural experiment station there 1890–4. Since 1902 he has been chief of the Insular Bureau of Agriculture, Philippine Islands. In 1889 he received from the French minister of agriculture the cross of the Chevalier du Mérite Agricole. Among his writings published in the proceedings of various bodies, and in government reports, are: ‹Weeds of Maine› (1869);

‹Ornamental and Useful Plants of Maine› (1874); ‹Agricultural Grasses of Central Montana› (1883); ‹Revision of the North American Melicæ› (1885); ‹Grasses of Mountain Meadows and Deer Parks› (1889); ‹Diseases of Plants› (1885–6–7); and papers on ‹Grasses as Land and Soil Binders,› and on ‹Grasses and Forage Plants› (1894–1900). He has also published ‹The True Grass,› translated from ‹Die natürlichen Pflanzenfamilien› (1890).

La Navidad, lä nä-vē-däd′. See NAVIDAD, LA.

Lancaster, lăng′kăs-tėr, SIR **James,** English navigator: b. about 1550; d. London 9 June 1618. He served under Drake against the Armada, commanded the ‹Edward Bonaventure› in the earliest expedition to the East Indies in 1591–4, captured Pernambuco in Brazil in 1594, and commanded the first fleet of the East India Company 1600–3. On his return home he was knighted. He was one of the original board of directors, and did much to promote the voyages of Weymouth, Hudson, and Baffin, in search of the Northwest Passage to India. The strait leading west from the north of Baffin Bay was in 1616 named Lancaster Sound by Baffin. See LANCASTER SOUND.

Lancaster, Joseph, English educator, the founder of the educational system bearing his name: b. London 25 Nov. 1778; d. New York 23 Oct. 1838. In 1798 he opened a school for children in Southwark, which he conducted on the Madras system, previously made known by Dr. Bell. (See BELL, ANDREW.) The principal features of the system were the teaching of the younger pupils by the more advanced students, called monitors, and an elaborate system of mechanical drill, by means of which these young teachers taught large numbers at the same time. He soon found powerful support, and was able to erect a school-house, which in 1805 was attended by 1,000 children. The number of his patrons and the amount of subscriptions continuing to increase, he founded a normal school for training teachers in his system. He made extensive tours through Great Britain and Ireland, and in 1811 had founded 95 schools, attended by 30,000 children. He was reckless and improvident in his habits; became bankrupt, and emigrated to America in 1818, where he at first received some support, but ultimately fell into poverty. His family subsequently removed to Mexico, where his system was very popular, and where his grandchildren, bearing the name Lancaster-Jones, became prominent politically.

Lancaster, William Joseph Cosens, «HARRY COLLINGWOOD,» English civil engineer and author: b. Weymouth 23 May 1851. He entered the British navy as a midshipman, but on account of defective eyesight resigned, and became a civil engineer, in that capacity visiting different parts of the world. Under the pseudonym «Harry Collingwood,» he is known to juvenile readers in England and America as the author of the popular nautical romances: ‹The Secret of the Sands› (1878); ‹Under the Meteor Flag› (1884); ‹The Pirate Island› (1884); ‹The Congo Rovers› (1885), a story of the Slave Squadron; ‹The Missing Merchantman› (1888); ‹The Cruise of the Esmeralda› (1894); ‹An Ocean Chase› (1898); ‹The Castaways› (1899).

Lancaster, Mass., town, and several villages combined, in Worcester County, on the Nashua River, and the Boston & Maine railroad; 18 miles north of Worcester. Here is the State Industrial School, a public library, numerous churches, high school, and manufactures of soap, brick, cotton goods, pumps, carriages, etc.; also large dairy and other farming interests. The town was first settled in 1651 by John Prescott, and it was here in 1676, that the Indians laid the place in ruins and killed 40 of the inhabitants. The town owns the waterworks. Pop. (1890) 2,200; (1900) 2,478.

Lancaster, N. H., town and county-seat of Coos County, on the Israel River, 126 miles north of Concord. The town is on the Boston & Maine and the Maine Central R.R.'s; and is a popular summer resort and residential section for New York and Boston people, being situated in an attractive part of the White Mountain region. It has manufactories of drugs, chemicals, lumber, wood-work, and machinery. The town owns and controls the waterworks. Pop. (1890) 3,373; (1900) 3,200.

Lancaster, N. Y., village in Erie County, on the New York Central & H. R., the Lehigh Valley, the Delaware & L. and Erie R.R.'s; 10 miles east of Buffalo. An important manufacturing centre containing iron-works, brass foundries, machine shops, glass-works, flouring-mills, brickyards, knife-works, and other industries. The waterworks plant is owned by the village. Pop. (1890) 1,600; (1900) 3,750.

Lancaster, Ohio, city and county-seat of Fairfield County; on the Hocking river and canal, and the Toledo, the Cincinnati and Muskingum Valley, and other railroads; 32 miles south of Columbus. It is the farming centre for the county; and is engaged in the manufacture of agricultural implements, foundry products, flour, glass, shoes, and has railroad shops and carbon works. It is the seat of the State Industrial School for Boys, Crawfis Institute, and the Columbia commercial school; contains a fine court-house, high school; four banks with a capital of $125,000; and many churches; and has electric light and street railroad plants; a good water supply; daily, weekly, and monthly periodicals; and an assessed property valuation of nearly $2,000,000. The city does an annual business amounting to $750,000. It was first settled in 1800 by Ebenezer Zane, and is governed by a mayor and a city council of seven members elected every two years. The city owns the waterworks and gas plants. Senator John Sherman and Gen. W. T. Sherman were born here. Pop. (1890) 7,555; (1900) 8,990.

Lancaster, Pa., city and county-seat of Lancaster County, on the Pennsylvania, the Philadelphia & Reading, and other railroads; 68 miles west of Philadelphia, and 37 miles east of Harrisburg. It is the manufacturing trade centre for the county; is an important tobacco market; and is engaged in tobacco growing, cigar-making, cattle raising, and the manufacture of cotton goods, iron and steel goods, shoes, and combs. It is the seat of Franklin and Marshall College; contains the Lancaster, Saint Joseph's, and the County Hospitals, Children's Home, Mechanics' and Y. M. C. A. libraries, and Conestoga Park, and has gas and electric light plants, electric street railroads. 12 National and State banks having a combined capital of $2,485,000; about 50 churches, and an assessed property valuation of over $16,000,000. The city was founded in 1718 by Mennonites (q.v.) and was called Hickory Town until 1730. In 1777 Congress sat here for a few days, and from 1799 to 1812 it was the capital of the State. It became a borough in 1742 and a city in March 1818. It is governed by a mayor elected every two years, and by a select council of 9 members and a common council of 27 members elected annually. Here was the birthplace of General John Fulton Reynolds (q.v.), and a monument has been erected to his memory. The municipality spends upward of $250,000 yearly in maintaining the public service. Pop. (1890) 32,011; (1900) 41,559.

H. E. KENNEDY,
Editor of the 'Morning News.'

Lancaster, S. C., town and county-seat of Lancaster County, on the Southern railroad, 84 miles north of Columbia. This is the shipping and trade centre of a large and fertile district devoted to the growing of cotton, tobacco, and grain. There are extensive cotton mills, machine shops, and other industries; public schools, two banks, and weekly newspapers. Pop. (1890) 1,094; (1900) 1,477.

Lancaster, House of, a name given in English history to designate the line of kings — Henry IV. V. and VI., immediately descended from John of Gaunt, fourth son of Edward III. Edmund, second son of Henry III., was created Earl of Lancaster and Leicester. His son Thomas added Derby and Lincoln to his titles, became leader of the baronial opposition to Edward II., and was beheaded for treason. His grandson was advanced to the dignity of a duke and, dying without male issue, the inheritance fell to his daughter Blanche, who became the wife of John of Gaunt. See also ENGLAND.

Lancaster Sound, an outlet of Baffin Bay, in lat. 74° 20′ N., connecting it with Barrow Strait. Though this opening into the Arctic Ocean was discovered by Baffin in 1616, it was first navigated by Parry in 1891. See LANCASTER, SIR JAMES.

Lance, a weapon consisting of a long shaft, with a sharp point, much used before the invention of firearms, and still in use. It was common among the Greeks and Romans. Frederick the Great formed an entire regiment of lancers. The Austrians followed, and soon established three regiments. After the partition of Poland, many Poles entered the French service, and a body of Polish lancers was established. The war with Russia, in which the efficiency of the lance in the hands of the Cossacks, particularly in 1812, was strikingly manifested, brought this weapon into still more repute, and the Prussians formed three regiments. The French lancers were formed in 1813 to cope with the Cossacks. Almost all the armies of Europe have had regiments of lancers. On 4 March 1903 the British War Office issued an order abolishing the use of the lance, in play as well as in work.

Lance′let. See AMPHIOXUS.

Lancelot (lăn′sē-lŏt) **of the Lake,** a name celebrated in the traditions relating to King Arthur or the Round Table. Lancelot was the son of Ban, king of Brucic, and after his father's death was educated by Viviana (the Lady of the Lake). She took him to the court of King Arthur, to make him one of his knights, and to admit him to the heroes of the Round Table. Arthur with his sword (*Escalibor*) dubbed him knight, and Lancelot subsequently distinguished himself by his great heroism. His love for Guinevere, the wife of Arthur, and his disregard of Morgana, a fairy, and the sister of Arthur, placed the knight in the most dangerous situations, from which, however, he always extricated himself. He finally succeeded to the throne, after having defeated King Claudas, the murderer of his father, but was slain by Mordred, the murderer of Arthur, whom Lancelot wished to punish. In his last moments Viviana appeared, and kissed the last breath from the lips of the dying hero, the sole survivor of the Round Table. His remains were deposited near those of Guinevere.

Lancet-fish. See SURGEON-FISH.

Lance′wood, the wood of a West Indian tree (*Oxandra virgata,* or *Bocagea virgata*), of small or moderate size, but of great usefulness and value, possessing in a high degree the qualities of toughness and elasticity. It is well adapted for the shafts and poles of light carriages, and for all uses where light, strong, elastic timber is required. Both in strength and elasticity it is considered superior to the best ash. The name is also applied to the trees themselves, as well as to several other trees and their wood.

Lanciani, Rodolfo Amedeo, rō-dŏl′fō ä-mā′dā-ō län-chä′ē, Italian archæologist: b. Rome 1 Jan. 1847. He was educated at the College Romano and the University of Rome, and in 1878 was made professor of Roman topography in the latter. He attained celebrity by his investigations among the ruins of Rome, and is a member of many learned societies. In 1887 he gave a course of lectures at Harvard University, afterward published with the title 'Ancient Rome in the Light of Recent Discoveries' (1888). Other works of his are: 'L'Itinerario di Einsiedeln e l'Ordine di Benedetto Canonico' (1891); 'Pagan and Christian Rome' (1892); and 'The Ruins and Excavations of Ancient Rome' (1897).

Land, in political economy. In economic theory as in social fact, land holds a peculiar position, by which the laws normal to other industrial objects are deflected. Foremost is the fact that, it being an indispensable *locus* for all industry or even social existence, its price or rental in a community where all the land is taken up is non-competitive, a monopoly which is also a *sine qua non,* as would be that of air or water; and consequently is always higher than its productive value justifies, or what is the same thing, men are content to receive a less return on their capital invested in it than in any other object. This is of course aggravated in countries where, as in England before 1832, all political privileges are annexed to it, the richest manufacturer having no vote unless he bought land and became a freeholder; less so, but still heavily, in England at present, where it and its tenantry confer great social and political prestige; but most of all in societies like the south of Ireland, where there is practically no industry but agriculture, and a footing on the soil at some terms is the one refuge from starvation. Farms there in former days were bid for on occasion at ten or a dozen times the gross annual produce, because there are no degrees in impossibility, and they could not in any event be deprived of a bare coarse subsistence. But the only countries in which it is on an economic level with other objects are those like America, where there has been an inexhaustible abundance of land to be had at about the cost of surveying and registering title; and here it has been the economic regulator of other prices and wages, which cannot fall below the profit of free agriculture.

The economic discussion over land in England, where freeholds are very difficult to acquire, naturally took the form of an investigation of the phenomena of Rent (q.v.); and an important part of the first economic philosophies was based on a theory of the origin and mutations of the rent charge. According to them, it could only exist where there were different grades of soils, and represented the difference in profit of farming better ones over that of farming those just sufficient to make their utilization worth while. In fact, however, even if all soils were alike, rent would still be paid for their hire if the labor and capital could produce more than the rental. Another principle early formulated, differentiating the working of land from other industries, was that of diminishing returns: it was said that labor and capital in any other field produce in exact proportion to their volume, whatever that be,— ten times the investment producing ten times the return,— whereas upon the land it is manifestly not so: extra labor produces but a small and rapidly dwindling accretion to the product, till it soon ceases to produce any. Here again there was imperfect observation: two plowings or hoeings would not produce double the crop of one, but double the outlay invested in manures or other fertilizers, loads of loam, etc., often produce very much more than a proportionate extra return. The real difference is, that in other industries the extra outlay can be applied in exactly the same channels, in land it must seek different ones.

Land in this sense refers purely to land used for raising food; where it has other uses, it is subject to the general laws of industry. Land, for instance, on which is located a water-power for manufacturing, or mineral land, if for sale, follows the usual mercantile conditions.

The subject of land belongs under Land Laws; of the single tax, under Taxation; of land nationalization, under Socialism, it being a branch of the question how far it would profit the country to place the entire social machinery under elected instead of self-determined managers; of agrarian difficulties, under the special branches of history concerned — the Roman agrarian contests, for example, shed little light on and are little illumined by the system of peasant distribution in France or the Irish land laws. For the methods followed in the United States, see LANDS, PUBLIC.

Land Banks, Massachusetts. Early in the 18th century, Massachusetts paper currency had driven abroad nearly all her coin, broken her credit, and demoralized her business; and the failure of the Quebec expedition in 1711 carried the embarrassment to a climax. Encouraged by the success of the South Sea scheme in England, some Boston merchants induced the General Court to make the bills of credit of the province legal tender for debts of seven years previous and three years subsequent. Besides this, a number of notable men, including Peter Faneuil, devised the scheme of a bank whose resources should rest on real estate mortgages, to make loans of its own notes; to encourage subscriptions, it was proposed that Harvard College should have $1,000 a year out of the proceeds. Gov. Dudley opposed it strongly; his son, the attorney-general, memorialized the General Court against it; and the latter forbade them even to print their scheme till they had laid it before the Court, which then refused to incorporate it. To ward it off and produce the same result, at Dudley's suggestion a public bank was founded, with a capital of $250,000 provided by the General Court, to lend bills of credit for five years at 5 per cent, one fifth to be repaid each year, the whole secured on real estate mortgages. In 1739, with the bad state of the finances increased by the still worse state created by the paper money of Rhode Island, and silver rated at 27 to 1, the project of a land bank was again brought forward. Several hundred persons were to form it; notes were to be issued up to $750,000, the security being a mortgage on each partner's real estate in proportion to his holding, or sureties also possessed of sufficient estate, and each partner paying 3 per cent on the loans made him, in bills or in kind, at a rate fixed by the directors. The House of Representatives was largely favorable; but Gov. Belcher denounced it as tending to fraud, disturbance of order, and confusion of business, and he set aside the election of the Speaker and nearly half the council for connection with the bank, besides displacing many office-holders. Despite this, the company began operations, expecting that the notes would circulate readily. They were mistaken: not over $300,000 were issued. But in 1741 Parliament not only extended to the colonies an act forbidding the issue of bills not payable in coin at the end of the term, but made the directors liable to the holders of the bills for their face with interest. As a large part of them had been issued at a discount, the partners (though many had little to lose) were threatened with ruin, and Parliament had to permit relief measures. One of these partners, who lost all his property, was the father of Samuel Adams.

Land Crabs. Almost all shore-crabs will withstand exposure to the air for some hours without suffering injury, and many of them are regularly so exposed at ebb tide. It is not surprising, then, that some of them have wandered far from the seashore into the fresh-water streams and the moist woods and mountain forests, or even largely forsaken the vicinity of water and established themselves on dry hillsides. The land crabs, par excellence, belong to the family *Gecarcinidæ*, in which the carapace is thick and hard, strongly arched above, rounded, bent downward and truncate in front, and vaulted in the branchial region. The branchial chamber is spacious and lined by a spongy membrane which retains moisture for a long time and thus keeps the gills damp. Six or seven genera and several species inhabit the warmer regions of both hemispheres. One species (*Gecarcinus ruricola*) is common on many of the West Indian islands, is excessively abundant on some of the Bahamas and occurs in southern Florida. They abound at the eastern end of Cuba, and were a source of immense annoyance to the inexperienced soldiers of the United States army in the campaign of 1898 against Santiago de Cuba. On Jamaica and the other larger islands they inhabit a zone in the hills from one to three or four miles from the shore, where they live in burrows beneath stones or under the roots of trees, from which they emerge at night to seek their chiefly vegetable food. They are large, robust creatures with extremely powerful claws, which a pugnacious disposition leads them to use freely. Mating takes place in the spring, and during the rainy season in May a common impulse causes them to migrate in vast armies to the sea, where they bathe and deposit their eggs, which are washed up and buried in the sand by the waves. There is no metamorphosis, but the young develop directly and hatch in nearly the adult form. By resident naturalists and travelers who have observed it, this animal's march to the sea is described as a most impressive sight. Most of the males form an advance guard which is followed in two or three days by the females and remaining males. They are said to proceed in a direct line and to climb over, instead of passing around, every obstacle, even houses. After discharging the eggs, bathing, and resting, the crabs return to the hills and in midsummer close their burrows with leaves, grass, etc., and retire to their inmost recesses to moult. At this time, while in the soft-shelled state, they are in high favor for the table, and are dug out of their burrows in large numbers by the natives. A related species (*Ucauna*), the Brazilian mangrove-crab, is remarkable for the regular inspiratory and expiratory changes of the air in the branchial chamber.

The *Thelphusidæ* are river crabs rather than land crabs, but a number of species inhabit the damp forests of warm countries. In Japan a well-known species (*Thelphusa dehaanii*) is frequently met with in the mountains at an elevation above 2,000 feet. Some terrestrial species are mentioned in the article HERMIT CRAB.

Consult: Brown, 'Civil and Natural History of Jamaica'; Young, 'West Indian Stalk-eyed Crustacea'; and Rathbun, 'Proceedings of the U. S. National Museum' (1899).

Land Grant, a concession or subsidy made by the United States Congress to assist railroad companies to secure funds, by the sale of bonds secured by lands so granted, to construct lines of railway through parts of the United States where the local traffic would not pay the running expenses. About 215,000,000 acres of land were given to the various railroads of the country by the government. The Illinois Central received a strip of land 12 miles wide, running the whole length of Illinois; the Northern Pacific received 47,000,000 acres; the Atlantic and Pacific, 42,000,000; the Union Pacific, 13,000,000, and other roads in proportion.

Land League, an Irish organization founded by Charles S. Parnell, which came into being at a meeting held in Dublin 18 Nov. 1879. The principal tenets of the association were the «three F's»— fixity of tenure, fair rent, and free sale (of the tenant's interest); but many speakers at Land League meetings, held in different parts of the country, went so far as to demand that the soil should belong to the cultivator. Opposition by direct violence was deprecated, and recourse was had to boycotting. (See BOYCOTT.) This state of things continued till the end of 1880, when 14 members of the Land League, of whom the most important were Parnell, Dillon, Biggar, T. D. Sullivan, and T. Sexton, were indicted. The chief counts were «conspiring to prevent payment of rents, to defeat the legal process for the enforcement of payment of rents, and to prevent the letting of evicted farms.» The trial, which took place early in 1881, was a fiasco, but it drew from Justice Fitzgerald the declaration that the Land League was an illegal body. A Ladies' Land League, under the presidency of Miss Anna Parnell, was then formed. It was denounced by Archbishop McCabe, and warmly defended by Dr. Croke, archbishop of Cashel, and T. D. Sullivan. The agitation increased, and the «No Rent» cry became more frequent. Gladstone denounced Parnell, and soon afterward Parnell, Dillon, Sexton, O'Kelly, and the chief officials of the League, were arrested and imprisoned in Kilmainham. They issued a manifesto calling on the Irish tenants to pay no rent during their imprisonment. The government replied by declaring the Land League an illegal body, and suppressed its branches throughout the country. The Ladies' Land League continued until the close of the year, when it was dissolved by the leaders of the Irish party. See IRELAND.

Land-locked Salmon, a salmon which inhabits an inland body of water, and can never go and come to the sea. The term applies in America only to salmon inhabiting certain lakes in eastern Canada and northern New England; and whether these salmon should be regarded as distinct species or merely as representatives of the Atlantic salmon modified to suit their local conditions, is a question upon which ichthyologists are not agreed. It is most convenient to follow the distinctions made by sportsmen, and regard the land-locked salmon as two species, the Sebago salmon and the ouananiche (qq.v.).

Land Office, United States, the department charged with the management and disposal of the public lands. For its constitution and history, see LANDS, PUBLIC.

Land-snail, an air-breathing terrestrial gasteropod mollusk, or snail of the family *Helicidæ* or some nearly related pulmonate. These mollusks possess a well-developed, usually globose and more or less spiral, horny and brightly colored shell (except in slugs, q.v.), into which the whole animal may be withdrawn, and which has, usually, a lunate aperture, not closed by an operculum. Four retractile tentacles exist, the upper pair being the larger and possessing eyes at their tips. A distinctly developed so-called «foot» is present. The aperture by means of which air is admitted to the lung-chamber for the purpose of breathing exists on the right side, under the edge of the shell. The mouth possesses an upper mandible of horny consistence and toothed structure, and, as in other gasteropods, there is a tongue or lingual ribbon bearing many teeth. The food is generally of a vegetable nature, and snails are capable of doing great mischief in gardens, but none in the United States is noticeably harmful. The sexes are united in the same individual; but the copulation of two such hermaphrodite individuals is necessary for impregnation, which becomes mutual. The eggs are globular or oval, have coriaceous shells, and are laid singly in damp places, as under leaves, stones, etc.; *Bulimus* (q.v.) is noted for the comparatively large size of its eggs. These eggs and the snails themselves are eaten by birds, turtles and other enemies, especially in the tropics, where land-snails are more varied, numerous and conspicuous than in temperate regions. Some species, however, live in very cold climates, far to the north or high on mountain ranges. Those of cold climates hibernate in winter, creeping into sheltered places, and closing the aperture with one or more air-tight drum-head-like curtains of hardened mucus. In hot and dry places they protect themselves in midsummer against undue loss of moisture in the same manner.

The family Helicidæ, which embraces not only the terrestrial genus *Helix*, but the bush-climbing, long-spired *Bulimus* (q.v.), and several smaller genera, includes thousands of species. Specimens are always most numerous in moist woods and in a limestone region than elsewhere. Many small terrestrial mollusks, properly called land-snails, belong to families other than *Helicidæ*, as the *Orthalicidæ*, *Bulimulidæ*, and *Pupidæ*, the last containing many minute American species, not larger than a pin-head, shaped like a grain of rice, and beautifully chased; *Stenogyridæ*, in which are found the great agate-shells (*Achatina*) and sundry others of the tropics; *Succineadæ*, represented by many small, glassy expanded forms of great beauty; and others, some of which contain shell-less and slug-like forms.

Utility of Snails.— Snails have been made of use medicinally in the past, and curative virtues are still attributed to them among European peasants. Among the Romans snails were held in high esteem as articles of food and even of luxury; and special parks or establishments named «cochlearia» were constructed for the purpose of fattening these mollusks. The practice of eating snails has never been very common in England, but Howard, the prison philanthropist, tried to encourage it. Howard cultivated the *H. varronis*, the largest of European species. In modern Europe, as in many parts of France, and in Vienna, especially during Lent, snails are largely consumed, especially among the lower orders. The proletariats of Naples are exceedingly fond of a soup made from *H. nemoralis*. The most valued species among modern epicures is the *H. vermiculata* or little hermit snail, found at Montpelier; and *H. aspersa*, the «garden-snail» of the English, is also regarded as very delicate when properly cooked. *H. pomatia* has a wider range as an edible snail, especially in France, where this species is extensively cultivated for market in appropriate enclosures called *escargotières;* thousands are also gathered from the vineyards and sold in the larger towns of southern France. It is imported in pickle to the United States, and finds extensive sale.

Bibliography.— Consult: Lovell, ‹British Edible Mollusks›; Cooke, ‹Mollusks› (Vol. III. Cambridge Natural History, 1895); Binney and Bland, ‹Land and Fresh-water Shells of North America.›

Land of Steady Habits, a phrase applied to the State of Connecticut.

Land Surveying. See SURVEYING.

Land-tortoise, a terrestrial turtle of the family *Testudinidæ*, order *Cryptodira* (see CHELONIA), a family characterized primarily by the possession of a strong box-like shell, completely ossified when young and covered with horny shields, into which the whole body may be withdrawn and in some forms wholly enclosed. The family also contains aquatic and amphibious forms (see POND-TURTLES; TERRAPIN), but these need not now be considered. American representatives are found in the box-turtles (properly so-called) of the genus *Cistudo*, in which the plastron is connected with the carapace by ligaments and is divided into two movable lobes, the transverse hinge being so perfect that the box can be completely closed after head, legs and tail have been withdrawn. The carapace is high and arched. The common box-tortoise of the United States (*C. carolina*) has become completely terrestrial, and has undergone some interesting structural modifications in consequence, among others a loss of webbing between the toes. It reaches about six inches in length, is highly variable in the arrangement of the blackish and reddish tints of its coloration, and each dorsal shield is nicely sculptured in concentric rings, but these become worn nearly smooth in old age. They wander about the woods, walking with the shell well lifted from the ground, and searching for food most diligently in the evening and early morning and in moderate and moist weather. Their food consists chiefly of snails, slugs, earthworms, crayfish, grubs, and the like, together with fungi and a little green stuff. In winter they hibernate, buried in soil or garden rubbish. They are fond of staying in one limited district, are easily tamed and exhibit some intelligence, but individuals differ much in these respects.

The typical land-tortoises, however, are those of the genus *Testudo*, in which the plastron has no hinged, folding part, and the feet are short and webless. The 40 or more species are scattered throughout the warmer parts of the world, excepting in Australasia. The small, convex, highly sculptured «Greek» tortoises of Europe and North Africa, so often kept as garden pets, are familiar representatives. They feed almost wholly upon green grass, leaves and vegetables. The captive made famous in Gilbert White's ‹Natural History of Selborne› was one of these (*T. ibera*), and its shell is now preserved in the British National Museum. The gopher tortoise (q.v.) of Florida is a North American species; and a similar widely spread South American species (*T. tabulata*), which lives mainly on forest fruits, is often two feet long.

Gigantic Land Tortoises.— Certain terrestrial tortoises of very large size survived until the historic age, and in some cases still exist, on islands in the Indian and Pacific oceans. They are relics of a bygone period, when even larger ones prevailed. Fossil bones in Miocene and Pliocene strata of India, western North America and other parts of the world, indicate tortoises of that period whose heads alone must in life have been nearly a foot in length, and beside those giants even the largest of the modern species so-called would look small. The presence of such turtles gave their name to the Galapagos (q.v.) group of islands off the coast of Ecuador, where each of the large islands of the archipelago supported a separate species, but all resembled one another in the relative small size of the head and great length of the neck. «The most peculiar looking are or were *T. ephippium* and *T. abingdoni*, the shell of which is extremely thin, with large lacunæ in the osseous plates. The profile of the shell is saddle-shaped, with the horny shields partly concave and turned upward at the sides. The general color of these and other Galapagos tortoises is black.» Toward the close of the 19th century all that remained of these tortoises were caught and distributed alive to various parks and zoological collections in North America and Europe, where they will be cared for and will probably continue their race. They eat grass and leaves of succulent plants, as lettuce; their food in the Galapagos having been mainly cactus and a lichen (*Usnea*).

Other giant tortoises inhabited the islands of the Indian Ocean until within the historic period, and a few remain in captivity. In 1898 there was still living in England a specimen of *T. sumeiri*, once existing in thousands on the Seychelles, whose history was known since 1766, when it was already of large size. Other species inhabited Madagascar, where they became extinct prehistorically, Bourbon, Mauritius and Rodriguez. They were utilized as food by the voyagers of the 17th and 18th centuries; were wastefully slaughtered by the European colonists, and carried in shiploads from island to island, until at last none remain but a few captive specimens.

Consult: Günther, ‹Gigantic Land Tortoises› (1877); Gadow, ‹Amphibia and Reptiles› (1901); Baur, ‹American Naturalist,› Vol. XXIII. (December 1889).

Lande (Fr. länd), in France, a name given to a sandy plain unsuited for bearing grain. From the vast extent of landes (about four fifths of the total area) which it contains, the third department of France, in point of size, derives its name. The landes lie to the north of the Adour, while the country to the south of that river is fertile. Of the whole area (about 2,250,000 acres), nearly one half is waste, a third under wood, and little more than a sixth arable. The landes are very thinly populated, the inhabitants gaining subsistence by fishing, by such agriculture as is possible, and by keeping cows and sheep. The shepherds make use of stilts, that their increased height may give them a greater range of vision, and, when fatigued, sit on a pole with a head somewhat like that of a crutch, and while away the time in knitting.

Lan'der, Frederick West, American military officer: b. Salem, Mass., 17 Dec. 1821; d. Paw Paw, Va., 2 March 1862. He was educated at the Norwich (Vt.) Military Institute, and became a civil engineer. He was employed in making surveys across the continent by the United States government for the purpose of finding a suitable route for a transcontinental railroad and served in the Army of the Potomac in the early part of the Civil War.

Lander, Jean Margaret (Davenport), American actress: b. Wolverhampton, England, 3 May 1829; d. August 1903. Her stage career began in childhood, and her parents brought her to this country in 1838, where she played for four years, then traveled in Europe (1842–8), playing as Julia in ‹The Hunchback› in England and on the Continent, returning to the United States in 1849. She acted with great success in the principal cities until 1860, when she married Gen. Frederick West Lander (q.v.) and retired from the stage. After his death in the Union army in 1862, Mrs. Lander joined the Hospital Corps of the army, and for more than a year she and her mother were in charge of the hospital at Port Royal, S. C. After the War she returned to the stage and again enjoyed great popularity in a number of important roles, some of which she originated in this country. Her final appearance was made in Boston in 1877, in an adaptation of ‹The Scarlet Letter.›

Lander, Louisa, American sculptor: b. Salem, Mass., 1 Sept. 1826. In early youth she manifested her taste for sculpture by modeling heads for dolls, and carving bas-reliefs on alabaster and other soft substances. As she grew older she modeled likenesses of members of her family, and executed cameo heads. She went to Rome in 1855 and became the pupil of Crawford, and soon after finished in marble ‹To-day,› a youthful figure emblematic of America, and ‹Galatea.› Among her subsequent works are: a bust of Hawthorne; a spirited statuette of Virginia Dare, the first English child born in America; a life-size statue of Virginia; a reclining statue of Evangeline; ‹Elizabeth, the Exile of Siberia›; a statuette of Undine, and one of ‹Ceres Mourning for Proserpine›; numerous portrait busts; ‹A Sylph Alighting›; and ‹The Captive Pioneer.› She was a sister of F. W. Lander (q.v.).

Lander, Richard, English African explorer: b. Truro 8 Feb. 1804; d. Fernando Po 6 Feb. 1834. He became a domestic servant; in that capacity accompanied Captain Hugh Clapperton as his servant on his second expedition into the interior of Africa 1825. After Clapperton's death in 1827 he returned to the coast, and in 1829 published ‹Records of Captain Clapperton's Last Expedition to Africa.› In the spring of 1830 he set out with his brother John on an exploring expedition, under the auspices of the English government, and from Badagry, near Cape Coast Castle, they proceeded to Boossa on the Niger, and after ascending the river for about 100 miles, traced its course downward to the sea, and proved that it entered the Bight of Benin by several mouths. They were the first also to discover that it was fed by the Benue. Their journal was published in 1832, entitled ‹Journal of an Expedition to Explore the Course and Termination of the Niger,› and was translated into several languages. While on a trading expedition in the delta of the Niger, he was wounded by the natives, and died soon after.

Land′grave (German *Landgraf*), a title assumed by certain territorial counts of the German empire to distinguish them from the inferior counts. There were originally three landgraves, those of Thuringia, and of Upper and Lower Alsace, who were princes of the empire. The title was assumed by Louis III. of Thuringia about 1130.

Landlord and Tenant, the relation of renter to rentee; not necessarily of land, except as all dwellings or industries must have land for a *locus* (see LAND, IN POLITICAL ECONOMY), but of any of its material incumbrances. The landlord need not be the owner: he may himself be a lessee or tenant granting occupancy or use to a sub-tenant. It is sufficient that his title is superior to that of the one who holds through him. The difference between the latter's interest and that of the landlord is known as the reversion of the latter; but there is obviously no reversionary interest unless the grant is specifically limited to a less volume than the grantor's, and none unless it is inferior in kind. Historically, the relation originated in the practice of infeudation in the Middle Ages, when all holdings were a chain of vassalships, when even kings did homage for portions of their possessions, and no property was held by any but kings, except as vassal to some overlord. The feudal incidents were abolished by the English statute of Quia Emptores in 1290. The modern mercantile relation of lessors and lessees is the creation of statute, judicial decisions, and the specific agreements of written contracts.

The mutual obligations of the contracting parties in law are natural consequences of the relation. The landlord on his part must protect the tenant from any other claim of occupancy; must not evict him or suffer him to be evicted, and if he does either, is liable in damages. He is not, however, under any obligation to protect him against violence, trespass, nuisances, or other unlawful acts of outsiders; nor to furnish habitable buildings, usable implements, or anything whatever of specific quality unless specially agreed on. The doctrine of *caveat emptor* is also extended to *caveat lessor;* he must form his own conclusions and run his own risks. The tenant cannot question or interfere with the landlord's title, even if the latter be worthless: his own is derived from it, and must stand or fall with it. Nor does any length of occupancy enable him to plead the latter in bar of the landlord's right, by the statute of limitations, under common law; but he very generally can by statute after a certain period, though never till the period of his tenancy has expired. Of old the feudal tenant could do at once much more and much less than this: he could not under any circumstances get the landlord's property into his own hands, but by a legal fiction of which the law sanctioned the use (feoffment or common recovery), he could grant to a third party what he did not himself own, so that the third party could retain it; the wrongful grantor, however, forfeited his own estate to the landlord. Statutes long since abolished these fraudulent conveyances.

The tenant must keep the premises in repair; if he lets them go to ruin or deteriorate from non-use he is liable in damages. By common law he must rebuild premises destroyed by fire; most States of the Union abrogate this right, however. The tenant must not commit waste; but he may cut wood for fire, repairs, or fencing, and if he is a tenant at will or for life he has a right to the crops.

Obligations by agreement may of course be almost anything. Stipulation of rent usually forms a part; permission to make improvements not to be removed is most usual, sometimes obligation to make them of certain sorts; and an agreement not to assign the lease without the landlord's permission. The landlord may agree to renew the lease or to pay for improvements, or permit removal of fixtures, etc. An agreement to pay a reasonable rent has been held to be implied without being specified in the lease. All such rights and duties extend to the successors to the parties, including assignees.

Landois, läṅ-dwä, **Hermann**, German zoologist: b. Münster, Germany, 19 April 1835. He studied for the priesthood, but in 1859 turned his attention to science, and in 1873 was appointed professor of zoology at the Academy of Münster. He is the author of ‹Sound and Voice Apparatus of Insects› (1867); ‹Text-Book of Zoology› (1870); ‹Text-Book of Botany› (1872); ‹Voices of Animals› (1875); ‹Text-Book of Instruction in the Description of Nature›; and other popular works of a like character.

Landois, Leonard Christian Clemens, German physiologist: b. Münster, Germany, 1 Dec. 1837. He is a brother of H. Landois (q.v.), and was educated at the University of Greifswald and has been professor of physiology there from 1872. He is widely known as an original investigator and has published: ‹Le Diagnostique des Maladies des Yeux› (1877); Manuel d'Ophthalmoscopie› (1878); ‹Traité complet d'Ophthalmologie› (1886); ‹Lehrbuch der Physiologie› (10th ed. 1899); etc.

Lan′don, Letitia Elizabeth, English poet, better known by her initial signature «L. E. L.»: b. Chelsea, England, 14 Aug. 1802; d. Cape Coast Castle, Africa, 15 Oct. 1838. She wrote much for the then fashionable annuals, and was long popular both as poet and prose writer. In June 1838 she was married to a Mr. George MacLean, and sailed with him to Cape Coast Castle in Western Africa, where he was governor. She died there soon after her arrival, from an accidental over-dose of prussic acid, which she had been in the habit of using medicinally. Her chief works are: ‹The Improvisatrice and Other Poems› (1821); ‹The Golden Violet› (1827); ‹The Venetian Bracelet› (1829); ‹Ethel Churchill,› a novel (1831); and ‹Romance and Reality,› a novel (1837).

Landon, Melville de Lancey («ELI PERKINS»), American author: b. Eaton, N. Y., 7 Sept. 1839. He was graduated at Union College in 1861, and soon after joined the Union army, from which he retired in 1864, having reached the rank of major. He became a cotton-planter in Arkansas and Louisiana, traveled in Europe, and was for a time secretary of the United States legation at St. Petersburg. His writings have made him known chiefly as a humorist, but have dealt with serious as well as lighter subjects. He has published: ‹Saratoga in 1901› (1870); ‹History of the Franco-Prussian War' (1871); 'Wit, Humor and Pathos' (1875); 'Wit and Humor of the Age' (1880); 'Kings of Platform and Pulpit' (1887); 'Thirty Years of Wit' (1890); 'Eli Perkins on Money—Gold, Silver or Bimetallism' (1895), and other works.

Lan'dor, A. Henry Savage, English traveler and painter: b. Florence, Italy. He is a grandson of Walter Savage Landor (q.v.). He was educated at the Liceo Dante Instituto Tecnico, Florence, and the Atelier Thaddeus and Atelier Julian in Paris. He has traveled for several years, in Corea, China, Japan, India, Nepal, Tibet, South Mongolia, Persia, Beluchistan, the Philippine, Azore, and Sulu islands, and in Australia, America, and Northern Africa. He was the first white man to reach the sources of the Brahmaputra River and established their exact position (Tibet 1897); and was also the first white man to explore Central Mindanao Island, there discovering the Mansakas («white tribe»). He was the first Anglo-Saxon to enter Peking, the Forbidden City, when it was taken by the allied troops in 1900. Among his writings are 'Alone with the Hairy Ainu'; 'Corea, or the Land of the Morning Calm'; 'A Journey to the Sacred Mountains of Siao-ontai-shan'; 'China and the Allies' (1901); 'In the Forbidden Land' (1898); 'Across Coveted Lands' (1902); 'The Gems of the East' (1904); 'Tibet and Nepal' (1905).

Landor, Walter Savage, English poet and author of prose dialogues: b. Warwick, England, 30 Jan. 1775; d. Florence, Italy, 17 Sept. 1864. The literary life of Landor is among the longest in the history of letters; his first book, 'The Poems of Walter Savage Landor,' appeared in 1795; his last work, 'Heroic Idyls,' came out in 1863. He was the eldest son of Dr. Landor and his second wife, Elizabeth Savage, both of ancient families. As a boy Landor showed great love of reading, was fond of trees and flowers, and was known for his physical strength and fiery temper. At school near home and at Rugby, which he entered at 10, he was an excellent Latin scholar, and his rebellion against the somewhat arbitrary dictum of his tutor regarding a Latin quantity was the cause of his rustication in his sixteenth year. Two years later he entered Trinity College, Oxford, where he was known for his sympathies with republican government and whence he was expelled the following year for a boyish freak. This led to a quarrel with his father, and in 1794 he left home. For the next ten years he lived a somewhat nomadic life, fluctuating between London and Tenby, Wales, with short periods of residence in Bath and other intervening cities, and trying his hand at journalism and poetry. In the former field he wrote rather intemperate articles for the *Courier* against the Tory government then in power; in the latter he did some of his best work. Besides 'The Poems of Walter Savage Landor' already mentioned, there appeared in 1798 his long and vague, but often musical, poem, 'Cebir,' and four years later 'Poetry by the Author of Cebir.' The literary influence to which he was at this time most subject was Milton.

On the death of his father in 1805, Landor succeeded to a goodly property, and began to look about for a country place. Finally in 1809 he bought a large estate at Llanthony in Wales, which he conducted in so high-spirited and unpractical a way that in five years he sunk £70,000 in it and was obliged to give it over to trustees, who made it yield a sufficient income to support him elsewhere. Meanwhile, in 1808, he had with characteristic enthusiasm enlisted with a company of volunteers in the war for Spanish liberty, but after a few months in Spain, returned disgusted with the pusillanimousness of the leaders. With equal impetuosity he had, in 1809, married Miss Julia Thullier, a young girl 18 years his junior, whom he met at a dance in Bath. Owing to his unevenness of temper and to the commonplaceness of her mind the marriage proved, in many ways, to be an unhappy one. In a fit of anger, he went to France without her, in 1814, though they had planned the journey together. During this period he published several books, of which the most important is 'Simonidea,' a volume of elegiac verses (1806), some of his Latin poems, 'Idyllia Heroica' (1810), and the tragedy 'Count Julian' (1812).

Settling first in Tours, Landor was there joined the following year by his wife, and the two then went to Italy. For three years they lived at Como and later in various Italian cities, until, in 1821, the Landors made Florence their home. Here they were for eight years, and here Landor, who had done comparatively little literary work except for the finishing of 'Idyllia Heroica' (1820), wrote the books most intimately associated with his name, the 'Imaginary Conversations.' The first of these appeared in two volumes in 1824; this was followed by a third in 1828, and by the fourth and fifth in 1829. Altogether the number of conversations was about 80, which was increased during the rest of Landor's life by about half again as many more. Though not in any sense popular, they were welcomed by the men of letters of the time. In general they express Landor's reflections and feelings on subjects of high importance. Colvin, in his life of Landor, divides them into two classes, the dramatic, represented by the excellent 'Leofric and Godiva,' and the reflective to which type the majority conform, but in a strict sense none are dramatic, for the reason that Landor rarely gets outside of his own feelings, and though this feeling is often high and noble, it is not to any notable degree historically accurate. The reflective dialogues express Landor's fine thoughts on a great variety of subjects, the character of which is represented by the galaxy of famous men who serve as his mouthpiece. All in all, the 'Conversations' are among the best examples of restrained, polished, classic style that we possess.

In 1829, Landor removed to Fiesole and here, among other work, he wrote 'The Citation and Examination of William Shakespeare,' published in 1834. The book is one of his longer pieces but is not so successful as the 'Conversations' because of its rather labored humor. Nor is it so good as the two succeeding pieces, which Landor planned or wrote in Italy and published after his return to England in 1835. 'Pericles and Aspasia' (1836), his longest single work, is commonly regarded as his most finished production, in regard to beauty of thought and finish of expression. Scarcely, if at all, inferior, however, is the ‘Pentameron,’ the record of a five-days’ visit of Petrarch with Boccaccio, a book which contains some of Landor’s most mature criticism, as well as the most charming of his descriptive passages, the narrative of Ser Francisco’s visit to church. It is on these perhaps as much as on the more miscellaneous ‘Conversations’ that Landor’s fame chiefly rests, though the latter by reason of their earlier appearance and the newness of their form are what are more commonly coupled with Landor’s name.

Landor’s work after 1837 is comparatively unimportant, and except for some articles to Leigh Hunt’s *Monthly Repository,* a satire, and some “Hellenic,” supplies little new in type. The most conspicuous volumes were ‘Last Fruit of an Old Tree’ (1853), containing conversations and miscellaneous work, ‘Dry Sticks, Fagoted by W. S. Landor’ (1858), and ‘Heroic Idylls’ (1863).

Criticism is in substantial agreement that Landor occupies a high but not a pre-eminent place in 19th century letters. The excessively cultivated nature of his subjects, the comparative scantiness and restraint of his production, and the fact that his style is conspicuous for rhetorical graces rather than for natural warmth or broad sympathy, keep him from attaining the highest position either as a poet or as a prose writer, but as the master of polished prose and the writer of isolated passages he has few superiors.

Bibliography.—The standard life is that by John Forster in 2 vols. (1869), now forming the first volume of the standard edition of the works in 8 vols. (1876). Colvin’s life in the ‘English Men of Letters’ is good; it supplies a good list of authorities on Landor. Leslie Stephen’s essay (‘Hours in a Library,’ vol. 2), and Vernon Lee’s ‘The Rhetoric of Landor’ (*Contemporary Review,* vol. 84, p. 856, 1903), should be consulted.

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Land′rail. See Corncrake.

Lan′dreth, Burnet, American agriculturist: b. Philadelphia 30 Dec. 1842. He was educated at the Polytechnic College, Philadelphia, was captain of infantry during the Civil War, serving in the Army of the Potomac, and since the war period has devoted himself to the promotion of higher agricultural and allied interests in many important fields of service. He was chief of the Bureau of Agriculture at the Centennial Exhibition, director-in-chief of the American Exhibition in London, and is a member of many American scientific societies; also holds honorary membership in similar bodies in European countries, in India, and in Japan; and is Chevalier and Officier du Mérite Agricole de France. He founded and is president of the Association of Centenary Firms of the United States, and is head of the seed-house of D. Landreth & Sons, established in 1784 in Philadelphia. He has published several works on agricultural subjects.

Landry, Auguste Charles Philippe Robert, Canadian author and statesman: b. Quebec 15 Jan. 1846. He was graduated from Laval University in 1866; then took a course in agricultural science at the College of Sainte Anne, and devoted himself to farming. He served for several years in the militia, rising to the rank of lieutenant-colonel. In politics he is allied with the Conservatives; he was a member of the Quebec Assembly 1875–6; was elected to the Canadian House of Commons in 1878, where he served till 1887, when he was defeated at the general election; in 1892 he was called to the Senate. He became president of the Quebec Exhibition Company in 1894, is a member of several agricultural societies, and was elected president of the Council of Agriculture in 1896. He has written ‘Traité populaire d’Agriculture théorique et pratique’ (1878); ‘L’Eglise et l’Etat’ (1883); and numerous papers on political and scientific subjects.

Lands, Public. The subject may be divided into five sections: (1) The acquirement of the lands by the nation; (2) the objects and methods of disposal; (3) the manner of acquirement by individuals; (4) the government system of management; (5) general statistics.

1. The 13 States as finally delimited contained 341,752 square miles, increased by the treaty of peace with Great Britain to 830,000. Their Western lands *in posse* were ceded to the general government as a common possession and trust fund, first by New York to remove obstacles to the formation of the Confederation (q.v.); then by the rest of the northern States and Virginia before the adoption of the Constitution; the others gradually followed, Georgia coming last in 1802. It was understood, and is implied in the Constitution, that this was eventually to be erected into States; but meantime Congress must decide on their disposal to the settlers who were ultimately to form those States, and could reserve as *enclaves* within the States whatever tracts it chose. The Ordinance of 1787 (q.v.) is a monument to its action in administering the territory north of the Ohio. For the further accessions to our territory, see Annexation. But after these State or treaty cessions, there still remained Indian claims to vast tracts, which could only be quieted by purchase or war, and in fact required much of both. Great tracts were bought, and the Indians who refused to remove from the remainder east of the Mississippi were gradually deported beyond it. (See Indian Territory; and for the most extreme case of forcing a removal, Cherokees and Cherokee Case.) The reservations have embraced in all more than 100,000,000 acres, but have themselves later been largely thrown open to settlement, by purchase from the Indians.

2. The first thought in handling the public lands was revenue: “to effect a gradual discharge of the domestic debt, and furnish liberal tributes to the federal treasury” (‘Federalist’). As the country grew richer this policy was abandoned, and two others took its place,— to induce settlement of the territory, and to provide funds for public uses where general taxation would have been unpopular or perhaps unconstitutional. The latter have included grants to private individuals for eminent public services, to educational and charitable institutions direct and to States for them, to public improvements like roads, canals, and railroads, and to States for them (the latter first), and lately for a giant irrigation fund.

The first policy naturally led to its being sold to syndicates in vast tracts; the price, at first fixed at a minimum of $1 per acre, was reduced to 66⅔ cents, and two great sales were made in Ohio, to a New England and a New Jersey company. The second resulted in Cincinnati, but its 1,000,000 acres conflicted with Indian and military reservations, and only 310,000 acres were actually sold. This policy aroused great discussion: some claimed that the land should be sold to settlers in such lots as they wished; others declared that if so done the Eastern States would be depopulated,— the States were already bidding against each other to sell their own lands, Massachusetts offered Maine lands at 50 cents an acre to check western emigration, and the Illinois Spaniards offered theirs for nothing with a temporary exemption from taxation, and stocked at that. Hamilton made a classic report in 1790, the basis of an important part of the present system, and in 1796 Congress voted to sell the lands in quantities a mile square at $2 an acre. Up to 1801 the total sales were 1,484,047 acres, all in Ohio. But the sales were so slow at the last that in 1799 nothing was turned into the treasury from this source, and in 1800 only $443. In May 1800 a credit system was introduced, one fourth down and the rest in three years. The result was a great increase in sales, but also in so much chance speculation that a large part of the payments were defaulted, Congress disliked to oust the settlers, and relief acts were regularly passed for many years. In April 1820 the credit system was abolished, and lands sold for cash in lots as small as 80 acres, at $1.25 per acre. The debts still owed were over $21,000,000 in December 1820; they were not wholly discharged — partly through payment for arrears and more by relinquishment of lands — till 1830. Under the new system, by 1840 the sales had been some 76,000,000 acres. After the panic of 1837 the pre-emption system (see Section 3) was introduced, with a bitter fight,— as it was thought to encourage speculators, intruders, and squatters, who would not pay until forced,— and for some years it was confined to special licenses which were really relief acts for previous settlers. In September 1841 a permanent pre-emption act was passed, supplemented by the act of 5 March 1843. This was confined to surveyed lands; in 1853–4 it was extended to unsurveyed ones, so that intending settlers could take their choice of the best lands everywhere. In 1854 a Graduation Act (q.v.) was passed, to sell off cheaply lands which had been long in the market. From 1852 on a homestead law was one of the platform issues; first to grant 160 acres free to any settler, then to charge 25 cents an acre after five years, finally passed in 1862 substantially as at present,— five years' continuous residence and improvement on a quarter-section, and then a free patent. The results of this policy are given in the final paragraph. The pre-emption law has recently been repealed on account of the shameless collusive frauds on the government. In 1878 a Timber Culture Act was passed, granting not exceeding 160 acres to any one proving that he had planted 150 acres of timber; this, too, has been repealed.

Of the gifts, the chief personal ones were in bounties to the Revolutionary soldiers and to those of the War of 1812, and to a few individuals like Lafayette. After the Mexican War, some 60,000,000 acres was given in bounties to soldiers and officers. Grants were also made to those who would take land on specified frontiers, to form a buffer settlement. The grants for public improvements have been lavish. The first were wagon roads; then came canals, for which over 4,000,000 acres were granted in five States between 1824 and 1866; then by act of 1850, all swamp and overflowed lands within the bounds of any State were granted it as a fund to construct dikes and drainage. The first railroad grant was made to Illinois in 1850 to construct the Illinois Central Railroad; as ever since, alternate sections of land on each side were given. Several scores of others have been given to other States. The greatest gift of the sort, however, was for the construction of the Union Pacific Railroad, which had to be given direct because the lands for many hundred miles were in districts where no States had arisen. (See Credit Mobilier of America.) About 155,000,000 acres were granted in all, but some reverted to the government for failure to fulfil conditions. The educational gifts have been great: the States admitted previous to 1850 had 1-36 of their area reserved for a school fund, those since then 1-18, some 70,000,000 acres altogether; in 1862 each State had a tract proportional to population for an agricultural college — about 10,000,000 acres; each of the last six States has been granted a tract for a university, over 1,000,000 acres in all, with other gifts for education, public buildings, etc., amounting to 25,000,000 acres in all. Finally, in 1902 the entire receipts from the sale of lands in 17 States and Territories were set aside as an irrigation fund, calculated ultimately to produce several hundred million dollars.

3. There are several methods by which private entry has been made on public lands. The pre-emption law, recently repealed on account of fraud, allowed any one to receive a full title to 160 acres of land after six months' residence and improvement, on paying $1.25 an acre; there were several exceptions to the lands that might be taken, and no one who already owned 320 acres, or who deserted his own land to take up the new, was entitled to the privilege. Despite this, it has been a huge engine of fraud: its excuse being that it was for many years the only way in which the unoccupied lands could be settled up. Less rapidity of settlement might not have been injurious. The Homestead Acts (q.v.), five years' residence and no payment, made the same exceptions of land and persons, otherwise both were the same as under the former system. This affords far less chance of fraud, and is the one system now in use. Another method is to announce a public auction to the highest bidder at $1.25 an acre, the unsold part being retained for private sale. Military land warrants to soldiers or their families are another method. The Timber Culture Act, now repealed, has been mentioned.

4. The General Land Office classifies its lands in seven divisions: (1) Agricultural lands. These are rated either as «double minimum,» within a specified distance of works of internal improvements, and sold at $2.50 an acre; or minimum, at $1.25 an acre. (2) Town sites: either sold at public auction for $10 an acre, or inhabitants of cities or towns granted the privilege of entry at $1.25. (3) Mineral lands, varying from placer locations at $2.50 an acre to

mining rights at $5; not to exceed 1,500 x 600 feet, nor go below 1,500 x 50, thus varying from 20.66 to 1.72 acres. (4) Timber and stone, unfit for cultivation, 160 acres limit, $2.50 an acre. (5) Saline, containing salt springs; offered first at public auction for $1.25 an acre, then held for private sale at the same price. (6) Coal, limit of 160 acres to a person and 320 to a company, save that the latter (if at least four persons) on expending $5,000 can enter 640 acres more; $10 an acre if over 15 miles from a railroad, $20 if less. (7) Desert, limit 640 acres, price 25 cents on entry, with an affidavit of intending to irrigate it within three years; which done, $1 an acre more secures a full title.

The method of survey is the rectangular system, devised by Jefferson; under which an immigrant can travel a thousand or two thousand miles into a new territory and find his farm without delay or doubt. It was adopted in 1785; the township of six miles square and the section of one mile were Monroe's suggestion. A base line and meridian line are first determined; and from the former, townships of the above size are established, and numbered north and south. From the meridians chosen, ranges a mile square are charted, and numbered east and west of the principal meridian. Thus, «Northeast quarter of Section 11, Township 17 south, Range 3 west of the fourth principal meridian,» can be reached at once; and boundary marks being always placed at the intersection of divisional lines, the special farm can be determined without trouble. The first principal meridian established was that dividing Ohio and Indiana, with the Ohio River as its base, and the meridian 84° 51′ west. This controls surveys in Ohio. Since 1785, 24 initial points (intersection of principal bases with surveying meridians) have been used.

These lands are under control of the General Land Office at Washington; a bureau first established in the Treasury Department 25 April 1812, placed under presidential control in 1836, and transferred to the Interior Department on its organization in 1849. The head is the commissioner. It issues and records all government land patents, whether on private claims, congressional grants, or any other ground; there are three chief clerks (of surveys, of public lands, and of private claims), a presidential secretary to sign land patents and affix the official seal (a duty formerly discharged by the President), and a recorder to countersign them,— all appointed by the President and confirmed by the Senate. The commissioner makes annual report to Congress; and the office issues maps showing government reservations and unappropriated lands, circulars of information, etc., besides auditing all accounts relating to these lands. The commissioner and all employees of the office are forbidden to deal in the public lands directly or indirectly. There is also a State land office established in each State with more than 100,000 acres of unsold lands, each having a register and a receiver appointed by the President for four years; the former receives applications and issues patents, the latter receives and receipts for the money. In 1902 there were 115 district land offices, and 17 surveyors-general.

5. In 1902 (June 30) the total amount of public domain lands from the first had been 1,809,539,846 acres (2,827,406 square miles). Of this, the amount now surveyed and ready for sale was 301,979,307, unsurveyed and unappropriated in Alaska 367,983,506, outside of Alaska 223,992,663; reserved, 151,161,638; appropriated, 764,422,726. Of course a very large part of these unsurveyed lands are mountain or moor, permanently unavailable; but a great quantity is still left worth appropriating. How rapidly this is being taken up will be shown by the following table of operations at the General Land Office for the past five years (year ending 30 June):

	No. original Homestead Entries.	No. acres sold.	Cash sales.
1898.........	44,980	8.453.896.92	$ 2,277,995.18
1899.........	45,776	9,182,413.16	3,070,137.34
1900.........	61,270	13,453,887.96	4,379,758.10
1901.........	68,648	15,562,796.30	4,972,160.79
1902.........	98,829	19,488,535.30	6,261,927.18
Total.......	319,503	66,141,529.64	$21,251,744.98

In other words, of the lands outside Alaska, an amount equal to over ⅛ was taken up in five years, and 1-27 in a single year. In 1902 there were also given in grants to railroad roads and wagon roads 5,008,131.66 acres. It is evident that in a very few years the last acre of cultivatable land will have been disposed of. This process is accelerated by bogus claims used by ranchmen to fence in great quantities of land for grazing purposes, which it is almost impossible for the government fully to suppress. Of the sales, the chief amounts were in Montana, South Dakota, Idaho, Utah, Nevada, and Minnesota, in order of amounts. See PUBLIC DOMAIN; HOMESTEAD AND LAND LAWS.

Land's End, England, a headland in Cornwall, about 60 feet in height, consisting of granite cliffs, and forming the western extremity of England. There is a lighthouse on the rocks, called Longships, about a mile to the west. Here is the entrance to the English Channel from the Atlantic Ocean.

Landscape Gardening — otherwise, as sometimes called, landscape architecture — is a decorative art that so selects and arranges buildings, roads, paths, lawns, trees, and shrubs as to render beautiful the areas needed around houses and within cities and towns. In this reference the term tree means a woody plant with a single trunk, and the term shrub means woody plant with many trunks. The Roman, and subsequently the Italian, villa was supplemented by a garden into which the architectural and sculptural elements of the villa were freely extended. Terraces with stone foundations and balustrades lead down broad stairways to flower gardens disposed in geometric pattern and frequently accompanied by fountains with stone curb and ornate centrepiece. Casino, grotto, pergola, arch, vase, and even statues increased this formal character; and in consistency therewith the trees, shrubs and hedges were pruned or clipped, and sometimes trimmed into geometric shapes, thus making the so-called topiary work. This formal or architectural style was followed, along with other elements of Italian culture, by the French, until in the 17th century Lenôtre gave it a broader treatment more suited to a level country and peaceful conditions. This formal style prevailed also in England until in the same century a naturalistic style arose which has ever since formed the counterpart and rival to the formal style. It discards the statue, reduces architecture to indispensable bridge and shelter, conceals roads and paths, displaces the terrace by the lawn, and the exotic pattern bedding or the flower bed by the flower border. The herbaceous perennials proper to this style are not eclipsed in beauty or fragrance by their exotic rivals; and, with shrubs and trees, they are freed from the shears to attain their full growth. Shrubs and climbers bind house to earth, and furnish boundaries to the grounds, while flowers range in front of them, or are relegated to a separate section. This naturalistic style has spread throughout northern Europe and the United States, being here the favorite with the late F. L. Olmsted (q.v.) in broad, restful effects produced in many city parks of the land.

The city home-grounds must choose one of these styles to exclusion of the other, and at present the natural style generally prevails; but the city or private park, and even the ample country home-grounds, can combine the two by assigning each its distinctive place, namely, the formal style near the residence — provided that be of dignified architectural style — or the city entrance to the park, and the naturalistic style beyond this and next to the fields or the woods. Thus, the Dresden Park, originally small and formal, has been enlarged by naturalistic grounds; while Central Park, New York, planned on the naturalistic scheme, yet includes the Mall ending in a terrace. Indeed, this composite style, as Edouard André names it, may furthermore include, according to favorable conditions, varieties such as a water garden, a bog or marsh garden, a rock garden, a wild garden, and a sub-tropical garden, each with its characteristic shrubs and herbs. The picturesque style, which F. A. Waugh proposes as a third leading style, approximates this wild variety; though, of course, like other varieties, it may easily expand into a whole park, as must happen in a mountainous district. The Japanese gardening also belongs to this variety, which has irregularity as its chief trait. The aviary and animal collection need never occupy more than one section of one of the parks in a metropolitan park system; but free singing birds and playful animals, such as the squirrel, should enliven every park, great or small, and will do so as soon as our predatory habits have yielded to the mild influences of art.

The principles of landscape gardening, like those of other decorative arts, include in the first place conformity to structure; then, unity of style; next, a variety in unity of the art elements known as mass, proportion, balance, surface, line, color, tonality, chiaroscuro, and texture; and, finally, finish and significance. The application of these principles obviously allows ample scope for originality of treatment. Structural conformity includes relation of house to grounds and of these to locality. A complete plan should be prepared for the park, and even for home-grounds, just as it usually is for a house; and no subsequent fancies should be allowed to disturb the integrity of this scheme for the whole. For home-grounds there are ordinarily needed three distinct sections. The first of these is the lawn between the front of the house and the street. If a front fence is maintained, a border of shrubs should accompany it to give seclusion. Otherwise this border should run along the base of each house and from each house to the next, in order to seclude persons on the veranda or back lawn from the gaze of strangers. The second section is the area at the side and back of the house, which should be enclosed, by hedges or by belts or groups of shrubs, from the other sections and from adjoining properties. This second area should adjoin the living-rooms of the house, and may be simple turf with a flower border along the boundaries — in accord with the naturalistic style, or be divided into terrace, game courts, flower garden, and the like — in accord with the formal style. The third section embraces the kitchen-yard, laundry-yard, and stable, provided with an independent entrance, and screened by lattice with climbers or by shrubs from the street, as well as from other sections. The park structure must regard entrances, roads, paths, game courts, boat-houses, refectory, greenhouse, and the locations suitable for varieties in the composite style.

Unity of style is violated oftenest by introduction of statues or pattern bedding into grounds of the naturalistic style. In the composite style, the pattern bedding, flower garden, or rock garden should be detached from sharp contrast with other elements by hedge, shrubs, or sunken panel. Such unity does not exclude native or acclimated perennials and annuals from use in the home-grounds in front of the hedges or the boundary shrubs, which is, indeed, their ideal place, furnishing a shadowed foil, enlivened by the colors of the flowers.

The prime requisite of variety is that of mass in the grouping of trees or shrubs apart from the lawn or the flower beds. The mere «lover of flowers,» untrained in landscape gardening, usually violates this principle by scattering shrubs or trees promiscuously over the grounds at his disposal. Even shrubs or herbs of one kind will be massed with advantage wherever space allows more than one specimen. Such grouping, especially at gateways and prominent curves of roads, will furnish varied views and unexpected beauties; while in other places it will entirely screen ugly objects, or reveal beautiful ones in varying degree. But single shrubs are admissible near the house, walk, or boundary, provided they are specimens of some choice plant.

The variety of proportion in its narrower sense of unequal, vertical divisions, as of a façade or a face, results from placing herbs, shrubs, and trees in this order receding from the house or the centre of the area. This order also gives a curving transition from horizontal ground to vertical tree; and, of course, it also affords each object the best display possible without seriously obstructing another. The whole plantation should be so planned as when mature to be in proportion to the extent of the grounds. In application to gardening, symmetry reduces to balance, that is, an equivalence instead of an equality of parts about a medial line. Variety in surface is secured by sloping, raising, or hollowing the lawn as a whole, and by raised beds or sunken panels for the formal garden. For small areas the concave lawn is best, because giving an effect of greater extent than is really the case. Variety in line must be sought equally in sky line, border line, bed line, and road line. The naturalistic style achieves this end by ovate curves, otherwise variously known as catenary, infinite, swelling, or sweeping curves. The curves of a road should be justified by a plantation, pool, or other impassable object, and the curves of a border by a larger shrub or a group of herbaceous plants. Bays in a tree border lead into vistas which suggest distance and extent of grounds. The formal style achieves variety in line by geometric curves and angles. Variety in color should be sought, not only in flowering herbs and shrubs, but in trees by introduction of those with yellow or red foliage. But the effects chiefly prized are quiet, restful ones, whereas violent contrasts, especially with geranium and coleus against a mowed lawn in pattern bedding, are generally decried. Brilliant masses in the formal style should be carefully harmonized, or be separated by low shrub hedges, bunches of ornamental grass, white flowers, or gravel walks. Tonality is likely to be violated by dark evergreens placed near light green deciduous trees. The degree to which the beauty of a landscape depends on chiaroscuro is fully revealed only by the photograph, which omits the colors that always accompany light and shade in nature. The same grouping that gives mass secures chiaroscuro also. Texture in a plant depends upon the number, shape, disposition, and tissue of its leaves, and varies widely from one plant to another. It therefore supplies an element of variety distinct from the size, shape, or color of the plant, be it herb, shrub, or tree. It is obvious that all the above mentioned qualities must be supplemented by a careful finish, which calls for constant care.

Finally, landscape gardening, like all other arts, has significance besides form. It reveals nature's patience, kindness, and serenity; and thus proves to be the great restorative to men jaded with life's cares. Again, the simple and healthful pleasures of outdoor life moderate the ever increasing demand for the expensive and wasting luxuries of our modern society. Moreover, the landscape designer can convey the simplicity, boldness, or dignity of his own creative mind to the impressionable observer by means of landscape gardening.

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EDMUND BUCKLEY,
Editor ‘University Lessons in Art.’

Land'seer, SIR **Edwin Henry,** English painter: b. London 7 March 1802; d. 1 Oct. 1873. Hampstead Heath was the scene of some of his early studies, and on one of his early productions now at Kensington his father has written «at the age of five.» Following the advice of Haydon he studied the Elgin Marbles, the wild beasts, in the Tower and Exeter Exchange, and dissected every animal whose carcass was obtainable. His life is merely the record of his works. In the Academy's exhibition for 1815 he exhibited the ‘Portrait of a Mule,’ and the ‘Heads of a Pointer-Bitch and Puppy.’ In 1818 he contributed several studies of animals to the Academy and the British Institution. In that year a picture exhibited at the exhibition of the Oil and Water Color Society in Spring Gardens, ‘Fighting Dogs Getting Wind,’ secured great applause. In 1820 he painted his ‘Dogs of St. Gothard.’ In 1821 he exhibited ‘Ratcatchers,’ a ‘Prowling Lion,’ and other works of great spirit. In 1822 he received the premium of £150 from the British Institution for the ‘Larder Invaded.’ The ‘Cat's Paw’ appeared at the Academy in 1824, and was sold for £100. In 1826 he was elected A.R.A., and in 1830 became R.A. In 1827 he exhibited ‘The Return from Deer-Stalking’; a ‘Fire-side Party,’ 1829; ‘High Life,’ and ‘Low Life,’ 1831; ‘Spaniels of King Charles' Breed,’ ‘A Jack in Office,’ 1833; ‘Bolton Abbey in the Olden Time,’ 1834; ‘The Drover's Departure,’ 1837; ‘The Return from Hawking,’ and the ‘Shepherd's Chief Mourner,’ 1837; a ‘Distinguished Member of the Humane Society,’ and ‘There's Life in the Old Dog Yet,’ 1838; in 1840, ‘Laying Down the Law’; in 1844, ‘Coming Events Cast Their Shadows Before,’ and in 1846, ‘The Stag at Bay’; in 1849, ‘The Forester's Family’; in 1850, ‘A Dialogue at Waterloo’; in 1851, ‘A Scene from the Midsummer Night's Dream’; in 1853, ‘Night and Morning,’ and ‘The Children of the Mist.’ His later works include, ‘Saved,’ ‘Deer-Stalking,’ ‘A Flood in the Highlands,’ ‘Wild Cattle at Chillingham,’ his celebrated work of sculpture, the Lions in Trafalgar Square, and others. Landseer's pencil was productive, and besides many works not here named he produced portraits of horses, dogs, and other animals. In 1850 he was knighted; in 1855 he received the gold medal of the Paris exhibition. He declined the presidency of the Royal Academy offered him on the death of Sir Charles Eastlake (1865).

Land'slide, or **Landslip,** the slipping or sliding of land, through the failure of supporting strata, from its original position. They are due to a variety of causes. Water, particularly in its changing forms through frost and thaw, is the chief agent in their production. The wearing away of supports by water, the cracking of underlying materials by summer droughts, and the rending of existing crevices by the thawing of water frozen in them, are some of the commonest modes by which they are brought about. Sometimes a mass of land resting on an inclined bed slides for a considerable distance before it is arrested by a level surface; thus, in 1772, the Solway Moss, loosened by excessive rains, rolled over 400 acres of cultivated land, reaching in some parts to the roofs of the houses. The fall of the Rossberg in Switzerland, and the slip at Charmouth, near Lyme Regis, are other familiar instances. In 1902, in British Columbia a remarkable landslide occurred destroying an entire mountain village and causing the death of nearly 100 persons.

Landsturm, länt'stoorm, in Germany, a local militia, consisting of those of the reserve who are too old to serve in the LANDWEHR (q.v.). The landsturm is never called on to serve out of its own district except in case of invasion.

Landwehr, länt'vār («national defense»), in Prussia, a term applied to that part of the military force of the state which is not kept constantly under arms, but during peace follows ordinary trades, and is only summoned into active service on the breaking out of war or some internal emergency. In 1805 Austria organized a landwehr; a Russian landwehr was employed in 1812; and in 1871, the system was extended to the whole German empire.

Lane, Anna Eichberg King, American author: b. Geneva, Switzerland, 1856. She is daughter of the late Julius Eichberg (q.v.), a distinguished Boston musician, and received her early education in that city. Her first husband was Tyler Batcheller King, of Boston; in 1898 she was married to John Lane, the publisher, of London and New York. She has written many short stories and poems, among the latter being her national hymn, ‹To Thee, O Country!› Her prose writings include: ‹Brown's Retreat,› ‹Kitwyk,› and ‹American Wives and English Housekeeping.›

Lane, Edward William, English Orientalist: b. Hereford 17 Sept. 1801; d. Worthing, Sussex, 10 Aug. 1876. He published ‹Manners and Customs of the Modern Egyptians› (1836), and made one of the most famous translations of the ‹Arabian Nights› (1838–40). This work was the first translation of consequence into English which was made directly from the Arabic, all previous translations having been made through the French. It contained valuable illustrations and numerous scholarly and indispensable notes. The translations of Burton and Payne were subsequent to it. The world is indebted to him for many valuable works on Egypt, and especially for his ‹Arabic-English Lexicon› (1863–74), which cost him 20 years of unremitting labor. The succeeding parts came out from 1877 to 1882 under the editorship of S. Lane-Poole, the whole forming a dictionary indispensable to the student of Arabic. See ARABIAN NIGHTS.

Lane, George Martin, American educator: b. Charlestown, Mass., 24 Dec. 1823; d. Cambridge, Mass., 30 June 1897. He was graduated from Harvard in 1846 and after four years at the universities of Berlin and Göttingen returned to America and became professor of Latin at Harvard in 1851. He held this chair until 1894 when he became professor emeritus. He published ‹Latin Pronunciation› in 1871, in which he contended for the continental pronunciation of the language as against the ‹English method.› He left unfinished a Latin Grammar, completed by Morgan (1898). The famous ballad of ‹The Lone Fishball› was written by Professor Lane.

Lane, Henry Smith, American politician: b. in Montgomery County, Ky., 24 Feb. 1811; d. 1881. He studied law, and was admitted to the bar; removed to Indiana in 1832, and while engaged in his profession became prominent in Whig politics. After serving as State senator (1837), he was twice elected to Congress (1838 and 1840), and in the Mexican War lieutenant-colonel of an Indiana regiment. The dissolution of the Whig party was followed by a preliminary organization which led to the formation of the Republican party, and in this movement Lane was conspicuous, acting with other leaders who planned the first Republican national convention, held in Philadelphia in 1856, and of which he was permanent chairman. A coalition of Republicans with members of the disappearing American party in 1859 elected him to the United States Senate, but after a contest he was unseated in favor of his Democratic competitor. He was elected governor of Indiana in 1860, and in the same year became United States senator, serving one term.

Lane, James Henry, American politician and soldier: b. Lawrenceburg, Ind., 22 June 1814; d. Leavenworth, Kan., 11 July 1866. He was admitted to the bar in 1840, enlisted as private in an Indiana regiment in 1846, served in the Mexican War, became colonel, and at Buena Vista commanded a brigade. Returning from the war, he was elected lieutenant-governor of Indiana; from 1853 to 1855 was a Democratic representative in Congress; in the latter year removed to Kansas, joined the Free-State party, acted as president of the Topeka and Leavenworth constitutional conventions, and became major-general of the Free-State forces. In 1856 the Free-State legislature elected him to the United States Senate, but he was not allowed to sit. He was a prominent actor in turbulent scenes, and was twice indicted, once for treason and again for murder: on the second charge he was tried and acquitted. In 1861 Kansas was admitted to the Union, and Lane was elected United States senator, but entered the Federal army and in the same year was appointed brigadier-general of volunteers, serving with ability until March 1862, when his commission was canceled. The «Great Southern Expedition» from Kansas (1861–2) and other military schemes of the period were conceived by Lane, but came to nothing. As commander for recruiting in the Department of Kansas (1862) he came into collision with the State authorities and was charged with attempted usurpation. In 1865 he was again elected to the United States Senate, suffered from paralysis in the following year, and died by his own hand.

Lane, Joseph, American soldier and politician: b. Buncombe County, N. C., 14 Dec. 1801; d. Oregon 19 April 1881. In 1816 he went from Henderson County, Ky., to Warwick County, Ind., where he was for some time clerk in a mercantile establishment, and in 1822–46 served in both houses of the State legislature. He resigned from the senate in 1846 to enlist as a private in the 2d Indiana volunteers, was soon commissioned colonel of the regiment, and in the same year was promoted brigadier-general. He was wounded at Buena Vista, defeated Santa Anna at Huamantla, and was brevetted major-general, U. S. A., for this service. After the Mexican War he was appointed governor of Oregon territory, was Democratic delegate from Oregon to Congress in 1851–7, defeated the Rogue Indians at Table Rock in 1853, and in 1859–61 was a United States senator. He was nominated for the vice-presidency in 1860 on the unsuccessful Breckenridge ticket.

Lane, SIR **Ralph,** English administrator in America: b. Northamptonshire, England, about 1530; d. in Ireland 1604. In 1583–4 he held a command in Ireland, in 1585 took the direction of the colony that Raleigh was establishing in Virginia, sailed in that year in the fleet commanded by Sir Richard Grenville, and was left with 107 colonists at Roanoke Island, while the fleet returned to England (25 August). He was thus the first governor of Virginia. The location proved unsuitable, provisions ran low, and there was trouble with hostile Indians. On 19 June 1586 the colony sailed for England in the fleet of Sir Francis Drake. In 1589 Lane was a colonel in Drake's expedition against Portugal, and in 1591 helped to quell a rebellion in Ireland. Letters by him may be read in Hawks' ‘History of North Carolina’ (1857); and in Hale (editor), ‘Archæologia Americana,’ Vol. IV. (1860).

Lane, William Coolidge, American librarian: b. Newton, Mass., 29 July 1859. He was graduated at Harvard in 1881, and was assistant librarian there from 1887 to 1893, when he became librarian of the Boston Athenæum, continuing in that position until 1898, since when he has been the librarian of Harvard University. From 1886 to 1900 he served as secretary and treasurer of the publishing board of the American Library Association, and in 1898–9 was president of the association.

Lane-Poole, Stanley, English archæologist: b. London 18 Dec. 1854. He is a nephew of E. W. Lane, the Orientalist (q.v.). He was educated at Corpus Christi, Oxford; in 1874–92 was employed in the coin department of the British Museum; was sent by the British government on archæological missions to Egypt (1883) and Russia (1886); was employed by the Egyptian government in archæological research at Cairo (1895–7); and in 1898 became professor of Arabic in Trinity College, Dublin. Among his works are: ‘Social Life in Egypt’ (1883); ‘The Moors in Spain’ (1887); ‘Saracenic Egypt’ (1900); ‘Mediæval India’ (1902); and ‘The Story of Cairo’ (1902). He also edited many volumes, and prepared the extensive catalogue of the Oriental and Indian coins in the British Museum (1875–92).

Lane Theological Seminary, a divinity school founded at Cincinnati, Ohio, 1829. It was opened for students three years after its foundation, and its endowment in 1902 amounted to $480,929; its income $18,078; it had five instructors and 20 students. Although it is under the control of the Presbyterian Church it receives students from other reformed bodies. No tuition fees are charged, board is low, and there are 39 scholarships, each of the value of $2,000. The college stands on a lot of sixty acres; there are five professors' houses, and a library containing 19,000 volumes.

Lanessan, Jean Antoine de, zhŏṅ äṅ-twän dė län-ĕ-säṅ, French naturalist and publicist: b. Saint-André-de-Cubzac, Gironde, 13 July 1843. He entered the health corps of the French marine service, after studying medicine at Bordeaux, and was engaged as surgeon on the coast of Africa and China until the Franco-Prussian war. He was elected to the National Assembly in 1881, and came into notice as a republican journalist. Being interested in colonial matters he was appointed governor-general of Indo-China in 1891; and his writings have done much to promote French colonization. His principal works are: ‘De Protoplasme végétal’ (1876); ‘La Matière, la Vie et les Etres Vivants’ (1879); ‘L'Expansion Coloniale de la France’ (1888); ‘Principes de Colonisation’ (1897).

Lanfranc, lăn'frănk (Fr. läṅ-fräṅ), Anglo-Norman ecclesiastic, the first archbishop of Canterbury after the Norman Conquest: b. Pavia, Italy, about 1005; d. Canterbury, Kent, 24 May 1089. After studying law in his native city he left Italy about 1039, and founded a school of law at Avranches, which soon became one of the most popular in Europe, but entered the Benedictine monastery of Bec, and in 1046 was chosen its prior. About 1053 he came into close relations with William of Normandy, and though he at first condemned William's marriage with his cousin, he afterward (1059) went to Rome to procure the papal dispensation for it. William accordingly made him prior of his new foundation, the abbey of St. Stephen at Caen (1062), and in 1070 made him archbishop of Canterbury in place of Stigand. Lanfranc was William's most valued counsellor and continued in the reign of William Rufus to exercise great influence in the government of England. See Freeman, ‘History of the Norman Conquest.’

Lanfrey, Pierre, pē-ãr läṅ-frā, French historian and publicist: b. Chambéry 26 Oct. 1828; d. Pau, France, 15 Nov. 1877. He was educated in the Jesuit college of his native town and in Paris, and became well known by the publication of works in support of political and religious liberalism. These include: ‘L'Eglise et les Philosophes au XVIII. Siècle’ (1855); ‘Essai sur la Révolution Française’ (1858); ‘Histoire Politique des Papes’ (1860); ‘Lettres d'Everard’ (1860), a social novel in epistolary form; ‘Le Rétablissement de la Pologne’; and ‘Etudes et Portraits Politiques’ (1863). His most important work is a ‘History of Napoleon I.’ (1867–75), which is strongly hostile to Napoleon. It was left incomplete at his death. In 1871 he was elected to the National Assembly by the department of Bouches-du-Rhone, and took his seat with the republican left. He was ambassador at Berne 1871–3, and in 1875 he was elected a life senator.

Lang, Andrew, Scottish author: b. Selkirk 31 March 1844. He was educated at St. Andrews and at Balliol College, Oxford; was elected fellow of Merton, Oxford, in 1868; in 1888 was appointed Gifford lecturer on natural religion at St. Andrews; became a constant contributor to periodical literature; and published an extensive list of volumes on a wide variety of subjects, being recognized as the most versatile of present-day writers. His wide learning appears in his prose renderings of the ‘Odyssey’ (1879; with Butcher), and the ‘Iliad’ (1882; with Myers and Leaf), and ‘Homer and the Epic’ (1893), a defense of the unity of the poems; in his works on comparative mythology and religion, ‘Custom and Myth’ (1884), ‘Myth, Ritual, and Religion’ (1887; new ed. 1899); ‘The Making of Religion’ (1898), and ‘Magic and Religion’ (1901); and in his studies of Scottish history, such as ‘A History of Scotland from the Roman Occupation (1900 et seq.). Some of the most interesting of his work is to be found in ‘Letters to Dead Authors’ (1886); ‘Letters on Literature’ (1889); ‘Angling Sketches’ (1891); ‘Essays in Little’ (1891); ‘Adventures Among Books’ (1904). He published also collections of *vers de société*, ‘Ballades in Blue China’ (1880), and ‘Rhymes à la Mode’ (1884); and in verse, ‘Ban et Arrière Ban’ (1894), and his most ambitious poem, ‘Helen of Troy’ (1882). Mention should also be made of ‘Cock-Lane and Common Sense’ (1894), a discussion of the spiritualistic question; and the biographies of Lockhart (1896) and Tennyson (1901).

Lang, Benjamin Johnson, American musician: b. Salem, Mass., 28 Dec. 1837. He studied music under his father, an organist and pianoforte teacher, and at 15 began work as teacher and organist. In 1855 he went to Germany for further study, which for three years he pursued under the instruction of Liszt, Albert Jaell, and others. Returning to Boston, he at once attained prominence as organist, pianist, teacher, and conductor; became organist of the Handel and Haydn Society in 1859, and conductor of the same in 1895; conductor of the Apollo Club in 1868; and of the Cecilia Society in 1874. In 1869 he made a second visit to Europe, and gave concerts in Berlin and other cities. As a member of the concert committee of the Harvard Musical Association he has done much in the interest of musical culture, and through this and other organizations has secured the production of many new works. The introduction of Wagner to the American public was in no small part due to his presentation of that master. While he has accomplished much work as a composer, few of his compositions have been published.

Lang, John Marshall, Scottish Presbyterian clergyman and author: b. Glasford, Lanarkshire, 4 May 1834. After completing his education at Glasgow University he took charge of several churches in succession, but returned to Glasgow in 1873, and was appointed to the Barony Church, where he had previously been installed in 1865, but left it for Edinburgh in 1868. In 1900 he was elected vice-chancellor and principal of Aberdeen University. He is the author of ‘Gnostic Sects and Heresies’ (1873); ‘Heaven and Home’ (1875); ‘The Last Supper of Our Lord’ (1881); ‘Life: Is it Worth Living?’ (1883); ‘Ancient Religions of Central America’ (1882); ‘The Church and the People’ (1893).

Lang, Margaret Ruthven, American composer: b. Boston 27 Nov. 1867. She studied the pianoforte under her father, B. J. Lang (q.v.); the violin under Louis Schmidt in Boston, and (1886–7) with Drechsler and Abel in Munich; composition with Victor Gluth in Munich; and orchestration (1887) under G. W. Chadwick, Boston. Her piano solos, songs, etc., have been received with high appreciation in musical circles; her ‘Dramatic Overture’ has been performed by the Boston Symphony Orchestra, and the Chicago Orchestra has several times given ‘Witichis,’ Theodore Thomas conducting.

Lang, Wilhelm, vil'hĕlm läng, German journalist and essayist: b. Tuttlingen 16 July 1832. Among his works are: ‘Michelangelo Buonarotti as a Poet’ (1861); ‘David Friedrich Strauss’ (1874); ‘Wanderings in Peloponnesus’ (1878); ‘From Suabia: History, Biography, Literature’ (in 7 parts, 1885–90), a collection of delightful essays; ‘The German Party in Würtemberg 1866–91’ (1892).

Lang'bridge, Frederick, English clergyman and author: b. Birmingham 17 March 1849. He was graduated at Oxford University and adopted the profession of private tutor and schoolmaster. He is now rector of St. John's, Limerick. He has published ‘Gaslight and Stars’ (1892); ‘A Cracked Fiddle’ (1892); ‘Ballads for the Brave’ (1890); ‘Love Has no Pity’ (1901); etc.

Lang'dell, Christopher Columbus, American lawyer: b. New Boston, Hillsborough County, N. H., 22 May 1826; d. Cambridge, Mass., 6 July 1906. He studied at Harvard, was graduated from its law school in 1853, in 1853–70 practised in New York, in 1870 became professor of jurisprudence in the Harvard law school, and in 1871 dean of the law school faculty. In 1895 he retired. He was an originator of the so-called «case» system of legal study, and was otherwise prominently identified with the progress of professional education in this country. His publications include: ‘Selection of Cases on the Law of Contracts’ (1870; enlarged ed. 1877); ‘Cases on Sales’ (1872); ‘Summary of Equity Pleading’ (1877; 2d ed. 1883); and ‘Cases in Equity Pleading’ (1878).

Lang'don, John, American statesman: b. Portsmouth, N. H., 25 June 1741; d. there 18 Sept. 1819. At the outbreak of the Revolutionary War he embarked in the patriotic cause, and in 1775 he was a delegate to the Continental Congress, but resigned office in June 1776, on becoming navy agent. In 1777, while speaker of the New Hampshire assembly, he pledged a large portion of his property for the purpose of equipping the brigade with which Stark defeated the Hessians at Bennington. Subsequently he was a member and Speaker of the State legislature, a member of the Continental Congress, a delegate to the convention which framed the Constitution of the United States, and president of New Hampshire. He was one of the first United States senators from New Hampshire, which office he held until 1801. In politics he acted with Jefferson, who upon assuming office in 1801 offered him the post of secretary of the navy, which he declined. From 1805 to 1812, with the exception of two years, he was governor of New Hampshire; and in 1812 he was offered by the Republican congressional caucus the nomination for the office of vice-president of the United States, which, on the score of age and infirmities, he declined. The remainder of his life was passed in retirement.

Langdon, Samuel, Congregational clergyman and educator: b. Boston, Mass., 1723; d. Hampton Falls, N. H., 1797. He was graduated from Harvard in 1740 and was pastor at Portsmouth, N. H., 1747–74. In 1774 he became president of Harvard, resigning in 1780. In the New Hampshire Convention he ardently advocated the ratification of the Federal Constitution.

Lange, läng'ė, **Julius Henrik,** Danish art critic: b. Vordingborg 19 June 1838. After leaving the University of Copenhagen he traveled in Italy, and thereafter devoted himself to study of the history of art. Among his works are: ‘On Art Values’ (1876); ‘Danish and Foreign Art’ (1879); ‘Gods and Men in Homer’ (1881); ‘Art and Politics’ (1885); ‘Bastien Lepage and Other Painters’ (1889); ‘Thorwaldsen's Representation of the Human Figure’ (1893).

Langevin, läṅzh-văṅ, Sɪʀ **Hector Louis,** Canadian statesman: b. Quebec 26 Aug. 1826. He was called to the bar in 1850, was editor of the ‘Mélanges Religieux’ in 1847, and of the ‘Courrier du Canada’ ten years later, and was appointed Queen's Counsel in 1864. Entering the Canada Assembly he became a member of the executive council, and at the union of the provinces in 1867 was made secretary of state for Canada, was subsequently minister of public works (1869–73); postmaster-general (1878); and minister of public works (1879). He retired from public life in 1891.

Langevin, Jean François Pierre La Force, zhŏṅ fräṅ-swä pē-ãr lä fôrs, French-Canadian Roman Catholic bishop: b. Quebec 22 Sept. 1821; d. 26 Jan. 1892. He was educated at the Quebec Seminary, was ordained priest in 1844, and consecrated bishop of Ramonski in 1867. In 1870 he founded the College of Ramonski, and in 1886 was appointed assistant to the apostolic throne. Among his publications were: ‹Histoire du Canada en Tableaux› (1860); ‹Cours de Pédagogie› (1865).

Langevin, Louis Philip Adelard, Canadian Roman Catholic prelate: b. St. Isidore, La Prairie County, Quebec Province, 23 Aug. 1855. He was educated at Montreal College; studied theology at the Sulpician Grand Seminary and St. Mary's College, Montreal; was ordained priest in 1882; was appointed professor of moral theology in the Catholic University of Ottawa; and in 1893 became rector of St. Mary's Church of Winnipeg. In 1895 he took office as archbishop of St. Boniface, Manitoba. He founded many parishes, and educational and missionary institutions.

Lang'ford, John Alfred, English journalist and lecturer: b. Birmingham 12 Sept. 1823. He has worked on the editorial staff of the Birmingham *Daily Press, Daily Gazette* and *Morning News.* He was teacher of English literature in the Birmingham and Midland Institute (1868–74). His publications include poems, essays, local histories, the chief of which are ‹Prison Books, and Their Authors› (1861); ‹The Praise of Books› (1880); ‹A Century of Birmingham Life› (1868); ‹Staffordshire and Warwickshire, Past and Present› (1874); ‹A Life for Love, and Other Poems› (1900); etc.

Lang'horne, John, English poet and translator of Plutarch: b. Kirkby Stephen, Westmoreland, March 1735; d. Blagdon 1 April 1779. Having taken orders, he became a curate in Essex in 1761, and rector of Blagdon, Somerset, in 1766. In 1777 he was installed a prebendary of Wells Cathedral. He wrote verses and stories once popular, but he is remembered now only by the translation of Plutarch's Lives which he made with his brother William (1721–72). This work, originally published in 1770, has passed through many editions.

Langlande, lăng'lănd, **Langelande,** or **Longland, William,** English poet: b. Cleobury Mortimer, about 1332; d. about 1400. Little is known of him except from tradition, according to which he was educated at Oxford, and became a monk of Malvern. The familiarity of the author with the Scriptures and the church fathers indicates that he was an ecclesiastic; several local allusions in the poem, and the fact that its scene is the «Malverne Hilles,» prove that it was composed on the borders of Wales; and internal evidence fixes its date at about 1362. It narrates the dreams of Piers Ploughman, who, weary of the world, falls asleep beside a stream in a vale among the Malvern hills; and while satirizing in vigorous allegorical descriptions the corruptions in church and state, and the vices incident to the various professions of life, and painting the obstacles which resist the amelioration of mankind, presents the simple plowman as the embodiment of virtue and truth, and the representative of the Saviour. Its ancient popularity appears from the large number of MS. copies still extant, most of them belonging to the latter part of the 14th century. It was a favorite of religious and political reformers, and several imitations of it appeared, the most important of which was ‹Piers Ploughman's Crede,› written about 1393 by some Wycliffite, assailing the clergy, and especially the monks. In 1550 the ‹Vision of Piers Ploughman› was printed by the reformers, and so favorably received that three editions were sold within a year. This poem is a remarkable example of a system of verse, derived from the Anglo-Saxons, and marked by a regular alliteration instead of rhyme. There are two classes of manuscripts, which give the text with considerable variations. The best edition both of the ‹Vision› and the ‹Crede› is that of Wright (1856, new ed. 1897); and of the ‹Vision,› that of Skeat (1886). Consult Jusserand, ‹Piers Plowman: a Contribution to the History of English Mysticism› (1893).

Langley, Samuel Pierpont, American astronomer and physicist: b. Roxbury, Boston, 22 Aug. 1834; d. Aiken, S. C., 27 Feb. 1906. He was graduated from a high school, studied architecture and civil engineering, and after a two years' trip abroad became an assistant in the Harvard Observatory in 1865, and later assistant professor of mathematics in the United States Naval Academy, and in 1867 was appointed director of Allegheny Observatory. In 1887 he became secretary of the Smithsonian Institution. He organized in 1881 an expedition to Mount Whitney, Cal., where he was successful in re-establishing the color constant and in extending the invisible solar spectrum. He also devised the bolometer, or thermic balance, a contrivance for detecting minute differences of radiant heat and measuring accurately to less than one ten thousandth of a degree Fahrenheit. His name became generally known through his ineffective experiments in connection with the problem of mechanical flight. A sum of $5,000 was voted him by Congress for the carrying out of his ideas. The general plan of his airship as tested consisted in the use of the aëroplane as a means of support; but neither this support nor the propulsive power was found adequate. Among his writings are: ‹The New Astronomy›; ‹Experiments in Aëro-Dynamics›; and ‹Internal Work of the Wind.›

Langley, Walter, English painter: Birmingham, England, 1852. After attending the National School, Birmingham, he qualified himself as a lithographer, meanwhile studying in the local school of art. He there gained the National scholarship and studied at South Kensington two years; settled in Newlyn, Cornwall, 1882. He had been awarded a gold medal for painting both at Paris and Chicago. Among his watercolor paintings are: ‹Among the Missing›; ‹Departure of the Fleet›; ‹Disaster›; ‹After the Storm.› His oil paintings include: ‹Never Morning Wore to Evening but Some Heart Did Break›; ‹Motherless›; ‹Bread-winners›; etc.

SAMUEL PIERPONT LANGLEY,

SECRETARY OF THE SMITHSONIAN INSTITUTION.

Langobardi, lăn-gō-bär′dī. See Lombards.

Lang′shan, a breed of small, active «Asiatic» fowls, long held in esteem by poultry-raisers; cocks weigh 10 pounds. Two varieties are approved — the pure white and the glossy black. See Poultry.

Langs′ton, John Mercer, American educator: b. in Louisa County, Va., 14 Dec. 1829; d. Washington, D. C., 15 Nov. 1897. He was born a slave, but when six years old was emancipated, and in 1849 was graduated at Oberlin College, where he was also (1853) a graduate in theology. Admitted to the bar in Ohio (1854), he practised law in that State for 13 years, and in 1869 was appointed professor of law at Howard University, Washington, D. C.; became dean of the law department, and in 1873 vice-president of the university. In 1871 he was appointed a member of the board of health of the District of Columbia, and was afterward elected secretary of the District. From 1877 to 1885 he was United States minister and consul-general in Haiti, and when he returned to this country he was made president of the Virginia Normal and Collegiate Institute at Petersburg. He was elected to Congress in 1888. He published ‘Freedom and Citizenship,’ a collection of addresses (1883).

Lang′ton, Stephen, English cardinal: b. about 1150; d. Slindon, Sussex, 9 July 1228. He was educated at Paris and while on a visit to Rome in 1206 Innocent III. created him a cardinal and nominated him to the see of Canterbury, consecrating him archbishop next year. King John refused to allow Langton to take possession of his see, and it was not till England had been placed under an interdict, John excommunicated and threatened with deposition, that the king yielded. Langton was acknowledged in 1213, and in August joined the insurgent barons, and acted with them in compelling John to sign Magna Charta. He crowned Henry III., and in 1223 demanded of him the full execution of the charter. He was the author of some theological treatises, and the division of the Bible into chapters has usually been attributed to him. Consult: Hook, ‘Archbishops of Canterbury.’

Lang′try, Lily, English actress: b. Island of Jersey 1852. She was the daughter of the Rev. W. C. Le Breton, Dean of Jersey, and as the «Jersey Lily» (a name given by Millais to the portrait of her which he had painted) was famous for her singular beauty and social graces. In 1881 she made her first appearance on the stage at the Haymarket Theatre in ‘She Stoops to Conquer.’ She paid several professional visits to the United States, and in 1903 she starred in a play written by herself in collaboration with J. Hartley Manners.

Language. See Etymology; Philology; Science of Language; Speech; Writing.

Languedoc, lăng′gwē-dŏk (Fr. läṅ-gė-dōk), France, a former province, now forming the departments of Aude, Tarn, Hérault, Lozère, Ardêche, and Gard, as well as the arrondissements of Toulouse and Villefranche, in the department of Haute-Garonne; and the arrondissements of Puy and Yssingeaux, in the department of Haute-Loire.

Langur, lăn-goor′, a monkey of the genus *Semnopithecus,* represented by numerous large leaf-eating species from Ceylon and India eastward to China and Borneo. They form a transition group between the gibbons and the catarrhine monkeys, and include a large number of well-known species, with long hind legs and tails and no cheek-pouches, such as the entellus, or sacred monkey of India, the wanderoos of Ceylon, the lutongs of the Malayan islands, and several less known forms.

Lanier, lạ-nēr′, **Clifford Anderson,** American author: b. Griffin, Ga., 24 April 1844. He studied at Oglethorpe College, leaving at the end of his sophomore year, desiring to enter the Confederate army, for which, however, he was then too young. In 1862 he volunteered as a Georgia soldier; served in Virginia; was signal officer of a blockade-runner in 1864, and suffered shipwreck. In 1885 he became superintendent of schools at Montgomery, Ala. He has written ‘Thorn Fruit,’ a novel; ‘The Mate's Race with the Banshees’; ‘Love and Loyalty at War,’ and other stories; ‘Dialect Poems,’ with his brother, Sidney Lanier (in Poems of the latter); ‘Apollo and Keats on Browning, and Other Verses’ (1902); etc.

Lanier, Sidney, American poet: b. Macon, Ga., 3 Feb. 1842; d. Lynn, N. C., 7 Sept. 1881. His father, Robert Lanier, a lawyer of Macon, came from a family noted for a love of music and art. An ancestor, Jerome Lanier, a Huguenot refugee, was well known at the court of Queen Elizabeth as a musical composer; another forebear, Nicholas Lanier, was director of music at the court of James I. and Charles I., and first marshal of the Society of Musicians incorporated at the Restoration. Sidney Lanier's mother, Mary Anderson, belonged to a prominent Virginia family also noted for decided talent for music and poetry. The poet's artistic temperament was therefore a direct inheritance. As a child Lanier was passionately fond of music and without any instruction learned to play on the guitar, piano, flute, and violin. A critic said of him in later years: «In his hands the flute was transformed into a voice that set heavenly harmonies into vibration.» This passion for music also showed itself in his keen sensitiveness to rhythmic effect. At 14 he entered the sophomore class of Oglethorpe College, Georgia, and after three years graduated with distinction. He was tutor in the college until the outbreak of the Civil War, when he joined the Confederate army as a private soldier. He fought in several important battles, was transferred to the signal service, and finally became signal officer of a blockade runner. In the autumn of 1864 he was captured and confined in Point Look Prison. He had taken advantage of every leisure moment to pursue his studies in literature, modern languages, and music, and during his long idle hours in prison he gained a complete mastery of the technique of the flute. He was released in February 1865, and made his way on foot to Macon, but the fatigue of the journey added to the previous hardships of camp and prison caused a severe illness which did irreparable damage to his lungs. The years that followed were years of hand-to-hand fight for a subsistence. For two years he was clerk in a hotel in Montgomery, and there wrote his novel ‘Tiger Lilies,’ a book of power and promise, but hastily written and poorly sustained; he taught at Prattville, Ala., and studied and practised law with his father for five years in Macon. In December 1867 he married Miss Mary Day of Macon, and her belief in his genius, her willingness to endure with him privation and hardship made possible the valiant struggle and the achievement of the next 14 years. In the autumn of 1873, after an unsuccessful attempt to re-establish his health by a winter in Texas, he determined to move to Baltimore, where he could find greater opportunities for culture. He played the flute in the Peabody orchestra; in the intervals of hemorrhage he wrote articles for magazines; he gave lectures on literature in private schools; and thus, with the generous aid of his father, he supplied the necessities of his family. His study of languages, of Anglo-Saxon and early English texts, of English and of foreign literature, was incessant and systematic. In February 1879 he was appointed lecturer on English literature at the Johns Hopkins University, and this position he held until his death. His two principal courses of lectures at the university are embodied in his ‹Science of English Verse› (1879), a thorough and suggestive treatise on English metre, declaring that English verse depends on stress, not accent, and that it is based on certain easily recognized musical rhythms, and ‹The English Novel› a masterly treatment of the development of the idea of personality and its place in the modern novel. Again and again Lanier was driven by illness to Texas, to Florida, to North Carolina, but he was never idle; he studied much, he thought largely on all vital subjects, on love, life, art, economics, religion, and now and then he gave to the world poems of exquisite truth and beauty. In the spring of 1881 it became evident that the unequal fight was nearing its end, and as a last restort he tried tent life in the mountains of North Carolina. The last illness came at Lynn, in Polk County, and on a morning of early September he passed away.

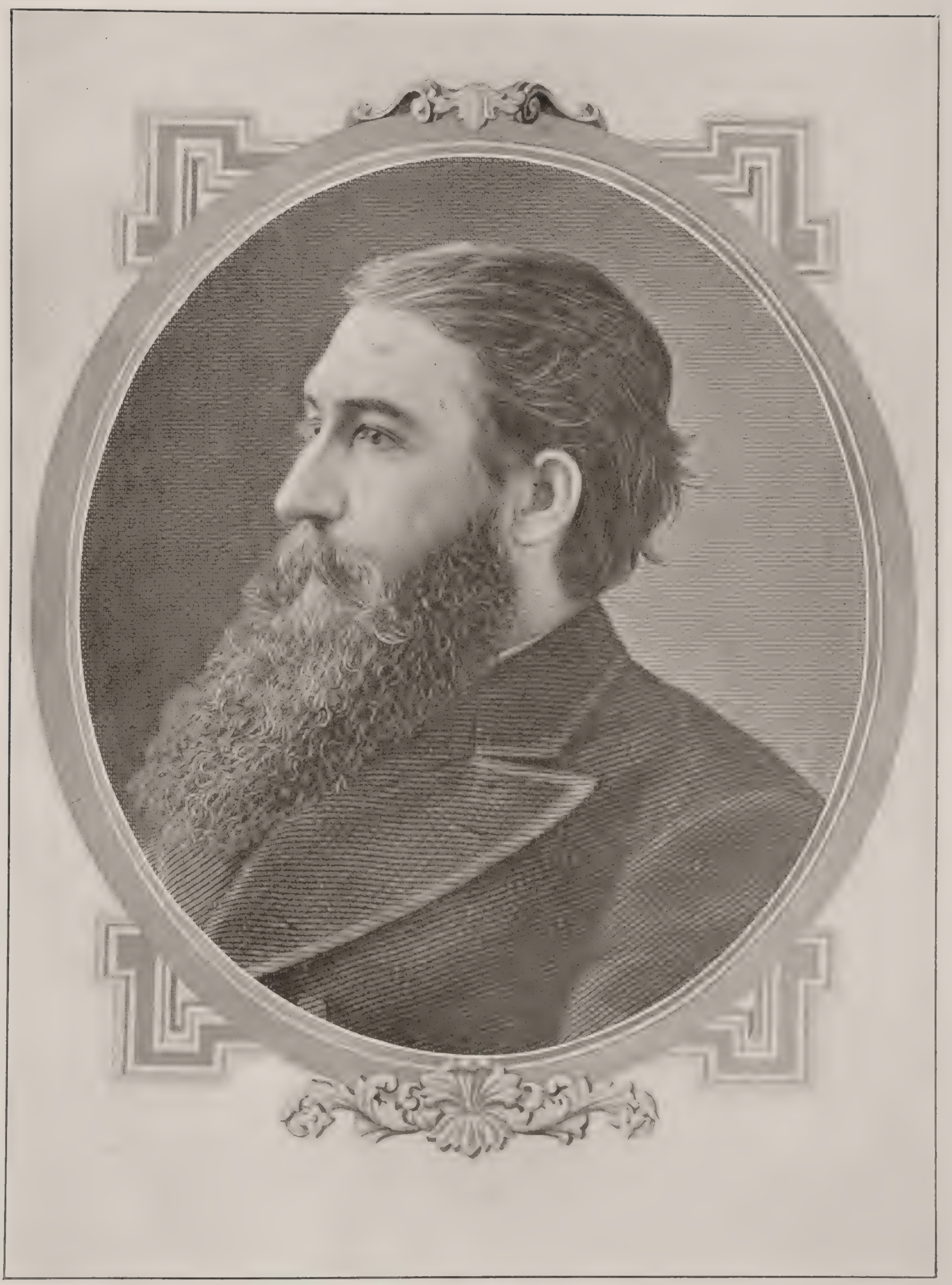
Lanier's most important prose works besides those already mentioned are: ‹The Boy's Froissart› (1878); ‹The Boy's King Arthur› (1880); ‹The Boy's Mabinogion› (1881); ‹The Boy's Percy› (1882); ‹Shakespeare and his Forerunners› (1902). His best known poems are: ‹Hymns of the Marshes›; ‹Clover›; ‹The Song of the Chattahoochee›; ‹The Crystal›; ‹Corn›; ‹The Symphony›, and ‹The Centennial Meditation.› The distinctive characteristics of his poetry are a wholesome outlook upon life, a constant recognition of the highest in character and in thought, and a varied fresh and melodious rhythm. His passion for good and love, his robustness, his high conception of the meaning and power of the love of man and woman, proclaim his close kinship to Browning. In questions of social economics Lanier was abreast of his time; he believed in the rights of the individual, he hated the iron hand of unjust trade, but he realized that these problems must be solved in the «patient modern way.» He knew that the great poet must be an artist in sound and color, as well as a thinker, and that no labor was too arduous for perfecting verse forms; to attain perfection in his art the poet must make the mechanical verse fulfil its vast possibilities, he must gain the mastery over imagination, so that imagination may become his servant. But for Lanier there was no art for art's sake; art was consecrated to man and to God. Like all true poets he lived near to nature, and he has described our Southern scenery with loving faithfulness warmed by vivid imagination. He has given new meaning to «our forests of live-oak beautifully braided and woven with intricate shades of the vine; to our broad fronded fern and keen-leaved canes.» The luxuriance of the southern forests, the wealth of undergrowth, the warmth, the color, the singing birds live in his poetry, but there is no undue heat, no tropical languor. Whittier has not been more faithful to the rocky coasts, to the snowstorms of New England, than has Lanier to the South. Consult his completed poems with memoir by W. H. Ward (1881–4). EMILIE MCVEA,

Sec'y Southern Association of Southern Women.

Lan'igan, George Thomas, American journalist and poet: b. Canada 10 Dec. 1845; d. Philadelphia 5 Feb. 1886. With Robert Graham, he founded in Montreal the ‹Free Lance,› a satirical and humorous journal, later published as the ‹Evening Star,› and afterward in the United States was connected with the New York *World* and other journals. His writings include: ‹Canadian Ballads› (1864); ‹Fables Out of the World› (1878), by «George Washington Æsop.» He will be longest remembered by his ‹Threnody› (for the Ahkoond of Swat), one of the most successful of humorous poems.

Lank'ester, Edwin Ray, English zoologist: b. London 15 May 1847. Educated at Downing College, Cambridge, and Christ Church, Oxford, he was elected a fellow and lecturer of Exeter College, Oxford, in 1872. In 1874–90 he was professor of zoology and comparative anatomy in University College, London, and from 1891 till 1898 Linacre professor of human and comparative anatomy at Oxford. Since 1898 he has been director of the natural history department of the British Museum. Elected a fellow of the Royal Society in 1875, he became its vice-president in 1896, and in 1885 he was awarded one of its royal medals. In 1884 was prominent in founding the Marine Biological Association, now located at Plymouth, and in 1869 became chief editor of the ‹Quarterly Journal of Microscopic Science.› Lankester's works include the following: ‹A Monograph of the Fossil Fishes of the Old Red Sandstone› (part I., 1870); ‹Comparative Longevity in Man and the Lower Animals› (1870), an Oxford prize essay: ‹Contributions to the Developmental History of the Mollusca› (1875); ‹Studies in Apus, Limulus, and Scorpio› (1881); ‹On Food› (1882); and ‹The Advancement of Science› (1890), nine essays and addresses.

Lan'man, Charles, American author: b. Monroe, Mich., 14 June 1819; d. Washington, D. C., 4 March 1895. He was educated at the Academy of Norwich, Conn., and went to New York, where he was in business from 1835 to 1845. He then returned to Monroe as editor of the ‹Gazette.› He afterward joined the staff of the ‹National Intelligencer› at Washington, D. C. He was private secretary of Daniel Webster in 1850, and secretary to the Japanese legation in Washington in 1871–82. He was among the first to explore the mountains in North Carolina. Among his writings are: ‹A Tour to the River Saguenay› (1848); ‹Private Life of Daniel Webster› (1852); ‹Dictionary of Congress› (1858); ‹The Japanese in America› (1872); ‹Biographical Annals of the Civil Gov-



SIDNEY LANIER.

ernment of the United States' (1876); 'Haphazard Personalities' (1886); etc.

Lanman, Charles Rockwell, American Orientalist: b. Norwich, Conn., 8 July 1850. He was graduated at Yale in 1871; studied Greek and Sanskrit there, and from 1873 to 1876 pursued studies in Orientalism at Berlin, Tübingen, and Leipsic, returning in the latter year to accept a fellowship at Johns Hopkins University. Since 1880 he has been professor of Sanskrit at Harvard. He has lectured at many institutions on Oriental subjects; has traveled in India, and from 1879 to 1884 was secretary of the American Philological Association, edited its 'Transactions' (Vols. X.–XIV.), and in 1890 became its president. He was corresponding secretary of the American Oriental Society from 1884 to 1894 and in 1896, and has served it as vice-president since 1897. His published works include: 'Noun-Inflection in the Veda' (1880); a 'Sanskrit Reader, with Vocabulary and Notes' (1884–8); 'The Beginnings of Hindu Pantheism' (1890); 'Rāja-Çekhara's Karpūra-mañjarī,' a translation of a Hindu drama of 900 A.D. (1900); and numerous contributions to Oriental and other journals.

Lanman, Joseph, American naval officer: b. Norwich, Conn., 11 July 1811; d. 13 March 1874. Entering the navy as a midshipman in 1825, he was commissioned lieutenant in 1835, commander in 1855, captain in 1861, and commodore in 1862. In the two attacks on Fort Fisher (1865) he led the line with the Minnesota, winning signal praise from Rear-Admiral D. D. Porter in his official report. He was raised to the rank of rear-admiral in 1867, and after further efficient services, in 1872 he was retired.

Lan'ner, the name of a small «noble» falcon formerly in high repute among European falconers of mediæval times, the identity of which, however, is not quite clear. It was probably the handsome reddish-gray *Falco feldeggi* of the Mediterranean region, still highly valued among Bedouin falconers for its docility and graces. The name is extended to other African and Asiatic hawks of similar appearance and qualities.

Lanoe, Falconer. See HAWKER, MARY ELIZABETH.

Lan'olin, a fatty substance obtained from the grease of sheep's wool, and consisting chiefly of cholesterin. The wool-grease is saponified by means of caustic soda, and the resulting emulsion is diluted with water. The lanolin then separates in fine particles, which, by the aid of a centrifugal separator, may be obtained in a creamy mass. The lanolin of commerce contains about 30 per cent of water. Lanolin is very generally used as a basis in the preparation of salves and ointments, since it does not grow rancid, and is itself antiseptic to a certain extent. It absorbs water, and penetrates the tissues of the body much more freely than lard or vaseline.

Lans'dell, Henry, English clergyman, traveler, and author: b. Tenterden, Kent, 10 Jan. 1841. As secretary to the Irish Church Mission, he has been prominent in philanthropic movements, traveling extensively about the world. In Siberia he investigated the prisons, publishing the results of his observations in 'Through Siberia' (1882); 'Russian Central Asia' (1885); 'Chinese Central Asia' (1893). Since 1892 he has been chaplain of Morden College, Blackheath, Kent.

Lans'downe, Henry Charles Keith Fitz Maurice, 5th MARQUIS OF, British statesman: b. 14 Jan. 1845. He was educated at Eton and Oxford, and entered in politics as a member of the Liberal party. He was one of the Lords of the Treasury (1869–72); Under-Secretary for War (1872–4); and in 1883 successor of the Marquis of Lorne as Governor-General of Canada. His period of office was marked by the completion of the Canadian Pacific railway, a peaceful arbitration of the fishery dispute with the United States, and the crushing of Riel's rebellion. In 1888 he was made Viceroy and Governor-General of India, in 1895 joined Lord Salisbury's cabinet as secretary for war, and in 1900 was appointed secretary of state for foreign affairs.

Lans'ford, Pa., borough in Carbon County, on the Central railroad of New Jersey, 44 miles north of Reading. It is the centre of the anthracite coal fields. It was settled in 1845, and was incorporated in 1876. The government is administered by a burgess elected every three years and a borough council which controls the local administrative offices. Pop. (1890) 4,000; (1900) 4,800.

Lan'sing, John, American jurist: b. Albany, N. Y., 30 Jan. 1754; d. 12 Dec. 1829. He studied law in Albany and New York; was engaged in practice at the beginning of the Revolution, during a period of which he served as military secretary to Gen. Schuyler. In 1784 he was elected to Congress, and while a member of that body was elected to the lower house of the New York legislature, where he was chosen speaker in 1786, in which year he also became mayor of Albany. For a short time he represented New York in the Constitutional Convention (1787), which he left because he held that he had been sent to participate in an amendment of the Articles of Confederation, and not in the forming of a new constitution. In 1788, at the New York convention, his opposition to the ratification of the Constitution was stoutly maintained. He served on the New York-Vermont boundary commission; in 1790 was appointed a judge of the New York Supreme Court, and became chief justice in 1798. From 1801 to 1814 he was chancellor of the State.

Lansing, Mich., city, capital of the State and county-seat of Ingham County, at the junction of the Grand and Cedar Rivers, and on the Chicago & G. T., the Lake Shore & M. S., and several other railroads, 85 miles northwest of Detroit. It is the farming trade centre for the surrounding region, and is engaged in the manufacture of agricultural implements, flour, stoves, machinery, beet sugar, canned goods, carriages, wagons, trunks, wheelbarrows, artificial stone and knit goods. It contains the State Capitol, built at a cost of $1,500,000; State Hospital; State Library, containing 105,000 volumes; United States government buildings; State School for the Blind; and the State Industrial School; State Agricultural College with a farm of 675 acres; and has electric light and street railroad plants; water power from the river; which is spanned by several bridges; National and State banks; about 20 churches; daily, weekly, and monthly periodicals; and an assessed property valuation of over $6,000,000. Under a charter of 1897, the city is governed by a mayor and council elected every two years. The waterworks and electric light plants are owned and operated by the municipality. The city was settled in 1837, laid out for the State capital in 1847 and incorporated in 1869. Pop. (1890) 13,102; (1900) 16,485.

Lansing Man, a term applied to a collection of human bones, found near Lansing, Kan., 20 feet below the surface of the earth, under a stratum of carboniferous limestone. The skull which was well preserved measured: Maximum length 188 mm.; breadth 138 mm.; cranial index 73.4. From the date of this discovery a few years ago, men of science have been divided in their opinion as to the antiquity of the remains. According to some scientists this skull is one of the oldest ever found in America, having belonged to a human being who lived on this continent prior to the glacial period; and as such, is of the same age, if not older, than that of the Pithecanthropus, found in Java, by Dr. Dubois. The opposition holds to the contrary, pointing to the fact that while of a rather low type of man, the skull differs very little from that of a modern Sioux Indian, and is not at all like that of the Java skull, which belonged to a being midway between the highest type of kula-kamba chimpanzee and the lowest type of negro. In the opinion of Prof. Upham, the Lansing skeleton offers probably the oldest proof of man's presence on this continent; yet it is only a third, probably only an eighth, as old as the flint hatchets of St. Acheul. It has been estimated that man in the Somme Valley and other parts of France, and in southern England, made good palæolithic implements fully a hundred thousand years ago. When the earliest man came to America cannot probably be closely determined. It may have been during the glacial period; it may have been earlier. In Prof. Upham's opinion, the Lansing discovery gives us much definite knowledge of a glacial man, dolichocephalic, low-browed, and prognathous, having nearly the same stature as our people to-day. Prof. Williston believes that the Lansing man was doubtless contemporary with the equus fauna, well represented in the late Pleistocene deposits of Kansas, which include extinct species of the horse, bison, mammoth and mastodon, moose, camels, llamas and peccaries. He was also the contemporary of the late palæolithic men of Europe, whose advanced implements showed that they had developed beyond the stages of primitive savagery.

Lansquenet, lăns'kĕ-nĕt, in Germany, a foot soldier, originally one belonging to the army of the Emperor Maximilian in the 15th century; afterward, a soldier of fortune; a soldier who gave his services to any one who paid highest. The name became corrupted into lance-knight. Also the name of a game at cards now obsolete, and originally played in the 15th century. It is similar to faro.

Lan'tern, or **Lanthorn,** (1) a small metallic frame used for carrying a lamp or candle in, consisting of a case or vessel made of tin. Lanterns were used by the ancients in augury. They were also carried before troops on the march by night, being then borne on the top of pikes, and so constructed as to throw lights only behind them. Dark lanterns are provided with only a single opening, which can be closed up when the light is required to be hidden, or opened when there is occasion for its assistance to discover some object. See LAMP.

(2) In architecture, a small structure on the top of a dome, or in other similar situations, for the purpose of admitting light, promoting ventilation, or for ornament, of which that on the top of the capitol at Washington may be referred to as an example. In Gothic architecture the term is sometimes applied to *louvres* on the roofs of halls, etc., but it usually signifies a tower which has the whole height, or a considerable portion of the interior, open to view from the ground, and is lighted by an upper tier of windows.

Lantern-fish, a general term for the luminous fishes of the depths of the sea, most of which belong to a single group (*Iniomi*). See DEEP SEA EXPLORATION; DEEP SEA LIFE; FISH; ICHTHYOLOGY.

Lantern-flies, homopterous bugs with membranous forewings concealing the folded hinder wings when the insects are at rest, and the head greatly prolonged and said to be light-giving in some tropical species. They feed upon plants and deposit their eggs in slits cut in the bark. The best known species is the candle-fly (*Fulgora laternaria*) of tropical America, but the luminosity alleged of it is an old story not recently verified. Many other popular beliefs are attached to the insect. It is said in Brazil, for instance, to be so poisonous that anything against which it strikes its long beak will fall dead. Several small and non-luminous species of this family occur in the United States. Consult Brunner, 'Am. Naturalist,' Vol. XXIII., 1885, p. 835.

Lantern of Demosthenes. See LYSICRATES, MONUMENT OF.

Lanterns, Feast of, a religious ceremony held in China on the 15th day of the first month of the year. It derives its name from the vast number of lanterns which are hung out of the houses and in the streets. The lanterns used are often of great value, being richly ornamented with gilding, painting, japanning, and sculpture, and some of them are of great size, reaching nearly 30 feet in diameter, and are so constructed as to resemble halls or chambers.

Lanthanum, a rare metallic element resembling cerium in its general properties, discovered by Mosander, in 1839, in the Swedish mineral cerite. It has the chemical symbol La, and an atomic weight (for $O = 16$) of 138. Its melting point is between that of antimony (840° F.) and silver (1740° F.). It has a specific gravity of 6.16, and a specific heat of 0.0448. It is a white metal, moderately ductile and malleable. It oxidizes rapidly upon exposure to the air, and decomposes water slowly when cold, and rapidly when hot. It dissolves readily in acids, with the formation of corresponding salts, which are mostly colorless, with an astringent taste. The metal is prepared by the reduction of its chloride by metallic potassium, and the subsequent removal of the potassium chloride that is formed, by washing with alcohol. Neither lanthanum nor its salts are of any industrial importance. The name is from a Greek word meaning «concealed,» in allusion to the fact that lanthana, the oxid, was for a time confused with the oxids of other rare metals belonging to the cerium group. Lanthanum occurs, as a silicate, in the minerals cerite, gadolinite, orthite, and allanite; as a carbonate in lanthanite occurring in Lehigh County, Pa., and Essex County, N. Y.

Lanza, län'zä, **Gaetano,** American mathematician and engineer: b. Boston 26 Sept. 1848. He was educated at the University of Virginia, and for two years was an instructor there; has been an instructor and assistant professor at the Massachusetts Institute of Technology; since 1875 professor of theoretical and applied mechanics; also since 1883 in charge of the department of mechanical engineering. He is a fellow of the American Academy of Arts and Sciences, a member of the British Association for the Advancement of Science, and of other scientific bodies here and in Europe. He has published 'Applied Mechanics' (1885), and his writings include many papers presented to scientific societies.

Lanzarote, län-thä-rō'tā, one of the Canary Isles, about 90 miles from the African coast; greatest length, 36 miles; breadth, 15 miles. Its coast is in general very bold, and presents ranges of basaltic cliffs rising in some parts to 1,500 feet; its interior contains several mountains, the loftiest of which has a height of 2,000 feet. The only port of any consequence is Arrecife. Pop., 16,409.

Laoag, lä-wäg', Philippines, capital of the province of Ilocos Norte, Luzon, on the Grand de Laoag River, 4 miles from its mouth. It is picturesquely situated in a fertile plain and is well built; it is open to the coastwise trade and is the centre of shipment for the agricultural products of the region. The name signifies «clearness» from the fact that the sky and atmosphere are almost continuously clear. Pop. 37,000.

Laocoon, lā-ŏk'ō-ŏn, a priest of Apollo at Troy. As he was sacrificing a bull to Poseidon on the shore, two serpents swimming from the Island of Tenedos advanced to the altar. The people fled, but Laocoon and his sons fell victims to the monsters. The sons were first attacked, and then the father. Winding themselves round him, the serpents raised their heads high above him, while in his agony he vainly endeavored to extricate himself from their folds. They then retired to the Temple of Pallas Athene, where they took shelter under her shield. The people saw in this omen Laocoon's punishment for his impiety in piercing with his spear the wooden horse consecrated to Athene. The story has frequently furnished a subject to the poets, but it is chiefly interesting to us as having given occasion to a fine work of sculpture — the Laocoon group, now in the Vatican. It was discovered in 1506 on the site of the baths of Titus. Pope Julius II. bought it and placed it in the Vatican. Its preservation was perfect, except that the right arm of Laocoon was wanting: this was restored by a pupil of Michelangelo. This group is of the dramatic Rhodian school, and by no means belongs to the best style of Greek sculpture. Yet is has been much treated of in literature, especially by Goethe, Heine, Lessing, Winckelmann, and Herder. It represents three persons in agony, but in different attitudes of struggle or fear, according to their ages. Pliny declares it was made of one stone by the sculptors Agesander, Polydorus, and Athenodorus, all natives of Rhodes, and the two latter, probably sons of the former.

Lessing makes it probable that those three artists lived under the first emperors. It may be fairly doubted whether the statue mentioned by Pliny is the same as that we now have; acute observers have found that the group does not consist of one block, though the junctions are carefully concealed. To this it may be answered that they were not perhaps perceptible in the time of Pliny. Several copies have been made; one in bronze, from a model by Giacopo Tatti or Sansovino. which was carried to France. Bacio Bandinelli made a copy which is in the Medici Gallery at Florence.

Laodamia, daughter of Acastus and Astydamia. Her affection for her husband, Protesilaüs, who, by decree of fate, was the first Greek to die at Troy, led her to follow him to the lower world.

Laodicea, lā-ŏd-ĭ-sē'a, the ancient name of four places in Asia Minor. (1) Laodicea, now called by the Turks *Eski Hissar* (Old Castle), an ancient ruined city, once the capital of Greater Phrygia, 120 miles east of Smyrna, the site of one of the seven primitive Christian churches of Asia. Nothing but very extensive ruins of inferior architectural merit remain to point out the locality of this interesting city. (2) See LATAKIA. (3) Now Ladik, a city of Lyconia, north of Iconium. (4) An ancient city of Syria, founded by Seleucus Nicator, which stood to the northeast of Baalbec, in a plain watered by the Marsyas.

Laos, lā'ōs, a territory in the Indo-China peninsula surrounded by the Shan states, Anam, Tonkin, and the Chinese province of Yun-nan. Its extent and the number of its inhabitants are unknown, but they have been estimated at one and a half million. The country is intersected by mountain ranges and traversed by the Mekong or Cambodia River, the alluvial valley of which produces abundant sugar, rice, tobacco, etc. Laos exports to the neighboring states a considerable quantity of ivory, gold, silver, precious stones, silk, etc. The inhabitants are reported to be connected with the Burmese in their racial, social, and religious peculiarities. The capital is Ching-Mai.

Laosaurus, lā-ō-sâ'rŭs, a genus of unarmored, herbivorous dinosaurs (q.v.) of the suborder *Ornithopoda,* whose remains are found fossil in the Jurassic rocks of western North America.

Lao-tse, lä'ō-tsā, or **Lao-tseu,** Chinese philosopher: b. Kiuh-jin 604 B.C. The date of his death is unknown. He was the founder or reformer of one of the most ancient and important religious sects of China, known as the Tao, or sect of reason. He was a historiographer and librarian to a king of the Chow dynasty; traveled to the borders of India, where he may have become acquainted with Buddhism; met Confucius and reproached him for his pride, vanity, and ostentation; was persuaded to record his doctrines in a book, which he did in the 'Tao-ti-king' or 'The Path to Virtue'; and on completing this task is reputed to have disappeared into the wilderness, and there ascended to heaven. According to him silence and the void produced the Tao, the source of all action and being. Man is composed of two principles, the one material and perishable, the other spiritual and imperishable, from which he emanated, and to which he will return on the subjugation of all the material passions and the pleasures of the senses. Lao-tse's moral code is pure, inculcating charity, benevolence, virtue, and the free-will, moral agency, and responsibility of man. Since the 2d century of our era the sect has continued to extend over China, Japan, Cochin-China, Tonquin, and the Indo-Chinese nations.

La Paz, lä päs (Sp. lä päth), a department of Bolivia, bounded on the north by Brazil, on the east and south by the departments of Beni, Cochabamba, and Oruro, and on the west by Peru. Its area has never been accurately determined; according to a recent conservative estimate it is 75,742 square miles. Extensive tracts in the northern portion are still unexplored, and the boundary disputes with Brazil and Peru add a large element of uncertainty. Calculations based upon the extreme Bolivian claims give the fabulous area of 275,413 square miles. The department is divided into 9 provinces, as follows: La Paz, Yungas, Larecaja, Muñecas, Campolican, Omasuyos, Pacajes, Sicasca, and Inquisivi. Each provincial capital has a municipal council and is administered by a sub-prefect. The provinces are subdivided into cantons, administered by corregidores. The entire department is subject to a prefect, representing the national government. Some of the highest peaks of the Bolivian Andes rise above the great Titicaca basin (itself 13,000 feet above sea-level) in the southern half of this department, which portion has a temperate and moderately salubrious climate (see La Paz, the capital, etc.). Chief products are copper, silver, tin, gold, coca, wheat, maize, barley, potatoes; in the torrid lowlands of the north, sugarcane, rice, tobacco, and coffee; and from the forests along the tributaries to the Amazon are obtained rubber and cinchona. Cattle and sheep are bred in large numbers on the upland pastures. The census of 1 Sept. 1900 shows the population to be 423,800.

La Paz, Bolivia, capital of the department of the same name, and, temporarily, of the republic (see Sucre). It is the metropolis and commercial centre of Bolivia, situated in the Quebrada del Choqueyapu, 650 feet lower than Lake Titicaca (from which the distance by road is about 45 miles) and yet quite 12,250 feet above the level of the sea. The latitude of La Paz is 16° 29′ 54″ S., lon. 68° 29′ 38″ W., and mean annual temperature about 50° F., or somewhat less than that of Paris. The annual range of temperature at La Paz, however, is very different from that at Paris, the summers being less hot, the winters less cold, and the extremes of temperature 19.4° F. to 73.4° F. The clearness of the sky occasions rapid loss of heat by radiation; the nights are therefore much colder than the days. Though the thermometer often falls below freezing-point, plants are rarely frozen, for the reason that the air at this great height is very dry. It is a substantially built but unimpressive city, with ill-paved streets rising at a steep grade from the small river which flows through its midst; it has, however, a beautiful Alameda or promenade, a cathedral, many churches, and some noteworthy public institutions — a museum, library, university, professional schools of various kinds, and courts. Up to 1903 the city remained without railway connections, the nearest stations on existing lines of railway being Oruro, terminus of the line from Antofagasta, and Puno on Lake Titicaca; to the latter point a railway was being constructed. Lines of telegraph connect La Paz with Oruro, Cochabamba, Colquechaca, Puno, and Santa Cruz. According to the census of 1900, the population is 57,000.

La Paz, Mexico, capital of the southern district of the territory of Baja California, the capital of the northern district being Ensenada de Todos Santos. It is pleasantly situated between the coast range and the bay, and has commercial dealings principally with San Francisco, Mazatlán, Guaymas, San Blas, and Manzanillo. Pop. 4,737.

Lapeer, la-pēr′, Mich., city and county-seat of Lapeer County, on the Michigan C. and the Grand T. R.R.'s, 60 miles north of Detroit, 45 miles west of Port Huron, and 41 miles south of Bay City. It was first settled in 1836 by A. N. Hart and was incorporated as a city in 1868. The municipal government is administered by a mayor and city council of 8 members elected every two years. The city has four banks, capital $250,000, and has numerous large factories, stone works, planing mills and iron foundries. The Michigan Home for the Feeble Minded is located here; also the Lapeer Business College, High School, and various church buildings. Pop. (1890) 2,753; (1900) 3,297.

E. T. Woodruff,
Editor of the ‹Clarion.›

La Perouse, Jean François de Galaup de, zhŏṅ fräṅ-swä dė gä-lōp lä pā-rooz, French navigator: b. near Albi, Languedoc, France, 22 Aug. 1741; d. after 1788. He served in the French navy against England (1778–83) and sailed in August 1785 with two ships on an exploring expedition to the Pacific, and by sailing through La Perouse Strait, between Saghalien and Yezo, discovered that each of these was a separate island. In February 1788 he sailed from Botany Bay; and after this no more was heard from him. In 1826 it was fully ascertained by the English Captain Dillon that both of the French ships had been wrecked in a storm on a coral reef off Vanikoro, an island lying north of the New Hebrides, and in 1898 a few relics of his party were found there. An account of the early portions of La Perouse's voyage prepared from journals sent home by him, was published under the title of ‹Journey Round the World.›

La Piedad, lä pē-ā-däd′, Mexico, town in the state of Michoacan, near the northern boundary, on the Lerma River, 62 miles southwest of Guanajuato. It is the centre of a large agricultural district. A fine bridge crossed the Lerma at this point. Pop. (1901) 11,200.

La′pis-laz′uli, the sapphire of the ancients, is a highly prized ornamental stone. It was long supposed to be a simple mineral, but now has been shown to be a variable mixture of lazurite, haüynite, diopside, amphibole, musco-rite, calcite, pvrite and other minerals. The most important mineral in the stone is lazurite, which is itself a highly complex compound, essentially $Na_4(Na\ S_3.\ Al)Al_2Si_3O_{12}$, but containing also in molecular combination varying amounts of haüynite and sodalite. Lazurite is usually massive, has a hardness of 5 to 5.5, a specific gravity of 2.45, and rich azure-blue color. Its most important localities are in Siberia, Persia, China, and Chile.

Lapithae, a mythical race of Thessaly, whose struggles under the leadership of their king, Pirithoüs, against the Centaurs are a frequent subject in art and literature. The final contest was due to the unsuccessful attempt of the Centaurs to carry off Hippodamia, the bride of Pirithoüs, at their marriage-feast.

Laplace, Pierre Simon, pē-ăr se-môṅ lä-pläs, Marquis de, French mathematician and astronomer: b. Beaumont-en-Auge (Calvados) 23 March 1749; d. Paris 5 March 1827. He studied the higher mathematics at the academy of Beaumont, in 1767 went to Paris, and there by the influence of D'Alembert became professor of mathematics in the Ecole Militaire. By his brilliant memoirs on the theory of probability he attracted wide notice, and in recognition was elected *membre-adjoint* (1773) and titular member (1785) of the Academy of Sciences. He was appointed examiner in the Royal artillery corps (1784), and professor of analysis at the Normal College (1794); and in 1816, for the elegance of his style in the 'Exposition du Système du Monde' (1796) was admitted to the Académie Française, of which in 1817 he became president. Appointed by Napoleon minister of the interior (1799), he was shortly dismissed, being, according to the Emperor, «below mediocrity as a minister,» and aiming to «conduct the government on the principles of the infinitesimal calculus.» He was, however, given a seat in the Senate, became its vice-president, and in 1803 chancellor. He also held the post of president of the bureau of longitudes, and was a member of the commission for the establishment of the metric system. Nichol called him the «titanic geometer,» and he has been styled also «the Newton of France.» Among the more important of his remarkable investigations are the discovery of the inequality in the movements of Jupiter and Saturn; his researches in probabilities (contained in the 'Théorie analytique des Probabilités' 1812, and the 'Essai Philosophique sur les Probabilités' 1814); his improvements in the lunar theory; and his theory of the tides. His chief work is the great 'Mécanique céleste' (1799–1825), a compendious solution of the problems of physical astronomy, and one of the greatest contributions ever made to science. It was translated into English by Nathaniel Bowditch (q.v.) (1829–39), who said: «Whenever I meet the words of *il est aise à voir* [it is easy to see] I am sure that hours and perhaps days of hard study will be necessary.» A collection of Laplace's works in 13 vols. was made by the French government (1878 et seq.). Consult the life by Kaufman (1841); and Arago, 'Biographies of Scientific Men' (in Eng. trans. 1859).

Lap'land, an extensive territory in the north of Europe, between lat. 64° and 71° N., and from the shores of Norway east to those of the White Sea; area, about 130,000 square miles, of which more than a half belongs to Russia; and the remainder is shared in nearly equal proportions between Sweden and Norway. Both from its geographical position and its physical conformation Lapland, or the country of the Lapps, is one of the most forbidding regions of the globe, consisting either of rugged mountains, some of them covered with perpetual snow, and many of them only for a short period free from it, or of vast monotonous tracts of moorland wastes. This extensive territory appears to have been at one time wholly occupied by the people to whom it owes its name; but its southern and better portions have been gradually encroached upon by Norwegians, Swedes, and Finlanders. The Lapps call themselves Sabme or Sabmeladsjak (the Norwegians call them Finns), belong to the Ural-Altaic stock, and are consequently closely related to the Finns (Suomi). As a race they are the shortest people in Europe (four or five feet in height). They are spare of body, with dark, bristly hair and scanty beard, and short, often bandy, legs. Though not very muscular they are capable of great exertion and fatigue, and frequently live to a great age. The mouth is large, the lips thick, and the eyes small and piercing. The Lapps are usually distinguished as Mountain, Sea, Forest, and River Lapps. The Mountain Lapps, the backbone of the race, are nomads; they move constantly from place to place in order to find sustenance for their reindeer herds, their only source of wealth. In summer they go down to the fiords and coasts, but spend the rest of the year in the mountains and on the plains of the interior. The Sea Lapps, mostly impoverished Mountain Lapps, or their descendants, dwell in scattered hamlets along the coast, and live by fishing. The Forest and River Lapps are nomads who have taken to a settled mode of life; they not only keep domesticated reindeer, but hunt and fish. The nomad Lapps live all the year round in tents. The reindeer supplies nearly all their wants, except coffee, tobacco, and sugar. They live on its flesh and milk; they clothe themselves in its skin, and use it as a beast of burden. It is computed that there are 400,000 reindeer in Lapland, for the most part semi-wild. In his personal habits and in his clothing the Lapp is the reverse of cleanly. He is, however, very good-natured, rather prone to self-indulgence, and miserly and selfish. His imagination is easily excited, and he is readily susceptible to religious impressions of a sensational type; a notable «epidemic» occurred at Koutokeino in Norwegian Lapland in 1848–51. The Lapps all profess Christianity; those of Norway and Sweden belong to the Lutheran Church, those of Russia to the Greek Church. The Norsemen treated the Lapps as a subject race as early as the 9th century, but had to reconquer them in the 14th; the Russians followed in the 11th, and the Swedes in the 16th. From the 13th to the 17th century the Lapps were kept in a state little better than slavery by Swedish adventurers known as Birkarlians. But at the present day both the Scandinavian governments bestow on them every consideration. The number of Laplanders is not supposed to exceed 25,000 of all descriptions, of whom Norway has nearly 15,000, Sweden about 7,000, the rest belonging to Russia. Probably one third of them are nomadic. Consult: Du Chaillu, 'Land of the Midnight

Sun' (1881); Tromholt, 'Under the Rays of the Aurora Borealis' (1885); 'The Testimony of Tradition' (1890).

Lapland Longspur. See LONGSPUR.

La Plata, lä plä'tä, Argentine Republic, the new capital of the province of Buenos Ayres. The important question of the location of the capital of the republic was not settled by law until Gen. Julio A. Roca became president. By custom, however, Buenos Ayres was the seat of the national government, and of the provincial government as well. This anomaly was ended during President Roca's first term. Congress passed a law by which the city of Buenos Ayres was declared to be the capital of the republic; the legislature of the province of Buenos Ayres decided to build a new city, which should be the provincial capital. The cornerstone of La Plata was laid on 19 Nov. 1882, in a barren waste a few miles from the village of Ensenada and about 24 miles below Buenos Ayres, on the south shore of the Rio de la Plata. The port of La Plata, built in Ensenada, is in communication with the city by means of a railroad and a canal, which is navigable by seagoing vessels. In less than three years from the date of its foundation the new capital had a population of 30,000, and, in addition to the public buildings, 3,631 brick and stone houses were either completed or in course of construction. It is said that the public buildings alone have cost about $40,000,000. The city is laid out on the same plan as Washington, D. C., with diagonal avenues 97½ feet wide, streets 58½ feet wide; and 23 public squares. Among the principal buildings are: the Government House, Treasury Department, Capitol, City Hall, Police Department, Provincial Bank, Hypothecary Bank, Bourse, Department of Engineers, Department of Justice, Museum and Public Library, Astronomical Observatory, Great Central Railway Station, etc. There are several handsome churches, two theatres, and a race-course. Railways connect this port with nearly every province of the republic. Permanent residents in 1901 numbered 35,410, and in addition there is a large floating population.

La Plata, Rio de, rē'ō dā, an estuary on the southeastern coast of South America, between Uruguay and Argentina; an outlet for the united waters of the Paraná and Uruguay rivers. The enormous outflow, which in volume is exceeded only by that of the Amazon, creates powerful currents; treacherous shallows are formed over the washings brought down from the interior of the continent; and the low-lying southern shores afford no shelter from storm winds. Therefore navigation in this estuary, which is 143 miles wide at its mouth, and about 190 miles long, narrowing gradually above Montevideo and Buenos Ayres, combines the perils of river and open sea. On the north shore there is one good natural harbor — that of Montevideo; on the Argentine side well-directed efforts are being made to supply natural deficiencies by building massive docks, dredging deep-water channels, and completing other extensive harbor improvements (see ARGENTINA, BUENOS AYRES, and LA PLATA). The region to which the Rio de la Plata, with the Uruguay, Paraná, and Paraguay rivers, gives access, is of vast extent. In the later years of Spanish dominion it was comprised in the viceroyalty of La Plata, from which the states of Argentina, Uruguay, Paraguay, and Bolivia have been carved; and to-day the southern portions of that region sustain some of the most progressive of all Latin-American communities. Early in the last century Great Britain attempted to secure control of this continental gateway, a position which, as it now appears, would have enabled her to win in the south a colony possessing very great resources — another Canada, at least. In 1806, when England and Spain were at war, Spain being the ally of Napoleon, Major-General William Carr Beresford, with about 1,600 men, arrived off Buenos Ayres, and captured the city quite easily. But a few weeks later the invaders were driven out. A much larger army, commanded by General Whitelocke, was sent in 1808 to recapture Buenos Ayres, and a separate force succeeded in taking possession of Montevideo. But the British were defeated on the south shore; General Whitelocke capitulated on the day of the attack, withdrew to his ships, and surrendered Montevideo.

MARRION WILCOX,
Authority on Spanish America.

Laporte, la-pōrt', Ind., city and county-seat of Laporte County, on the Chicago & W. M., Lake Erie & W., and several other railroads; 59 miles east of Chicago. It is the farming trade centre for the county; and is also engaged in the manufacture of woolen goods, agricultural implements, wheels, hubs, etc. It is an attractive summer resort, having several beautiful lakes in its vicinity; contains a handsome court house, city hall, St. Rose's Academy, and public library; and has an electric-light plant, waterworks supplied from one of the lakes; several churches, National and State banks, daily, weekly, and monthly periodicals, and an assessed property valuation of nearly $4,000,000. In the winter large quantities of ice are cut at the lakes here and shipped to Chicago. Pop. (1890) 7,133; (1900) 7,126.

Lap'wing, a plover (*Vanellus vanellus*) found throughout temperate Europe and Asia, across the whole breadth of which it breeds. In the summer a few are found as far north as Norway, Iceland and Greenland, and in winter they migrate for the most part to Africa, and India. In its habits the lapwing much resembles the American killdeer; and, like that bird, it is hated by gunners on account of its alarm-cries. This pursuit and the market demand for its flesh, and more especially for its eggs, have greatly reduced its numbers, especially in Great Britain. The lapwing is noteworthy for the long flowing crest on the head, the contrasting white and deep iridescent green of its plumage, and for its peculiar jerking, yet rapid flight.

Lap'worth, Charles, English scientist: b. Faringdon, Berkshire, 1842. He was trained as a schoolmaster at Culham College, taught at Galashiels, Scotland, 1864 to 1875, at St. Andrews, 1875 to 1881, and at Birmingham University. In 1892 he became president of the geological section of the British Association in Edinburgh. His great work has been in the field of theory with regard to 'rock-fold,' and the investigation of graptolites. Among his works are: 'The Geological Distribution of the Rhabdophora' (1880); 'Intermediate Text-Book of Geology.'

Laramie, lăr'a̤-mē, Wyo., city and county-seat of Albany County, on the Laramie River and the Union Pacific railroad; 58 miles west of Cheyenne, the State capital. It is the shipping and trade centre for a large stock-raising and mining section; and is also engaged in manufacturing; has large deposits of gold, silver, lead, graphite, antimony, cinnabar, and other minerals, and rolling mills, lime-stone quarries, plaster mills and railroad and machine shops. It is the seat of the University of Wyoming, the State fish hatchery, Agricultural Experiment Station, and the State penitentiary; contains public and college libraries and St. Joseph's Hospital; and has electric light plants, water-works, daily and weekly newspapers, and an assessed property valuation of over $1,500,000. Laramie was first settled in 1867 by employees of the Union Pacific railroad, incorporated in 1869 and chartered as a city in 1884. The municipal government is vested in a mayor and a council of six members elected biennially. Fifty per cent of the population are American born, 20 per cent Scandinavian and 10 per cent German. The city owns and operates the waterworks. Pop. (1890) 6,388; (1900) 8,207.

W. E. Chaplin,
Editor of the ‹Republican.›

Laramie Mountains, a Rocky Mountain range which extends through Wyoming and Colorado, and bounds the Laramie Plains on the east. The highest point is Laramie Peak, 10,000 feet high. Coal is the principal mineral found in this range.

Laramie Plains, a plateau in southern Wyoming, about 7,500 feet above sea-level.

Laramie River, an important stream rising in northern Colorado and flowing into the North Platte at Fort Laramie in Wyoming. Its length is about 200 miles.

Lar'ceny, the fraudulent appropriation of the personal property of another person without that person's consent. To constitute this crime the removal of the goods to any distance is not necessary, but it requires to be shown that the article has completely passed, for however short a time, into possession of the criminal. Concerning the kinds of things the appropriation of which is larceny, the common law restricted them to personal property as distinguished from real estate, but this distinction has been largely abolished by recent statutes. At one time in Great Britain the punishment for grand larceny was death; later it was restricted to transportation; now the punishment for larceny is imprisonment, the same as in the United States, and depends on the previous character of the prisoner. See also Theft.

Larch, a genus (*Larix*) of coniferous trees characterized by a pyramidal habit of growth; small linear leaves arranged in clusters upon the older branches, singly and spirally upon the young twigs, often conspicuous pistillate flowers which develop small, erect, globose or oblong cones, the attenuated scales of which are not deciduous at maturity. The species, of which there are less than a dozen, are natives of the colder parts of the northern hemisphere. The best known one in the United States is the American larch, hackmatack or tamarack (*L. Americana*), which grows generally in wet, peaty soils and shallow swamps, or occasionally upon drier upland soils, from Hudson Bay to Pennsylvania, and westward to Manitoba and Illinois. It attains a height of 60 or more feet, and has nearly horizontal branches. Its wood is hard and very durable, but light in proportion to its size. Being very straight and slowly tapering, the trunks are much used for telegraph poles, scaffold-supports, fence-posts, railway-ties, and in ship-building. It is less planted for ornamental purposes than the following species because its branches are less pendulous and less leafy.

The European larch (*L. decidua* or *L. europæa*) grows usually upon dry uplands and a wide range of soils, but rarely in moist ground. Its range is from the mountains of southern Europe to the far north, where it is among the few hardy trees; in Asia it has a similar distribution. In height it exceeds the tamarack, often reaching 100 feet, and since it is of rapid growth, and is used for an even larger number of purposes than the preceding, it is often planted for commercial purposes, windbreaks, and for ornament. The timber which is rich in resin and is practically exempt from insect attacks, is valued for wet situations. It is little used for planks because it warps badly. Since it does not ignite readily and does not splinter it was largely used in wooden battle-ships. Its bark, which contains tannin, is somewhat used for making leather; its stems yield Orenburgh gum resembling gum arabic; and its leaves in warm climates exude Brançon manna, a sweetish, turpentine-flavored manna (q.v.).

The other species more or less resemble the foregoing in habit and uses. The most beautiful and ornamental is probably *L. leptolepis,* a native of Japan. It attains heights of 70 and 80 feet and is remarkable for the brilliant autumn colors of its foliage. All the species except the Himalayan larch (*L. griffithii*), which seldom exceeds 40 feet in height, are hardy throughout the United States. The timber of the western larch (*L. occidentalis*), a native of the Pacific Coast region from Oregon northward, is considered the best yielded by coniferous trees. The tree is the largest of the genus, often reaching a height of 150 feet.

The only insect seriously harmful to the larch is a sawfly (*Nematus erichsonii*), whose young hatch in early summer from eggs previously inserted into the young shoots, and immediately begin feeding upon the leaves. This pest is occasionally sufficiently numerous to defoliate large tracts of forest.

Larcom, Lucy, American poet: b. Beverly, Mass., 1826; d. Boston 17 April 1893. In her youth she was a factory girl in Lowell, Mass., and to the ‹Lowell Offering,› a magazine conducted by the operatives in the cotton-mills, made contributions which attracted the favorable notice of Whittier. For three years she studied at Monticello Seminary (Godfrey, Ill.), for six taught in Wheaton Seminary (Norton, Mass.). She was editor-in-chief of ‹Our Young Folks,› a Boston magazine, later merged with ‹St. Nicholas,› in 1865–74. She edited several collections of verse, and published ‹Ships in the Mist, and Other Stories› (1859); ‹Poems› (1868); ‹An Idyl of Work, a Story in Verse› (1875); ‹Childhood Songs› (1877); and ‹Wild Roses of Cape Ann, and Other Poems› (1880); ‹A New England Girlhood Outlined from Memory,› an autobiography

(1899). Her collected poetical works appeared in 1884. Her poems of New England life were especially effective, perhaps the best-known being 'Hannah, Binding Shoes.' Consult: Addison, 'Life, Letters, and Diary of Lucy Larcom' (1894).

Lard, the melted and strained fat of swine, which differs in its situation from that of almost every other quadruped, as it forms a thick, distinct, and continued layer betwixt the flesh and the skin, somewhat like the blubber in whales. The greater part of the finer sorts of the lard of commerce is procured from the abdominal part of the animal. Lard is rather soft, white, and readily fusible at 100° F. It consists of stearine, which is a solid, and oleine, which is a liquid fat; but it usually contains small quantities of impurities, and it is to them probably that it owes its becoming occasionally rancid. It is used as a lubricant, but it is sometimes mixed with oils of better quality as an adulterant.

Larderel'lite, a native hydrous borate of ammonium, crystallizing in the monoclinic system, and having the composition $(NH_4)_2O.4B_2O_3.4H_2O$. It occurs at the Tuscan lagoons, and was named for Larderel, a Tuscan borax manufacturer. The mineral gives off ammonia when heated, and is used, to a certain extent, as a commercial source of ammonia.

Lard'ner, Dionysius, Irish physicist: b. Dublin 3 April 1793; d. Naples 29 April 1859. He was graduated from Dublin University in 1817 and was made professor of astronomy and physics in the University of London in 1828. From 1840 to 1845 he lived in the United States, where he gave popular scientific lectures in many towns. He wrote several notable mathematical treatises; and edited, himself becoming one of the chief contributors, a 'Cabinet Cyclopædia' (134 vols., 1829–46). Among his other writings are: 'Manual of Electricity,' etc. (1841); 'Treatise on Heat' (1844); 'The Steam Engine' (1852); 'Natural Philosophy and Astronomy' (1851–2).

Lareau, lä-rō', **Edmond,** Canadian author: b. St. Gregoire, Quebec, 12 March 1848; d. 1890. He was educated at the College of Ste. Marie de Mannoir, at Victoria College, and at McGill University, and was admitted to the bar in 1870. In 1876 he became professor of law in McGill University, and in 1886 was elected in the Liberal interest to the provincial legislature from Rouville County. His works, written in French, include histories of Canadian law (1872), and literature (1874), and 'Historic and Literary Miscellanies' (1877).

Laredo, lä rā'dō, Texas, city, county-seat of Webb County; on the Rio Grande, and on the Mexican N., the International & G. N., and the Rio Grande & E. P. R.R.'s; about 150 miles west of San Antonio. It is situated in an agricultural and stock raising region, and in the Rio Grande coal belt, with valuable iron ore deposits in the vicinity. Laredo was settled by the Spaniards in 1767, and was incorporated in 1848. The Spaniards found here Indians who tilled the soil and built houses. The early missionaries established here a mission some years before a permanent settlement was made. The chief manufacturing establishments are extensive concentrating and sampling works, brick yards, furniture factories, foundry and machine-shop products, stock-yards, grain-elevators, and large coal yards. It is the trade centre for a large section of the southwestern part of Texas. It is connected with Nuevo Laredo, on the Mexican side of the Rio Grande, by bridges. Some of the prominent buildings are the court-house, the jail, the Mexican National Hospital, the Mercy Hospital, and the Ursuline Convent. It is the seat of the Laredo Seminary, established in 1882, under the auspices of the Methodist Episcopal South Church, and the Ursuline Academy. The park of 65 acres is an attractive feature of the city. Pop. (1900) 13,429.

Lares, plural of the Latin word *lar,* tutelary divinities of the Romans, originally either the spirits of ancestors who watched over the family of a descendant, or, according to a perhaps more probable view, gods of the lands on which the man's house stood, and only later household gods. We have mention of *lares compitales* whom country people honored with a yearly festival at shrines erected at crossroads, but more frequently of the lares of the home, to whom prayer and sacrifice were offered at the daily meals as well as on all festal occasions. Their figures were kept in a little shrine, often in a special chapel in the house. There were also public lares whose worship, associated with that of the emperor, became important under Augustus and later.

Lar'iat. See Lasso.

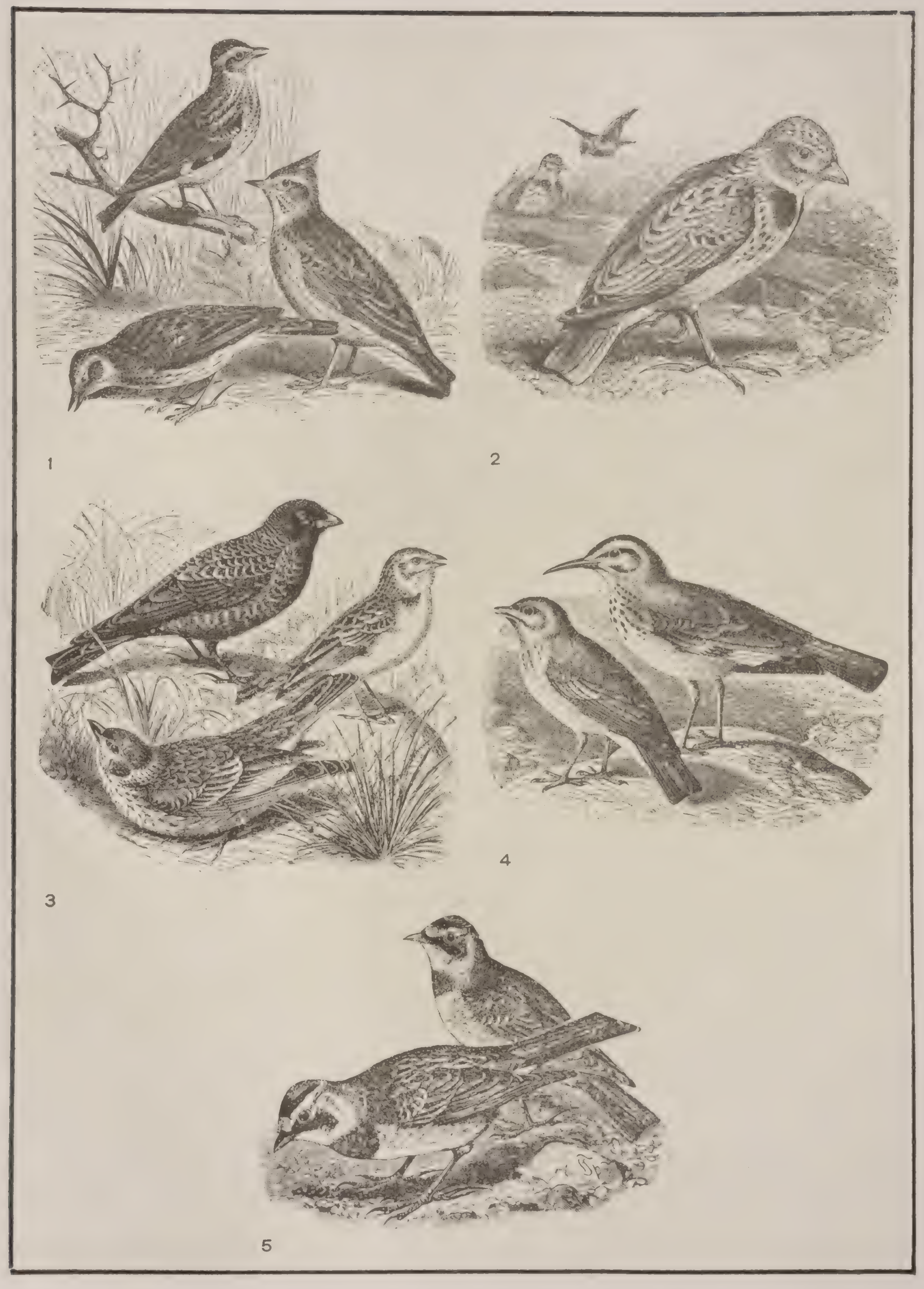
Lar'idæ, the family of sea-going birds which includes the skuas (*Stercorarinæ*), gulls (*Larinæ*), skimmers (*Rhynchopinæ*), and terns (*Sterninæ*); but some naturalists regard the skuas and skimmers as each of family rank. They are practically cosmopolitan, although the great majority are restricted to sea-coasts.

Lariosaurus, lăr-ĭ-ō-sâ'rŭs, a genus of fossil reptiles, of the family *Nothosauridæ,* allied to the plesiosaurs, which were lizard-like in shape, rarely a yard long, and had heads of moderate size with numerous prehensile teeth. Nearly complete skeletons of *L. balsami* are obtained from the black Triassic shales near Lake Como, and from the German Muschelkalk. Consult Woodward, 'Vertebrate Paleontology' (1898).

Larissa, lä-rēs'ä, Greece, city in Thessaly, on the Salamvria River, 35 miles northwest of Volo, with which it is connected by railway. It was celebrated in ancient times for its bull-fights, and was the rendezvous place of Julius Cæsar's army before the battle of Pharsalia. It is now the largest, richest, and most populous city in Thessaly, and the seat of a Greek archbishopric. Pop. 15,373.

Lark, a bird of the family *Alaudidæ.* Larks are small, ground-keeping birds, with small awl-like beaks, the long tarsi scutellated posteriorly, and the claw of the hind toe usually greatly lengthened; the wings vary much in length, but are usually short, as also is the tail. The normal coloration is light brown with darker longitudinal streaks, the under parts being whitish and the breast usually spotted. There is frequently a crest, or decided blackish marks about the head; while the desert forms are, as usual, pale and ornamented. Larks dwell in open grassy places, making their nests on the

LARKS.



1. Wood-lark, Sky-lark and Crested Lark.
2. Alanda calandra.
3. Alanda yeltoniensis; A. sibirica; A. brachydactyla.
4. Desert Larks.
5. Horned Lark.

ground or among rocks, sometimes elaborately; and laying spotted eggs; they are sociable, but hardly gregarious. Some frequently perch on trees, and most of them soar while singing, as is well known of the sky-lark (q.v.); and the song of many resembles that of this renowned musician. It is a physiological peculiarity of the family that larks molt only once a year. The food consists of insects and their larvæ, worms, small seeds, buds, berries, etc. The flesh of all is considered a dainty, and great numbers are caught annually on both sides of the Mediterranean to be sold in the markets. The family includes about 100 species, divided among about a dozen genera, of which only one, *Otocorys,* with probably but a single species (the horned lark, q.v.) is found in America, and only a single species occurs in Australia. The remainder of the family belongs to Europe, Asia, and Africa, where familiar types are the sky-lark and wood-lark (qq.v.).

The name is also given to many more or less similar birds of other families, as to several of the pipits and Old World warblers; while the meadow-lark (q.v.) of the United States is a starling.

Lark-bunting, a fringilline bird of the western plains of the United States, the male of which in summer is solid black, except a conspicuous white patch on the wings, and the female brown-streaked. The habits of the pair are terrestrial, and the male soars in singing after the manner of the sky-lark and with some similarity in notes. A very different bird, one of the smaller plains sparrows (*Chondestis grammaca*), is known as the lark-finch. Consult Keyser, ‹Birds of the Rockies› (1902).

Larkspurs, a genus (*Delphinium*) of annual and perennial herbs of the order *Ranunculaceæ,* characterized by palmately lobed or divided leaves, and showy racemes or panicles of large irregular flowers. Many of the species, of which there are about 60 in the north temperate zone, are cultivated for ornament, and have developed numerous improved varieties, some of which are double-flowered. The most popular annual species is *D. ajacis,* which attains a height of about 18 inches and bears showy blue or violet, sometimes white flowers throughout the summer. Of the perennial species, *D. formosum, D. grandiflorum* and *D. hybridum* are most popular in America, and have yielded the largest number of horticultural varieties. They are all natives of Asia, become two to four feet tall, blossom during mid-summer, and are noted for their beautiful tints of blue, their hardiness and ease of cultivation. If cut down immediately after flowering they often blossom a second time before frost. Among the best known American species are *D. menziesii, D. scopulorum* and *D. nudicaule,* which range from the Pacific Coast to the plains region; and *D. exaltatum, D. tricorne* and *D. carolinianum,* found most commonly east of the Mississippi. The larkspurs thrive best in rich, deep, sandy loam well exposed to the sun. The annuals are propagated from seed, as are many of the perennials, which are also increased by cuttings taken in early spring or from second growth in summer. Established clumps may be divided in fall or spring. Since the seeds are very slow in germinating they are usually sown in autumn out of doors, or in early winter in a greenhouse.

Larned, lär′nĕd, **Augusta,** American author and journalist: b. Rutland, N. Y., 16 April 1835. She was educated at the Watertown and Potsdam seminaries and at Spingler Institute, New York; has been contributor and correspondent to periodicals; editor of the ‹Revolution› (woman's rights); editorial writer for the ‹Christian Register,› Boston, for many years; and is author of the ‹Roundabout Road› series of papers which appeared in the New York *Evening Post.* She has also published ‹Home Stories›; ‹Talks with Girls›; ‹Tales Retold from Grecian Mythology›; ‹The Norse Grandmother›; ‹Tales from the Eddas›; ‹Village Photographs›; and ‹In Woods and Fields.›

Larned, Josephus Nelson, American author and librarian: b. Chatham, Ontario, Can., 11 May 1836. He was a member of the editorial staff of the Buffalo *Express* 1859–69; and editor, 1869–72; he was then superintendent of public education in Buffalo for a year, and in 1877 became librarian of the Buffalo Library, a position which he held for 20 years. He was president of the American Library Association in 1893–4. He edited and published (1902) ‹The Literature of American History,› a bibliography, in which the «scope and comparative worth» of each book is indicated in short annotations by historical students. His other works include ‹Talks about Labor› (1877); ‹History for Ready Reference› (1895); ‹Talk about Books› (1897); ‹History of England for Schools› (1900); ‹A Multitude of Counselors› (1901); and ‹Primer of Right and Wrong› (1902).

Larned, Walter Cranston, American lawyer and author: b. Chicago 30 Nov. 1850. He was graduated at Harvard in 1871; studied at the Harvard Law School, 1871–2, and in Europe, 1872–4; was admitted to the bar in 1874, and has since practised in Chicago. He is the author of ‹Arnaud's Masterpiece: a Romance of the Pyrenees›; ‹Churches and Castles of Mediæval France›; and ‹Rembrandt: a Romance of Holland.›

Larned, Kan., city and county-seat of Pawnee County, at the junction of the Arkansas and Pawnee Rivers, 240 miles southwest of Topeka. It is on the Missouri P. and the A. T. & S. Fe R.R.'s, and is the shipping centre of a large farming and stock-raising country. has flour mills, grain elevators, machine shops and other industries and has electric light and waterworks. The city is governed by a mayor and council elected every two years. Pop. (1890) 1,861; (1900) 1,780.

La Rochefoucauld, François, fräṅ-swä lä rōsh-foo-kō, DUC DE, PRINCE DE MARCILLAC, French courtier and moralist: b. Paris 1613; d. there 17 March 1680. He entered on a military career and was engaged as an officer at the age of 16 at the siege of Casale. In the wars and intrigues of the Fronde he served the party of the parliament, took part in the defense of Bordeaux (1650), and at the end of the civil war abandoned the pursuits of ambition for a life of repose and reflection. His house became a resort of the most distinguished wits and people of culture of the time, Boileau, Racine, Molière, Madame de Sévigné, and Madame de La Fayette. The first fruits of his literary activity were his ‹Mémoires sur la Régence d'Anne d'Autriche,› a spirited representation of that time, published

1662. In 1665 appeared anonymously the work by which he is now universally known, 'Réflexions, ou Sentences et Maximes Morales,' which passed through five editions in the course of the author's life and has been frequently republished. The best recent editions of the Maximes are those of Gilbert and Gourdault (1868–83), and Pauly (1883). The fundamental and prevailing thought in the book, that self-interest is the mainspring of all human actions, is presented with so much piquancy and variety of aspect that the reader forgives for a time the libeler of his race. His 'Correspondence' appeared in 1818. Consult Rahslede, 'Studien zu La Rochefoucauld' (1888); Bourdeau, 'La Rochefoucauld' (1895); Hemon, 'La Rochefoucauld' (1896).

La Rochejacquelein, Henri Du Verger, ŏṅ-rē dü vĕr-zhā lä rōsh-zhäk-lăṅ, Comte de, French Vendean royalist: b. Chatillon 20 Aug. 1772; d. Nouaille 4 March 1794. On the outbreak of the Revolution he retired to La Vendée, and the peasants of La Vendée having taken up arms in the royal cause, he placed himself at their head, and addressed them in the short and pithy harangue: «Let us go to meet the enemy; if I draw back, kill me; if I advance, follow me; if I die, avenge me.» After gaining 16 victories in 10 months he fell at Nouaille, shot by a Republican soldier whom he was offering quarter.

La Rochelle. See Rochelle, La.

Larousse, Pierre, pē-ār lä-roos, French encyclopædia maker: b. Toucy, Youne, 23 Oct. 1817; d. Paris 3 Jan. 1875. For several years he compiled educational text-books. In 1864 appeared the first volume of his great library of information, anti-clerical in tone, 'Grande Dictionnaire Universel du XIX. Siècle.' It was in 15 volumes, and was followed by an 'Encyclopédie du XVIII. Siècle.' He published also small condensed editions of the large works. His native town raised a statue to him in 1894.

Lar'rabee, William Clark, American Methodist Episcopal clergyman and educator: b. Cape Elizabeth, Maine, 1802; d. 1859. He was principal of Methodist academies at Cazenovia, N. Y. (1831–5), and Kent's Hill, Maine, and in 1837 was a member of the Maine geological survey. In 1840 he was appointed professor of mathematics and natural science in Indiana Asbury (now De Pauw) University, and in 1852–4 and 1856 was superintendent of public instruction in Indiana. He worked efficiently toward the improvement of educational methods in his denomination. Among the works published by him are: 'Scientific Evidences of Natural and Revealed Religion' (1850); 'Wesley and his Co-laborers' (1851); 'Asbury and his Co-laborers' (1853).

Larrabee, William Henry, American editor: b. Alfred, Maine, 20 Sept. 1829. He was graduated from Indiana Asbury (now De Pauw) University in 1845, was admitted to the bar but never entered practice, was assistant editor of 'The Methodist' of New York in 1862–5 and again in 1870–7, was associate editor of the Brooklyn *Daily Union* in 1865–70, and associate editor of the 'Popular Science Monthly' in 1879–1900. He contributed extensively to periodicals and encyclopædic publications, and wrote. with A. J. Schem, a 'History of the War in the East' (1877).

Lar'va, the young of an animal, when it differs from its parents in form and manner of life. In most invertebrates and in some of the lower vertebrates, the animal hatched from the egg is so different from the adult that in many cases the relationship was long unsuspected by naturalists, and the little creatures were given names as separate beings,—*zoëa, nauplius,* etc., now applied to the forms of larvæ they represent. These larvæ may grow by imperceptible degrees into the stature and likeness of the adult; or they may pass by comparatively sudden changes through a series of more or less different forms, until finally the adult form is reached and retained. In the latter case the development is said to be by metamorphosis (q.v.), most completely and familiarly manifested by insects. Whatever the method, the course of larval growth in its successive stages recalls the phylogeny of its race—that is, the course of its evolution in history. Thus each of the various phases of the larval life of any of the lower animals, like the fœtal life of embryos of the higher ranks, indicates probable ancestral forms. Some of the most remarkable larvæ may be mentioned. Among the marine annelids a larva known as the *trochophore* or *trochosphere* (Fig. 1) is common. It has a short compact body, traversed by the alimentary canal, and has one or more bands of cilia around the body and a sensory patch at the top of the head. By feeding, this larva grows, the increase being chiefly in length, and with this increase, the joining or metamerism of the body, so noticeable in the adult, appears. Other worms have different types of larvæ, among them the *pilidium* of the nemertines (Fig. 2), shaped

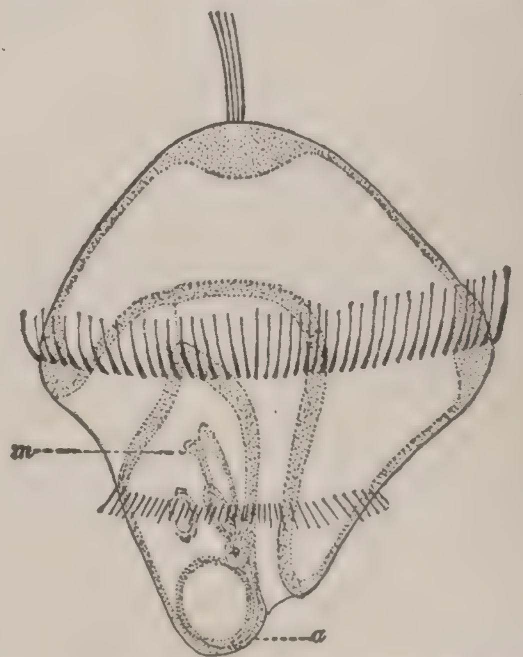


Fig. 1.—A trochophore: *a*, anus; *m*, mouth.

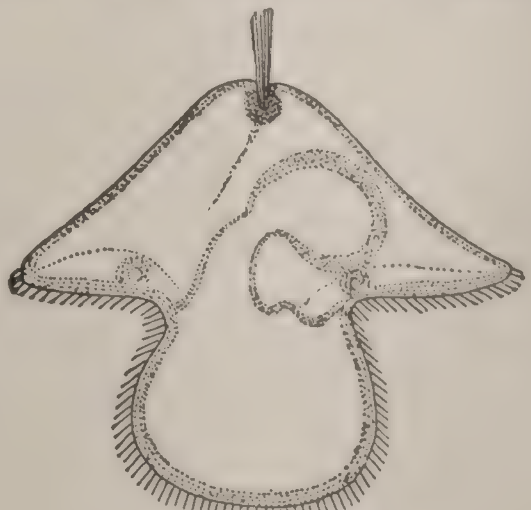


Fig. 2.—A pilidium.

somewhat like a chapeau with enormous ear lappets. Between these is the mouth which leads to a large blind sac, the stomach of the worm. The worm itself develops inside the pilidium and later escapes from it to continue its existence, leaving the rest to die.

Among the mollusks larvæ like the trochophore occur, and it is the existence of these larvæ which leads naturalists to think that annelids and mollusks, so different in the adult, had a common ancestry. Later, with the appearance of molluskan characters, a larva known as the *veliger* may appear. This is characterized by a large disk on the top of the head, which serves for a time as a swimming organ and is later lost.

All of the lower and some of the higher crustacea pass through a so-called *nauplius* stage (Fig. 3). The adult crustacean consists of several segments, but the nauplius is without joints, has a single eye, a straight alimentary canal, the mouth being overhung by an enormous upper lip, and three pairs of appendages, which later become changed into the two pairs of antennæ and the mandibles of the adult. The first pair of the nauplian appendages are simple and apparently are only sensory, while the two remaining pairs are two-branched, and serve as swimming organs, the basal portions being also used as jaws to force food into the mouth which lies between them. In the higher crustacea two other and better developed larvæ, known as the *zoëa* and the *megalops* may appear.

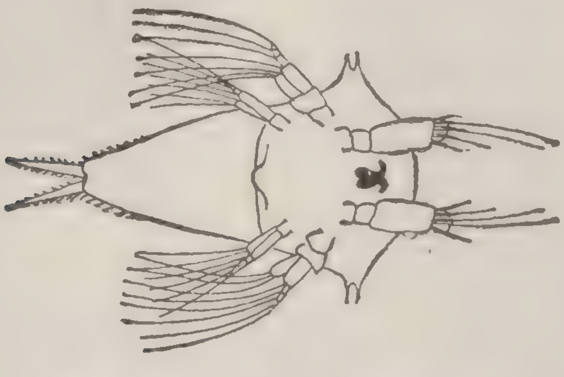


FIG. 3.—Nauplius of Sacculina.

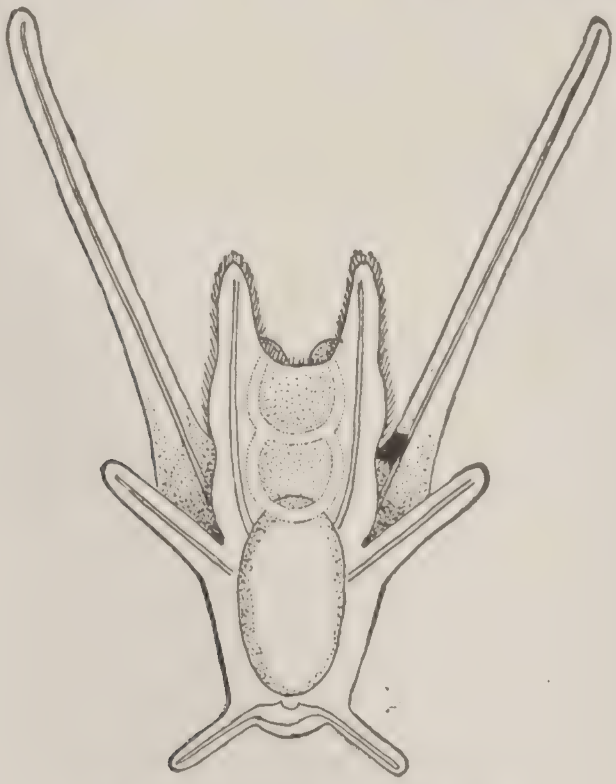


FIG. 4.—Pluteus of a sea-urchin.

Possibly the most remarkable larvæ occur among the echinoderms. These forms, exemplified by the starfish and sea-urchin, are noticeable for their radial symmetry, but in the larvæ, of which there are several distinct types, not a trace of a radial arrangement of parts can be found. They are rather markedly bilaterally symmetrical, with well-marked dorsal and ventral surfaces, which, however, do not correspond with the upper and lower surfaces of the adult. Some of these larvæ are more or less barrel-shaped, but in others, as the *pluteus* (Fig. 4) and *bipinnaria* (Fig. 5), the body is drawn out into a number of processes, soft and flexible in the latter, but stiffened in the pluteus by internal calcareous rods. The starfish or sea-urchin later arises on one side of this larva, the processes are absorbed and the radial arrangement is superimposed upon the bilateral features in the adult, without, however, completely obliterating them.

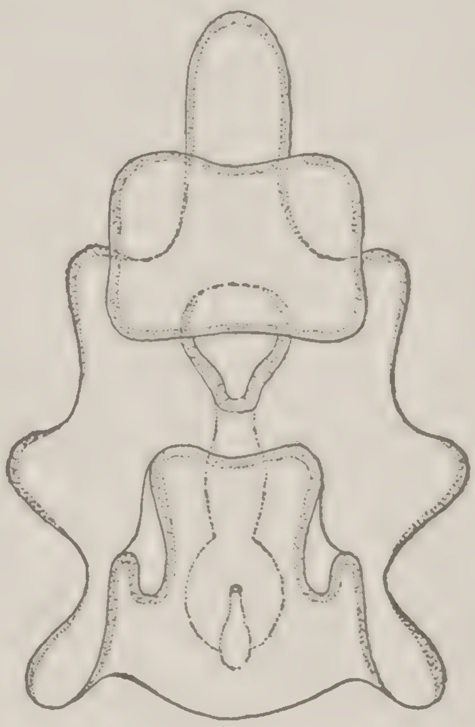


FIG. 5.—Bipinnaria of a starfish.

The larval forms of insects vary greatly both in their form and in the completeness of their metamorphosis. They may be divided into two classes, the cruciform and the campodeaform. The former include those which are worm-like, such as the caterpillars (q.v.) of moths and butterflies, the grubs of beetles, the maggots of flies, and the like. They are the most numerous and conspicuous forms, and are active and voracious, and do nearly all the damage to be attributed to injurious insects. The campodeaform larvæ are those which nearly resemble the parents, such as the nymphs of the dragon-fly and related groups. The second stage of larval life among insects is a very different existence, usually stationary and quiescent, and is called the pupa stage (see PUPA). Some larvæ among insects and elsewhere may breed, — a phase of reproduction called pædogenesis (see PARTHENOGENESIS).

The value of the different forms and habits of life assumed by animals in passing through the larval stage or stages is that it tends to prevent the extinction of the species, since if at any moment all the adults were swept out of existence, the young living in a different station would continue to represent and revive the species. «This law is seen to hold good among the insects,» as Packard points out, «where many species are represented in the winter-time by the egg alone, others by the caterpillar, others by the chrysalis, while still others hibernate as imagoes. Again, in the marine species, the free-swimming young are borne about by the ocean and tidal currents, and in this what in adult life are the most sedentary forms become widely distributed from coast to coast and from sea to sea.» On the other hand, the larval forms of fixed marine animals serve as food for fishes, especially young fishes and numerous invertebrates, which, without this resource, would starve.

Among vertebrates larvæ are rare, and appear only in the lower forms, those of the lamprey (*Ammocœtes*), of eels (*Leptocephali*), of certain salamanders (axolotls), and of frogs (tadpoles), being the most noticeable.

J. S. Kingsley,
Professor of Zoology, Tufts College.

Laryngismus (lăr-ĭn-jĭs′mus) **Strid′ulus.** Laryngismus is spasm of the glottis, causing contraction or closure of the opening; laryngismus stridulus (also called Kopp's asthma, Millar's asthma, etc.), is spasm of the glottis usually associated with some disease, especially with the common ailment of children known as rickets.

Laryngitis, lăr-ĭn-jī′tĭs. See Nose and Throat.

Laryngoscope, lā-rĭng′gō-skōp, an instrument used for examining the larynx. It consists of a little plane mirror attached to a stem, about four inches long, at an angle of 120° or more. This mirror is introduced into the mouth of the person to be examined, and held near the back of the throat, while a strong light is thrown upon it from a reflector worn upon the forehead, or held between the teeth of the examiner. In the strong light of the sun, or of an argand burner, the light thrown from the reflector is concentrated upon the laryngeal mirror, which lights up the parts to be examined, while it at the same time reflects the images of these parts into the eye of the examiner. In this way the mechanism of the human voice may be studied, and what is of considerable importance, disease if present can be readily detected, and the fitting remedy applied. The chief merit of introducing this instrument in a very complete form into medical practice must be assigned to Drs. Turck, of Vienna, and Czermak, of Prague, although Garcia, Liston, Babington, Avery, and others used a reflecting mirror to explore the recesses of the throat. It was not until the two German physiologists took up the subject in 1857 that the benefits arising from its use were fully recognized.

Laryngotomy, lăr-ĭng-gŏt′ō-mĭ. See Bronchotomy.

Lar′ynx, the organ by which the voice is produced, situated at the upper part of the trachea or windpipe. The larynx is formed mainly by two pieces of cartilage, called the thyroid and the cricoid, one placed above the other. The thyroid is formed of two extended wings meeting at the middle line in front of a ridge; above and from the sides two horns project upward, which are connected by bands to the hyoid bone, from which the larynx is suspended. The thyroid cartilage rests and is movable upon the cricoid, moving backward or forward, but not from side to side. The cricoid cartilage is shaped like a signet-ring (Greek *krikos,* a ring), the narrow part of the ring being in front. The cricoid carries, perched on its upper edge behind, the arytenoid cartilages, which are of great importance in the production of the voice. These various cartilages form a framework upon which muscles and mucous membranes are disposed. The mucous membrane which lines the larynx is thrown into various folds. These folds are called the true vocal cords, and by their movements the voice is produced. They are called true, as distinct from the false vocal cords which are above them, but take no part in producing the voice. The true vocal cords projecting toward the middle form a chink, which is called the glottis. By the contraction of various muscles this chink can be so brought together that the air forced through it throws the edges of the membrane into vibration and so produce sounds. Variations in the form of the chink will effect changes in the sound. Thus the production of voice is the same as in musical instruments, the arrangements in the larynx being such as to produce (1) the vibratory sounds, (2) to regulate the sound, (3) to vary the pitch, and (4) to determine the quality of the sound. The rapid, delicate muscular movements involved are produced by nervous stimulii reaching the muscles from the brain. Thus the voice is produced in the larynx, and is modified by the rest of the respiratory passages. (See Voice.) In the act of swallowing, the glottis is covered by a cartilaginous plate called the epiglottis. In the accompanying cut, Fig. 1, shows c, the larynx internally, b being the epiglottis situated above the glottis or entrance to the larynx, a a the trachea, and d the œsophagus or gullet. In Fig. 2, j is the trachea, b the hyoid bone, n n the thyreo-hyoid membrane, o the thyreo-hyoid ligament, g the thyreoid cartilage, h the cricoid cartilage, p the crico-thyreoid ligament. See Nose and Throat.

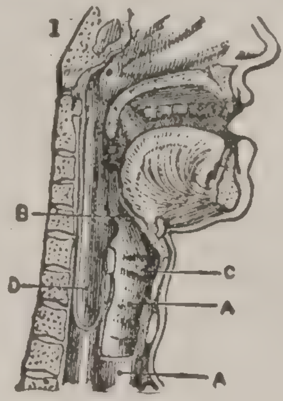


Fig. 1.
Larynx internally.

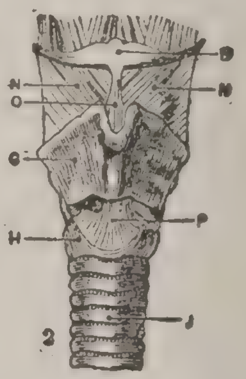


Fig. 2.
Larynx externally.

La Salle, Jean Baptiste de, zhŏṅ băp-tēst dē lä säl, French priest and educator, called the father of modern pedagogy: b. Rheims 30 April 1651; d. Saint-Yon 7 April 1719. After completing the preparatory course of humanities, he entered the university of his native city where, at the age of 19, he took his Master's degree. Shortly afterward he went to the Seminary of Saint Sulpice at Paris; and, while living there, followed the theological courses of the Sorbonne. On Easter eve 1678, he was ordained priest, being already a titular canon of the Cathedral Church of Rheims; two years later, in 1681, after defending a thesis before the faculty of the University of Rheims he obtained the degree of Doctor in Sacred Theology.

A man of means and academic culture, he was also a friend of the people, a true philanthropist, giving away all his patrimony in alms to help the deserving poor. He interested himself at an early period in education, especially the education of children belonging to the humbler classes. He noticed that nowhere was there a clear distinction drawn between primary and secondary education and that nowhere was there any provision made for instructing school-children in subjects of acknowledged utility to them in after life.

To correct this state of affairs he founded in 1681 a society of teachers under the name of Brothers of the Christian Schools (q.v.), enjoining them by rule to take the vows of religion but not to enter holy orders. By this latter regulation, he sought to free them from ecclesiastical duties so that they might be able to devote themselves unreservedly to the work of education. The rules and constitutions of the society were approved in 1724 by Pope Benedict XIII.

The first great change introduced by De la Salle and successfully carried out by his followers was the substitution of French for Latin as the language of the class-room. As in the case of antecedent reforms, this roused a swarm of wrathful critics; but it soon met with the approval of the universities and highest authorities in church and state.

The individual system of teaching was then in vogue, and as it seemed to him to involve loss of time and to favor idleness, he replaced it by the "simultaneous" method in which the teacher addresses himself to a numerous division and frequently to a whole class at a time. He insisted on the Socratic method of teaching for all subjects, rejecting the lecturing style as unsuited to elementary instruction. He also recommended the frequent use of object-lessons. Such thorough-going changes gave a great impetus to education inasmuch as it increased the efficiency of the teacher while diminishing his drudgery, and insuring substantial results. In due time, these bold innovations in educational methods brought about a general system of popular education in France as well as in other European countries, and merited for their author the title of Father of Modern Pedagogy.

In 1684 he opened a *Seminaire de Maîtres d'Ecole* for the formation of competent masters for the rural districts, which seminary was the first normal school or training college founded in Europe. Admission was by examination; and during the course, opportunities were afforded for practice-work by the free schools attached to the institution. In his endeavors to instruct the masses and educate the people, De la Salle established in Paris in 1699 regular public courses in science and art in which instruction was given to all comers on Sunday from 12 to 3, the session being always concluded by a short religious instruction. These schools were called *Ecoles Dominicales* and were, in some respects, the prototype of our Sunday schools. At Saint-Yon, near Rouen, he also founded a school of higher studies in which the students were allowed to select the courses best adapted to their wants.

De la Salle lived to see his society firmly established in France and his educational work appreciated at home and abroad. Among his published writings are *Le Devoir du Chrétien* and *La Conduite des Ecoles;* others are of an ascetical character and refer to the religious life.

This great educator and benefactor of the people was of a gentle yet firm disposition; severe to himself but kind and encouraging to others. The holiness of his life was proclaimed to the world by Pope Leo XIII. who on 24 May 1900, conferred on him the honors of canonization and enrolled him among the saints of the Catholic Church.

Brother Potamian,
Manhattan College, New York.

La Salle, René Robert Cavalier, rė-nā rō-bãr kä-vā-lē-ā, Sieur de, French explorer: b. Rouen, France, 22 Nov. 1643; d. Texas 20 March 1687. He sailed for Canada in 1667 with the hope of making his fortune there; became a fur trader at La Chine (so named for its supposed position on the route to China), explored Lake Ontario, established forts on the St. Lawrence, and was made by Frontenac commander of a fort which stood where Kingston, Ontario, now stands. Returning to France he received large grants of land in Canada, and was ennobled, but on the discovery by Marquette of the Mississippi, he left his new estate to seek the mouth of the great stream. His designs were favored by the French minister of marine, who supplied him with men and ships. In 1679 he had built and launched on the Niagara River a bark of 60 tons, the Griffin, crossed Lake Erie, and Lake St. Clair, and reached Green Bay. Here he loaded the Griffin with rich furs and sent it to meet the claims of his creditors at Montreal. He then proceeded in bark canoes and reached the banks of Lake Peoria. Leaving his lieutenants to continue explorations he returned to Fort Frontenac, where he learned of the wreck of the Griffin, and another ship sent with supplies for him from France. In the meantime his little band of explorers had been scattered through dissensions, but he succeeded in gathering them and descended to the mouth of the Mississippi, where he built a fort, and named the adjacent lands Louisiana. This was the great achievement of his life. After a visit to France he failed on his return (1684) with 4 vessels and 280 men, to locate the mouth of the Mississippi. He had a difference on this point with Beaujeu, the naval commander, who persisted in sailing on to Matagorda Bay. Here La Salle, to avoid further quarrels and recriminations, abandoned his companions; the colonists who followed him lost most of their supplies in a gale of wind, but managed to fortify the fort of St. Louis; they failed in their agricultural attempts, and sought in vain for gold. Their numbers were reduced to 35, and in 1687 he set out for a return to Canada. Two men, Dubant and L'Archevêque, who had embarked capital in the enterprise, were incensed at its failure, and in a quarrel murdered the nephew of La Salle, who, when he enquired into the matter, was shot dead from ambush.

Lasalle, lạ-săl', Ill., city in Lasalle County, on the Illinois River, the Illinois & Michigan Canal, and on the Illinois C. and the Chicago, R. I. and Pacific R.R.'s; 99 miles southwest of Chicago. It is the centre of a large trade by river, canal, and rail; is in a rich bituminous coal region; and is engaged in coal mining, zinc smelting and the manufacture of sulphuric acid, hydraulic cement, sewer pipe, bottles, clocks and ornamental pressed brick, and common brick. It is the seat of Saint Bede College and Saint Mary's Hospital; has a public library;

good sewerage system, waterworks, hospitals, a National bank, electric light and street railroad plants, and daily and weekly newspapers. The city was settled in 1830, and named in honor of La Salle, the explorer. It was chartered in 1852. The government is vested in a mayor and council. The city owns and controls the electric light plant and waterworks. Pop. (1890) 9,855; (1900) 10,446.

La Salle College, an educational institution in Philadelphia, Pa., founded in 1867 under the auspices of the Roman Catholic Church. It is under the management of the Brothers of the Christian Schools. In 1903 there were 24 instructors, 276 students, 8,700 volumes in the library, and the grounds and buildings were valued at $250,000.

Lascar, lăs-kär′, a name generally applied to Indian sailors on board of British ships, as, for instance, the large steamers of the Peninsular and Oriental Company. The Lascars make good seamen, being both temperate and docile. They are mostly Mohammedans.

Las Casas. See Casas, Bartolomé de las.

Las Cases, Emmanuel Augustin Dieudonné Marin Joseph, ĕm-män-oo-ĕl ō-güs-tăṅ dē-ė-dŏn-nā mä-răṅ zhō-zĕf läs käs, French historian; one of the companions of Napoleon at St. Helena: b. Chateau Las Cases, near Revel, 1766; d. Passy-sur-Seine 15 May 1842. He was educated at the school of the Oratorians in Vendôme, and at the military and naval schools of Paris, and when the Revolution broke out took part with the royalists. After the defeat of the Prussians in Champagne he fled to London, where he lived as a teacher. While here he executed his ‹Atlas historique et géographique› (1802), which he published under the name of Le Sage. When the *émigrés* were recalled by Napoleon, Las Cases returned to Paris. Having entered the army of Bernadotte (1809) he gained the favor of Napoleon, who in 1810 made him chamberlain and count of the empire. After the disasters of Leipsic and Moscow, Las Cases commanded the 10th legion of the national guard. In 1814 he refused to assent to the request for Napoleon's abdication, and went to England, whence he subsequently sent in his adhesion to the Bourbons. After the return from Elba he went back to France, and after the final defeat of the emperor at Waterloo followed him to St. Helena. Here with his son he devoted himself to the care of Napoleon, and passed his evenings in recording the emperor's remarks, which were subsequently published in his ‹Mémorial de Sainte Hélène, ou Journal ou se trouve consigné, jour par jour, ce qui a dit et fait Napoléon pendant dix-huit Mois› (1822–3). Having written a letter to Lucien Bonaparte commenting freely on the treatment to which Napoleon was subjected, he was arrested, 25 Nov. 1816, sent to the Cape of Good Hope, presently taken to England, thence conveyed to the continent, and to Frankfort-on-the-Main, where he at last received his liberty after 13 months' captivity. He was not allowed to return to France until the death of Napoleon. In the reign of Louis Philippe he was elected in 1831 and 1839 to the chamber of deputies, taking his seat at the extreme left, or with the ultra opposition. He wrote, in addition to the works above mentioned, his own life, ‹Mémoires d'E. A. D., Comte de Las Cases, communiqués par lui-même› (1819).

La Serena, lä sā-rā′nä, Chile, city, and capital of the department of Coquimbo (q.v.), on the Pacific coast, 215 miles north of Valparaiso. A railroad connects it with Coquimbo, 8 miles distant. Pop. (1900) 16,561.

Lasker, läs′kĕr, **Eduard,** German politician: b. Jarotschin, Posen, 14 Oct. 1829; d. New York 5 Jan. 1884. He was of Jewish descent, and after being educated at the Universities of Breslau and Berlin obtained a post in the municipal court (1851). He spent three years in England. On his return he entered the government service and was elected in 1865 to the Lower House. He sat subsequently in the Constituent North German Diet, and up to the time of his death in the North German and German Diet for the district of Saxe-Meiningen. He was associated with the «Fortschrittspartei» or Progressives, and in 1866 assisted in forming the National Liberal Party. He took an active part in the civil consolidation of the German empire. Among his writings is: ‹Zur Verfassungsgeschichte Preussens› (1874).

Lasker, Emanuel, German chess champion: b. Berlinchen 24 Dec. 1868. He chose mathematics as a profession, but eventually turned his attention to chess, playing with such success that since 1892 he has triumphed over all competitors both in tournaments and duel matches. He has outplayed, without losing a single game, Blackburne, Bird and F. Mieses of Leipsic. In 1892 he won the first prize in the London tournament; and in the International tournament at New York in 1893 beat all the best players, including Steinitz, champion of the world. A decisive match was arranged between him and Steinitz at Moscow and came off December 1896 and January 1897. Lasker won by 10 games to 2, 5 being drawn.

Las Palmas, läs päl′mäs, Canárias, the chief town of Grand Canary Island, and seat of the provincial government: an attractive place, with clean streets, a few handsome public buildings and churches, shaded walks, a well-defended small harbor, and a somewhat inadequate water-supply. The principal industries are the building and repairing of vessels, and manufacturing woolen goods, hats, leather, and glass. Population about 12.000.

Lassa, läs′sä. See Lhasa.

Lassalle, lä-säl′, **Ferdinand,** German Socialist: b. Breslau 11 April 1825; d. Geneva 28 Aug. 1864. He studied at the universities of Breslau and Berlin, and while there gained the friendship of such men as Böckh and Humboldt. Toward the end of 1844 he met at Berlin the Countess Hatzfeldt, who had contracted an unfortunate marriage, conducted her suit for separation, and brought it to a successful issue. He first made himself known as a leader during the democratic troubles of 1848, and was imprisoned for a year for alleged inciting to revolt. In 1858 he produced a work on the philosophy of Heraclitus, and in 1861 published his ‹System of Acquired Rights.› Thereafter he proceeded to organize the working-classes, which caused the government to accuse him of sedition, and he was imprisoned for four months. He was at first allied with the party of the Progressists, but in 1862 he broke with them; in 1863 he issued his famous ‘Offenes Antwortschreiben,’ a brochure in which he sets forth his working-class programme; and later in the same year founded a Labor Union (Allgemeiner deutscher Arbeiterverein), and began the Socialist propaganda in Germany. In 1864 he published an attack on the Manchester school of economists under the title ‘Herr Bastiat-Schultze von Delitzsch der ökonomische Julian, oder Kapital und Arbeit.’ In the summer of the same year he was killed in a duel occasioned by a love affair. One of the chief points in his economic theory was that the «iron law of wages» tended always to reduce wages to the mere cost of living; to remedy this he proposed associations of the working classes in productive enterprises with capital furnished by the state. He left no such elaborate statement of his views of the nature of capital and capitalistic society as did Marx; nor did he influence the labor movement so much through his theoretical teachings as through his power and success as an organizer. Consult: Bernstein, ‘Lassalle as a Social Reformer’; and Dawson, ‘German Socialism and Lassalle.’

Lassell, lạ-sĕl′, **William,** English astronomer: b. Lancashire 18 June 1799; d. 5 Oct. 1880. His early education was scanty, and while serving a mercantile apprenticeship at Liverpool he made telescopes for himself, and in a private observatory which he built near that city he began his astronomical work, about 1820, and continued it until 1861. There he built and mounted reflecting telescopes equatorially, the first of the kind in use, and also invented a method of polishing the specula. With his own telescope he discovered the satellite of Neptune in 1847, observed the eighth satellite of Saturn in 1848, and in 1851 discovered two new satellites of Uranus. In 1861, at Valetta, on the island of Malta, he mounted equatorially a reflecting telescope, and at that place until 1865 he made observations, also describing new nebulæ and correcting many of his former results. In 1865 he returned to England, built an observatory near Maidenhead, and there spent the remainder of his life.

Lassen, läs′sĕn, **Christian,** Norwegian philologist and linguist: b. Bergen, Norway, 22 Oct. 1800; d. Bonn, Prussia, 8 May 1876. He studied at Christiania, Heidelberg, and Bonn, at which latter university he became in 1830 extraordinary and in 1849 ordinary professor. With Eugène Burnouf he deciphered many Pali MSS., and the result of their labors was published by the Asiatic Society in an ‘Essay on the Pali or Sacred Language from the Peninsula beyond the Ganges.’ He published with Schlegel the ‘Ramayana’ and the ‘Hitopadesa,’ and was for many years editor of the ‘Zeitschrift für die Kunde des Morgenlandes.’ His works, which are numerous and valuable, relate to a variety of oriental languages and ancient history, embracing, among other subjects, translations from the Hindu philosophy, the history of Bactriana, Cabool, and India, and cuneiform inscriptions.

Lassen, Eduard, Danish composer: b. Copenhagen 13 April 1830; d. Weimar 15 Jan. 1904. He began his education at Brussels and 1851 won the «Prix de Rome.» Through Liszt his opera ‘Landgraf Ludwigs Brautfahrt’ was produced in Weimar (1875), where he was made the following year «Kapellmeister» to the court. He retired in 1895. Of his compositions those which are most remarkable for talent and artistic sincerity are the operas: ‘Frauenlob’ (1860); ‘Le Captif’ (1868). He wrote two symphonies, and the music for Sophocles' ‘Œdipus,’ and Goethe's ‘Faust,’ as well as numerous songs, etc.

Las′so, a long strong thong of buffalo-hide, rope, or leather, with a running noose at one end, used by ranchmen and hunters. It is thrown in such a way as to fall over the horns or head of the animal, the hunter coiling one end round a high pommel on his saddle. When he makes a successful cast the hunter spurs his horse to its fullest speed, and the horse or other animal is almost strangled or borne to the ground, and becomes an easy prey. Instead of a noose a leaden ball may be attached to the end of the thong, which is thrown so as to entangle the legs, neck, or horns of the animal to be captured. The lasso has been used in the South American wars: it was employed against the French sentinels by some of the semi-barbarous tribes whom Russia had pressed into her armies during the Crimean war.

Lasso-cells, or **Stinging Cells,** names applied to the cnidocysts of cœlenterates. See Nematocyst.

Lassus, lás′ŭs, **Orlandus,** or **Lasso,** läs′sō, **Orlando** (originally Roland Delattre), German composer: b. Mons in Hainaut 1520 or 1530; d. Munich June 1594. As a composer he was excelled only by Palestrina among musicians of the 16th century. About 1556 he went to Munich as chapel-master to Albert, duke of Bavaria, and in 1562 became chapel-master, an office which he held till his death. Among his more than 2,000 works are some 60 masses, many madrigals and songs, and the celebrated music for the Seven Penitential Psalms. In the royal library at Munich is the richest collection of his works. His sons published a collection of his motets, entitled ‘Magnum Opus Musicum’ (1604, 17 vols. folio). An edition of his collected works appeared at Leipsic 1893 (et seq.).

Last Days of Pompeii, The, a celebrated romance, by Edward Bulwer, Lord Lytton, published in 1834. The characters and scenes are suggested by the peculiarities of the buildings at Pompeii. Beginning a few days before the destruction of Pompeii, the story relates principally to two young Greeks, Glaucus and Ione, who are deeply attached to each other. The former is a handsome young Athenian, impetuous, high-minded and brilliant, while Ione is a pure and lofty-minded woman. Arbaces, her guardian, is the villain, who, under a cloak of sanctity and religion, indulges in low and criminal designs. His character is strongly drawn; and his passion for Ione, and the struggle between him and Glaucus, form the chief part of the plot. Nydia, the blind girl, who pines in unrequited affection for Glaucus, and who saves the lives of the lovers at the time of the destruction of the city, by conducting them in safety to the sea, is a touching and beautiful conception. The book, full of learning and spirit, is not only a charming novel, but contains many minute and interesting descriptions of ancient customs.

Last of the Mohicans, The, an American novel by James Fenimore Cooper, published in 1826. It formed one of the celebrated Leather-stocking tales.

Last Rose of Summer, The, a famous song by Thomas Moore, published in his 'Irish Melodies.' The air was derived from an old melody, 'The Groves of Blarney.'

Last Sigh of the Moor, The, a large hill in the outskirts of the city of Granada, Spain. It is noted as the spot where Boabdil, the last Moorish monarch, took his farewell of the land of his birth, 2 Jan. 1492.

Las Vegas, läs vā′gäs, N. Mex., city and county-seat of San Miguel County, on the Gallinas River, a branch of the Pecos, and on the Atchison, T. & S. Fe railroad, 83 miles east of Santa Fe. There are here practically two towns, the old Mexican settlement, which is the county-seat, and the modern city lying to the east, first known as East Las Vegas, but incorporated in 1896 as the city of Las Vegas. The New Mexico Normal University is located here, and there is a public library, flour-mills, carriage and wagon shops, railroad machine shops, planing-mills, foundries and machine shop. The surrounding country is devoted to agriculture and stock raising and Las Vegas is an important wool market. The health resort known as Las Vegas Hot Springs is located 6 miles distant, at an elevation of 6,767 feet above the sea. Pop. (1901) 8,000.

Laszow′ski-Ger′ard, MADAME **Emily de,** Anglo-Austrian novelist: b. Scotland 7 May 1849. She was educated in the Convent of Riedenburg in the Tyrol, was married to the Chevalier Miecislas de Laszowski, an Austrian lieutenant-general, and resides in Vienna. She published: 'Reata' (1880); 'Beggar My Neighbor' (1882), and other novels, written in collaboration with her sister, Dorothea Gerard, and 'Bis' (1890); 'The Tragedy of a Nose' (1898); 'The Extermination of Love' (1901); and other novels of which she is sole author. Her fiction has been popular both in England and America.

Latacunga, lä-tä-koon′gä, Ecuador, capital of the province of Leon and one of the oldest towns in the republic, containing an administration building, city hall, college, hospital, school for young ladies, five churches, two printing houses, manufactories of woolen and cotton fabrics, potteries, etc. Owing to its situation on a plain more than 9,000 feet above sea-level, it has an even and temperate climate, and the surrounding country is well adapted to agriculture and cattle-raising; but it is only 25 miles distant from the great volcano, Cotopaxi, and has repeatedly been destroyed by earthquakes. Pop. about 12,000.

Latchaw, John Roland Harris, American educator: b. Venango County, Pa., 7 Sept. 1851. He was graduated at Hillsdale College in 1881 and in 1895–6 studied at the University of Chicago. In 1881 he founded Barkeyville Academy in Pennsylvania, and conducted it until 1884, when he became president of Findlay College, where he was also lecturer on psychology and theology till 1893. From 1893 to 1895 he was minister of the First Baptist Church at Zanesville, Ohio; held several other pastorates; was president of Defiance College, 1896–1902, since when he has been president of Palmer University. He has written: 'Outlines of Psychology, Its Method and Matter'; 'Citizenship in the Northwest Territory'; 'Outline Lectures in Theology'; 'Theory and Art of Teaching'; and is editor and publisher of the 'Truth Seeker' and joint editor of 'Unity Herald.'

Lateral Line Organs, a system of sense organs in the lower aquatic vertebrates, so called from the fact that part of the system makes a well marked line on the side of the body of fishes, although a larger but less conspicuous portion of the organs occurs upon the head. In their simplest form, as in the fish *Chimæra,* the organs are placed in grooves, but usually the grooves are closed into tubes with openings at regular intervals by which water obtains access to the canals. The distribution varies considerably in different fishes, but the most constant canals are one along the side of the body, one across the back of the head, and three rows, one above, one below the eye and one on the lower jaw. The sense-organs contained in the canals belong to a group of peculiar structures known as «nerve-hillocks» or «neuro-masts,» and are further peculiar in their nerve supply, which is derived from the 7th (facial) and 10th (vagus) nerves. In the case of the amphibia these organs occur only in the aquatic forms. Hence, while they are present in tadpoles, they are lost, and with them their nerves, when the tadpole changes into a frog or toad. This would indicate that their function is in some way connected with an aquatic life, and only very recently has it been shown to be for the recognition of vibrations of low rapidity in the water. There has been accumulated considerable evidence to show that the ears of vertebrates are only specially modified parts of the lateral line system.

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Lat′eran, palace and church at Rome. The name is derived from Plautius Lateranus, head of a rich patrician family whose estates were confiscated by Nero, while he himself was put to death for complicity in the conspiracy of Piso. The palace afterward became an imperial residence, but was given to Pope Melchiades in 312 by Constantine the Great, and became the residence of the popes for a thousand years. Only one fragment of the palace of Constantine remains, the private chapel of the popes, and the end wall of their dining-room. The rest is all recent, the old palace having been rebuilt from designs of Fontana by Sixtus V. In 1438 Gregory XVI. turned it into a museum, and it contains many fine pictures and statues, and mosaics, notably the flooring taken from the baths of Caracalla in 1822 and containing 28 portraits of gladiators. The basilica of St. John Lateran is the original see church of the bishop of Rome. The see church was built by Pope Sylvester, Constantine joining with his own hands in the construction. It was consecrated in 324, overthrown by an earthquake in 896, rebuilt by Sergius III. in 911. This second basilica was destroyed by fire in 1308 and again after rebuilding in 1360, but restored by Urban V. 1370. The church consists of five naves. The transept is the most beautiful part of the building, and the many colored marbles, the statues of the Apostles, the Tabernacle, beneath which the skulls of Saints Peter and Paul are said to be preserved, the grand mosaic of the Head of Christ above the arch of the tribune (a work of art attributed to the time of Constantine), are all notable features among the numberless examples of religious art to be found in the building.

Lateran Councils, five councils of the Roman Catholic Church, held in the Church of St. John Lateran, Rome, under the presidency of the pope. The first Lateran Council took place in 1123, under Calixtus II. The Concordat of Worms was confirmed, the indulgences granted to the crusaders by Urban II. were renewed; the consecrations performed by Burdin, the antipope, were annulled; the decrees against simony, marriage of the clergy, etc., were repeated. The second (1139), under Innocent II., laid the interdict upon King Roger of Sicily, excommunicated the Petrobrusians, and ordered Arnold of Brescia to keep silent. The third (1179), under Alexander III., decreed that a vote of two thirds of the total conclave should be required legitimately to elect a pope. The fourth, conveyed by Innocent III. in 1215, is the most important of all the Lateran Councils. Besides representatives of many princes, two Oriental patriarchs were present 412 bishops, and 800 abbots and priors. Seventy decrees were issued. The first, directed against the Cathari and Waldensians, contains a confession of faith, in which the term *transsubstantiatio* occurs for the first time. The second decides the Trinitarian controversy between Petrus Lombardus and Joachim of Floris (in favor of the former). The 13th forbids the foundation of new monastical orders. The 21st decrees that all the faithful shall confess at least once a year to his sacerdos proprius (Mansi xxii. 953–1086. The fifth (1512–17), which was not recognized by the Gallican Church, abrogated, on the command of Julius II., the Pragmatic Sanction issued by the Council of Pisa, and approved the concordat between Francis I. of France and the pope by which the «liberties» of the Gallican Church were abrogated.

Consult: Valentini, ‹Basilica Lateranense descritta ed illustrata› (1839); Buddeus, ‹De Conciliis Lateranensibus,› Jena (1725).

Lat'erite, a highly ferruginous, argillaceous rock, found in India. The laterite of the highlands results from the weathering of the underlying volcanic rocks. «Low-level laterite» is the surface-rock of the extensive low lands near the western coast; is formed from the debris of volcanic rocks of the region and of highland rocks.

Latham, lā'tham, **Robert Gordon,** English ethnologist and philologist: b. Billingsborough, Lincolnshire, 24 March 1812; d. Putney, Surrey, 9 March 1888. He was educated at Eton and Cambridge and became professor of English literature in University College, London. He published numerous works on the English tongue, among them a ‹Treatise on the English Language› (1841; frequently republished); ‹History and Etymology of the English Language› (1849); ‹Handbook of the English Language› (1851); ‹Elements of Comparative Philology› (1862). His principal works on ethnology are: ‹Natural History of the Varieties of Man› (1850); ‹Man and his Migrations› (1851); ‹Ethnology of the British Islands› (1852); ‹Ethnology of Europe› (1852); ‹Descriptive Ethnology› (1859); ‹Russian and Turk› (1878).

Lath'bury, Mary Artemisia, American author and illustrator: b. Manchester, N. Y., 10 Aug. 1841. She was educated at Manchester and at Worcester, Mass.; after leaving school engaged in teaching art, and subsequently in editorial work; and since 1876 has devoted herself to general literature and illustration. She is author and illustrator of ‹Fleda and the Voice› (1878); ‹Out of Darkness into Light› (1880); ‹Seven Little Maids› (1882); ‹Ring-Around-a-Rosy› (1884); ‹Idyls of the Months› (1884); ‹Twelve Times One› (1885); ‹From Meadow Sweet to Mistletoe› (1888); ‹Child's Story of the Bible› (1898); has also published other books, and is well known through her Chautauqua songs and hymns in church collections.

Lathrop, lā'thrŏp, **George Parsons,** American author: b. Oahu, Sandwich Islands, 25 Aug. 1851; d. New York 19 April 1898. He was eduated in New York and in Dresden, studying in the latter city from 1867 to 1870, when he returned to New York and for a short time studied law. He went to England and there, in 1871, married Rose, second daughter of Nathaniel Hawthorne. (See LATHROP, ROSE HAWTHORNE.) From 1875 to 1877 he was assistant editor of the ‹Atlantic Monthly›; editor of the Boston *Courier* till 1879; resided afterward at Concord, Mass., and in New York city. Among his writings in prose and verse the following are best known: ‹Rose and Roof-Tree,› poems (1875); ‹Study of Hawthorne› (1876); ‹Afterglow,› a novel (1876); ‹A Masque of Poets› (1877); ‹An Echo of Passion› (1882); ‹In the Distance› (1882); ‹Spanish Vistas› (1883); ‹History of the Union League in Philadelphia› (1883); ‹Newport› (1884); ‹Gettysburg, a Battle Ode› (1888); ‹Dreams and Days,› verses (1892); ‹Gold of Pleasure› (1892). With his wife he published ‹Annals of Georgetown Convent› and ‹A Story of Courage› (1894); and he brought out an edition of Hawthorne's works, with a biography (1883). The American Copyright League was founded (1883) by Lathrop.

Lathrop, John (also **Lathropp, Laythrop**), American clergyman: b. Yorkshire, England; d. 1653. He was educated at Oxford, took holy orders; was rector at Egerton in Kent; and about the year 1624, in London, became minister (succeeding Henry Jacob) of the first Independent and Congregational church organized in England. He and his congregation underwent annoyance and persecution at the hands of churchmen, and for a time (1632–4) Lathrop was imprisoned. During his confinement he was bereft by the death of his wife and by a division in his flock over a question of baptism, and in 1634 sailed to Massachusetts, where he settled as minister at Scituate, removing in 1639 to Barnstable. The records of these towns kept in «an original register» written by him are referred to as authority by Prince in his ‹Annals of New England.›

Lathrop, John Hiram, American educator: b. Sherburne, N. Y., 22 Jan. 1799; d. Columbia, Mo., 2 Aug. 1866. He was graduated at Yale in 1819, from 1822 to 1826 was tutor there; adopted the profession of law, which he followed for six years, then abandoned it for that of teaching. He taught at Norwich, Vt., and at Gardiner, Maine. Between 1829 and 1840 held professorships of mathematics, natural philosophy, law, history, and economics at Hamilton College; was president of the University of Missouri 1840–9; afterward became chancellor of the University of Wisconsin (1849–59); president of Indiana University (1859–60); professor of English literature at the University of Missouri (1860–2). He was again president of the University of Missouri in 1865, and until the time of his death.

Lathrop, Rose Hawthorne, American author: b. Lenox, Mass., 20 May 1851. She was educated in the public schools, having lived during the years 1853–60 in England, where her father, Nathaniel Hawthorne (q.v.), was United States consul at Liverpool (1853–7), and in Portugal; studied art in Dresden and London; and in 1871 married George Parsons Lathrop, with whom, until his death, she was associated in literary labors. She has been especially interested in the improvement of conditions for suffering and needy people, and in 1891 established Saint Rose's Free Home for Cancer, and Rosary Hill Home, in New York, where she afterward became head of a Dominican community of the Third Order and directress of a charitable home, her title being Mother Mary Alphonsa. Besides many sketches and stories, her writings include 'Along the Shore,' poems (1888), and 'Memories of Hawthorne,' with her husband (1897), with whom she also collaborated in other works. See LATHROP, GEORGE PARSONS.

Lath'yrus, a genus of plants of the pea family, the vetchlings or everlasting peas, which resembles *Vicia* but have fewer leaflets (usually two), broader petals, an obliquely truncate staminal tube, and a style longitudinally flattened and bearded on the inner face. The species are numerous and grow in sandy and waste places, or in meadows. *L. pratensis,* the meadow vetchling, a climbing plant, two or three feet long, with yellow flowers, is a familiar example throughout the whole northern hemisphere. Another species (*L. maritimus*) the beach-pea, is equally widespread. The roots of *L. tuberosus* are eatable. *L. sativus* and other species are used as green fodder for cattle in India, but are harmful to pigs; and several species contain a poisonous principle injurious to the human system. Nearly 60 species of the genus are cultivated for their handsome flowers — yellow, red, scarlet, purple, and blue. The larger kinds are well adapted for arbors and shrubberies, where they may climb upon some support.

Lat'imer, Hugh, English prelate, reformer and martyr: b. Thurcaston, Leicestershire, about 1490; d. Oxford 16 Oct. 1555. He was educated at Cambridge, took holy orders, and by and by began to preach Protestant doctrine, which led to vigorous opposition. He was made chaplain to Henry VIII. in 1530, and during the ascendency of Anne Boleyn in 1535 was appointed bishop of Worcester. In 1538 he resigned his bishopric, not being able to accept the Six Articles, and was put in prison, but on the accession of Edward VI. he was released and became highly popular at court. This continued until Mary ascended the throne, when Latimer was cited to appear, with Cranmer and Ridley, before a council at Oxford, and condemned. After much delay and a second trial, Latimer and Ridley were burned at the stake. His preaching was popular in his own time for its pith, simplicity, and quaintness, and his 'Sermons' are still read. Consult Lives by Demaus (1869); R. M. Carlyle (1890).

Latimer, Mary Elizabeth Wormeley, American author: b. London, England, 26 July 1822; d. Baltimore, Md., 4 Jan. 1904. Among her works are: 'Salvage'; 'Princess Amélie'; 'A Chain of Errors'; 'My Scrap-Book of the French Revolution' (1898); 'The Last Years of the XIXth Century' (1901); 'The Prince Incognito' (1902); and 'Talks of Napoleon at St. Helena with General Gourzand' (1903).

Latin America, a general name given to the countries and people in South and Central America; especially those races who come of Latin stock. These include naturally the Mexicans, the inhabitants of Central America and certain islands of the West Indies.

Latin-American Literature. The Rio Bravo del Norte, or Rio Grande, serves as a dividing line between what may be termed «Saxon America» and «Latin America.» We of Saxon America are apt to look complacently upon ourselves as considerably in advance of our neighbors to the south, at least in material prosperity. But consider a moment the difference of circumstances under which we have grown. From the discovery of Haiti to the founding of Jamestown was 125 years; to the landing of the Pilgrims, 138. During those years Europe had been growing — England and Holland quite vigorously. The priority of Spain and Portugal was therefore a disadvantage: they reached the Western hemisphere in their intellectual infancy; England in her rough, growing youth.

The American possessions of Spain and Portugal were practically twice as remote as those of England. The English colonists kept close to the eastern edge of the continent, and to navigable waters; the most important settlements in Latin America were far inland, and could communicate with the outer world only by means of pack-mules. The maritime districts of the tropical regions were scarcely habitable by Europeans; and when the colonists moved into the interior, it was to be shaken by earthquakes, or terrified by the blaze of volcanoes. As the quest for gold was the chief motive with the Spaniards, they clustered around the old seats of aboriginal civilization, — the plateau of Mexico, Cundinamarca, Quito, and Lima. Subsequently communities of Europeans were established at Caracas, Santiago de Chile, the mouth of the Plata, and at various points along the Brazilian coast; but these did not attain prominence as literary centres until far into the 18th century. In the mean time, the intervening portions of the continent were pathless expanses of prairie and forest traversed by mighty rivers and lofty mountain ranges.

In the matter of acquiring and settling the new continent, the Church naturally took an active part. In addition to the bishops and the parochial clergy, whose duty was to provide for the spiritual needs of the European settlers, large numbers of the monastic orders were assigned to the conversion of the natives. By far the most important of these religious bodies was the Society of Jesus, whose members are popularly known as Jesuits. They were the latest in making their appearance; but their great organizing ability enabled them to outstrip all the rest. It was not long before they had gathered tribes of wandering savages into civilized communities, and they established great cattle ranches and sheep farms, together with mills, workshops, warehouses, and routes of trade. Paraguay became in effect a Jesuit state, until its prosperity and the mistaken notion that there were rich gold mines within its limits raised combinations hostile to the order. The Inquisition was introduced in 1569. It had not only the oversight of faith and morals, but also the control of education and of the admission of books into the country. Such instruction as the «Holy Office» was willing to sanction was with scarcely an exception imparted by members of the monastic orders. The *frailes* in their monasteries taught gratuitously the elementary branches and the prayers of the Church; but these slender advantages were available only in the towns. Boys might also be taught writing and the four operations of arithmetic. As to the girls, they were taught by the nuns reading, prayers, and the use of the needle; a few added music and painting. Aristides Rojas, the Venezuelan historian, has related how the first municipal school was established in Caracas. It was 24 years after the founding of the city, and it required a mission to Spain and two years of lobbying to obtain the royal permission to have a school at all; and its field of usefulness was at first limited to Spanish grammar and rhetoric. Books could be imported only on permits, obtainable with difficulty, after close scrutiny and long delay. An equally strict surveillance was exercised over colonial literary productions; each volume of each edition had to be registered separately, after donating 20 copies to the legal and regal authorities; and the publisher had not even the privilege of fixing the price.

The Colonial Period.— It was in such arid and sulphurous soil as has been described that Latin-American literature had to germinate. The first cultivators had to overcome difficulties unknown to those of happier countries; and it is with a feeling of wonder mixed with reverence that we realize how patiently and successfully they did overcome them. Learning made its first appearance — where alone it could — among the monks. As their special mission was to convert the Indians, they diligently studied Indian languages, customs, and antiquities; and it is to the diligence of these men that ethnologists owe nearly all that is known of the ancient civilizations of Mexico, Peru, and Cundinamarca. Botany and vegetable pharmacy afforded another appropriate field; and the various colonial governments fitted out at different times as many as five botanical expeditions. The students of the mathematics found exercise in geodetic surveys; and a knowledge of mechanics was essential in the working of the mines. Clavijero furnishes a long list of those who had made translations into the native tongues. All with one or two exceptions belonged to the monastic orders; and their studies embraced 15 languages. Humboldt himself saw dictionaries and grammars of 14. Quesada says that printing was introduced into Mexico in 1535, and into Lima in 1538; and that the first books printed in America were for the use of the Indians. In the remainder of the century there were written or printed 82 books for the religious instruction of the aborigines in Mexico, and 50 for learning the native languages.

In time higher schools, colleges, and universities were established in the principal colonies,— the instructors being, with scarcely an exception, ecclesiastics. The little Jesuit college of Bahia began its dubious existence in 1543, and another and larger one was established at Piratininga in 1554; and the roll of alumni of these two schools contains the most prominent names of early Brazilian literature and jurisprudence. The University of the City of Mexico opened its doors to students in June 1553; and two years later saw the establishment of the University of San Marcos, at Lima. In Ecuador, not to mention several colleges founded in the 16th century, the University of San Gregorio was opened at Quito in 1620; and the famous university of Santo Tomás at Bogotá dates its existence from the year 1627. The University of Chuquisaca (the modern Sucre) in Bolivia, the University of Córdoba in what is now the Argentine Republic, and the College of Santa Rosa which afterward became the University of Caracas, were all founded in the 17th century.

During the three centuries of the colonial period, no part of the world furnished a greater amount of historical material. The single national library of Santiago de Chile contains a catalogued collection of 2,740 manuscripts by the Jesuits alone. The material is indeed somewhat monotonous; and a larger space is devoted to monastic and episcopal interests than accords with our northern tastes. In reading these old authors, one is often reminded of the wide difference between the 16th or 17th century and some parts of the world in the 20th; as when Antonio de Leon Pinela, scholar and poet, historiographer of the Indies, authorized by royal order to lay three continents and the isles of the ocean under contribution for light and knowledge, seriously discusses the gravity of the sin of drinking chocolate on fast-days.

Foremost upon the long roll of early chroniclers stands the princely name of Ixtlilxóchitl, the descendant of the ancient chiefs of Texcoco. Three of the family acquired literary reputations; but the one here meant bore the Christian appellation of Fernando de Alva. His vast knowledge of native languages, songs, traditions, and pictographs procured him employment as interpreter to the viceroy; and about the beginning of the 17th century that ruler employed him to write in Spanish a history of his race. No one was equally qualified. His style alone has earned for him, from Europeans, the titles of the Cicero and the Livy of Anáhuac. His industry and his opportunities were equally great. He was personally acquainted with all the Indian sages — some over 100 years old — who had seen the empire of Motecuhzoma at the height of its glory. His work, in 13 books, began with the oldest traditions, and came down to his own time. The 13th book, dealing with the Spanish conquest, was printed separately in Mexico in 1829; but the whole is now accessible to the general reader in the French translation of Ternaux Compans. Carlos de Sigüenza y Góngora (1645–1700) acquired a high reputation for writing a similar history from the materials furnished by Ixtlilxochitl. Although far from being the only native work of importance, that of the Indian prince is the most interesting product of the aboriginal mind. The translator, in his preface, names other natives who attempted history. The most successful of these was Tezozomoc, who wrote (about 1598) a minute and circumstantial history of the Aztec nation. As he and Ixtlilxóchitl were not of the same nation, they had their partialities, and do not always agree with each other or with the Spanish chroniclers.

Of the many writers belonging to the monastic orders who made valuable contributions to Indian ethnology and early colonial history, none is more widely known than Francisco Bernardino Sahagún, who went to Mexico as a young man in 1529 and died there in 1590, after spending 61 years in teaching the Indians. He acquired such facility in using the native tongues that he wrote his great work, 'Historia General de las Cosas de Nueva España,' in one of them. It is a fine tribute to his human sympathies and his justice to a fallen race, that his contemporaries accused him of paganism. In the latter part of the 18th century, Francisco Xavier Clavijero (1721–93), a Jesuit and a native of Vera Cruz, spent many years as a missionary among the Indians, acquiring an extensive knowledge of their languages, customs, and traditions. Upon the suppression of the Jesuits he was compelled to leave his country, and he took refuge in Italy, where he wrote in Italian his great work 'Storia Antica del Messico' (4 vols., 1780–3). Although the work is not free from the inaccuracy that belongs to almost everything written in that age and from materials so uncertain, it has been the great storehouse of information regarding the ancient inhabitants of Mexico.

No American historian of his time surpassed the Brazilian Sebastião Rocha Pitta (1660–1738), a graduate of the ancient Jesuit college of Bahia. His great work 'Historia da America Portugueza desde o seu Descobrimento até o Anno 1724' is the outcome of great labor and fidelity. Not a few of the early historical productions were in verse; but these were usually commemorative of some particular event. One of the most extensive of these rhyming chronicles was that entitled 'Elegías de Varones Ilustres,' written by Juan de Castellanos, one of the original *conquistadores* of Venezuela.

Numerous epics, half history, half romance, were written in Latin America about the episodes of the conquest. Of these the 'Arauco Domado' is one of the earliest and most famous. Of all the native American races, the Araucans of Chile possessed in the highest degree those qualities that make up the ideal of manhood,—bodily strength and activity, intelligence, honorable truthfulness, indomitable courage, and love of independence. The Incas had never been able to subdue them; and they resisted the Spaniards with varying results 186 years, when in 1732 their independence south of the Bío-Bio River was acknowledged by treaty. During one of the periods of Spanish success, when Santiago and Valdivia were founded, Diego Hurtado de Mendoza led a party to the conquest of Chiloe in 1558. Among his followers was a young poet, Alonso de Ercilla y Zúñiga, who began by the nightly camp-fires to write a narrative of the war. Being afterward banished for supposed complicity in some attempt at revolt, he returned to Spain and lived in great poverty; but completed his poem 'La Araucana,' which has been praised as one of the truly great epics of the world. The Peruvian poet Pedro de Oña recast the epic and produced the shorter and inferior 'Arauco Domado.' It is to be regretted that from the fact of their living and writing in Spain, Ercilla y Zúñiga, together with Garcilaso de la Vega, the descendant of the Incas, cannot be reckoned among American authors. Another famous epic dealing with episodes of the conquest is the 'Lima Fundada,' composed by the Peruvian poet Pedro de Peralta y Barnuevo (1663–1743); a man of almost universal genius and attainments, as is attested by his numerous writings upon a wide range of subjects. A Mexican bishop, Bernardo Balbuena, who died in 1627, left a descriptive patriotic poem of great literary worth, entitled 'La Grandeza de México'; a pastoral called 'El Siglo de Oro,' the scene of which is laid in the New World; and 'El Bernardo,' an epic in three volumes.

Brazil presented in the 18th century two epic poets of distinction, José da Santa-Rita Durão and José Basilio da Gama. The former is best known to the present age by his epic 'Caramurú.' The hero, Diego Alvares Correa, is a personage of actual history,—a Portuguese adventurer, who with a number of others was shipwrecked on the Brazilian coast about 1509. They were able to save a good part of their effects, including arms and ammunition; and by the possession of these, Alvares became a powerful chief by the name of Caramurú (Man-of-fire), and played an important part in the history of the early Brazilian settlements. The poet has embroidered the tale with a golden thread of romance by introducing as his heroine the beautiful Indian maiden Paraguassú, the Brazilian Pocahontas. Da Gama's epic, the 'Uruguay,' although containing some fine descriptive passages, is not of equal merit. It is a polemic against the Jesuits, accusing them of trying to found an ecclesiastical empire; and fails to do justice to their civilizing influence.

No other American writer of colonial times was surrounded with such a halo of mystery and glory as Juana Inés de Azbaje y Ramírez (1651–94), more generally known as Sor Juana Inés de la Cruz. Her beauty, genius, and learning were alike celebrated in the most exalted terms; and she was called by her admirers «the Tenth Muse.» She was the one peerless star of the viceregal court of Mexico. Suddenly, for reasons known to herself, she forsook domestic ties and the splendors of a court for the seclusion of a convent. But she could not escape from her fame; and the highest dignitaries in Church and state sought the wisdom that dropped from her inspired lips. Her modesty was equal to her other virtues; and when twice elected abbess she declined the honor. Her principal dramas, 'Amor es Laberinto,' 'Los Empeños de Una Casa,' and 'Ovillejos,' treat of love, jealousy, desertion, unrequited affection, and like human themes, and were written prior to her retirement into the religious life.

As is well known, the «Golden Era» of the literature of the Iberian peninsula, which reached its height during the lifetime of Camoens, of Cervantes, and of Lope de Vega, was followed by a period of rapid literary and political decadence extending well into the 18th century. Numerous traces are to be found of an early influence, on the one hand of the Encyclopædists, and on the other of Rousseau. More important still was the revival of interest in the physical sciences, which was particularly in evidence on the plateaus of New Granada and Mexico.

The pioneer of this movement was José Celestino Mutis, a native of Cádiz, who came to America in 1760 along with Mesío de la Cerda, then recently appointed viceroy of New Granada. He was made professor of mathematics in the College of Nuestra Señora del Rosario; and it was due to his efforts that the Observatory of Bogotá was built, at that time the finest in the New World. He devoted 40 years to the botany of those regions, and determined the species that yield quinine, balsam of tolu, balsam of Peru, and other valuable products. He was also the patron and instructor of a whole generation of men whose names are honorable in the history of science. Of those none was more famous, or more unfortunate, than Francisco José de Caldas. He was one of the earliest scientists in America to make and record meteorological observations; and he measured with great accuracy the altitudes of Chimborazo and Tunguragua. He accompanied Mutis in his botanical explorations, and in 1804 was made director of the observatory. In 1816, when revolution was all abroad in Spanish America, a Spanish commander, Morillo, took possession of Bogotá. He knew the republican preferences of the professors; and they knew their consequent fate. On bended knees Caldas begged for a year of close confinement prior to his execution, in order that he might finish the great botanical work that had been in progress half a century, and the plan of which he alone understood; but he plead to insensate ears, and he and all the savants who had not effected their escape were butchered.

Meanwhile in Mexico, the astronomical observations of Velázquez y Cárdenas, Alzate y Ramírez, and León y Gama were attracting the attention of the French Academy and the leading astronomers of Europe; the Botanic Garden was established; and the Royal School of Mines and the Academy of Fine Arts were founded,— institutions which earned the unstinted encomiums of Humboldt.

The accession of Philip V., the grandson of Louis XIV. of France to the throne of Spain, was distinguished by the advent of French influences, and the founding of academies and literary societies. The Spanish Royal Academy and the Lisbon Royal Academy of Sciences were established in 1714, and numerous societies, formed upon French or Italian models, sprang up in the Peninsula and the colonies, being especially noticeable in Brazil and the regions of the Plata.

It is in colonial Venezuela that we first meet, on American soil, with the Basques of the Pyrenees — a people that are the living enigma of ethnology, without known kinship among the races of men. Shrewd, energetic, sturdy maintainers of liberty, they came over in great numbers in the 18th century, not to dig for gold, but to clear farms and introduce the culture of cocoa, cotton, coffee, and indigo. To them were largely due the material prosperity of Venezuela and its readiness to cast off the Spanish yoke. The liberator Simón Bolívar was a Basque, as were many of his principal followers. For the past hundred years the stream of Basque emigration has been toward the region of the Plata, where they have contributed to make the Argentine Republic a second New England; but they are scattered everywhere, and recognized by their industry, thrift, and un-Castilian names, as Icazbalceta, the Mexican archæologist; Narciso Aréstegui of Peru, author of the historical novel ‘El Padre Oraní’; the brothers Amunátegui of Chile, authors of ‘Los Precursores de la Independencia de Chile’; Anauzamendí, Arrechaveleta, Goicoerrotea, etc.

The Revolutionary Period.—The yoke of Spain, however legitimate, had long been felt to be heavy on the neck of her colonies; and the prostration of the Iberian peninsula beneath the heel of Napoleon furnished an opportunity for insurrections, which in 1810 broke out almost simultaneously in Mexico, Venezuela, New Granada, Quito, Chile, and Buenos Ayres. The last viceroys of Mexico and Peru departed in 1821; and the independent empire of Brazil was proclaimed 12 Oct. 1822. That date may be held to close the revolutionary period, considered as a struggle for national independence.

One poet of the revolution, José Joaquín Olmedo of Ecuador (1781–1847), rises far above all others for the sublimity and classic finish of his style, which earned for him the epithet of «the American Pindar»; and it is no exaggeration to say that he possessed a magnificence of rhetoric and a power of patriotic exaltation such as few poets besides the great Theban have exhibited. Olmedo's masterpiece is his ‘Canto á Junín,’ an epic ode without an equal in the Spanish language. Some of the patriotic poems of Numa Pompilio Llona of Peru are especially fine; and the sonnet to Bolívar by the Peruvian Adolfo García is one of the most beautiful compositions of its kind.

The name of Andrés Bello recalls all that is ripest and best in Latin-American scholarship, statesmanship, and patriotism. The teacher of Bolívar, the personal friend and companion of Humboldt, in the inception of the revolution Bello took his place by the side of his illustrious pupil. He prepared the great civil code that became law in 1855; and wrote treatises on international law, literary history, grammar, rhetoric, philology, pedagogics, and mental philosophy. To crown all, his poetic temperament, added to his clear and comprehensive intellect, made him one of the greatest masters of Castilian verse. His ‘Agricultura en la Zona Tórrida’ is a magnificent georgic of the remote south; and not less admired is his ‘Oración por Todos,’ — suggested by Victor Hugo's ‘Prière pour Tous.’

Of the revolutionary heroes one of the most prolific writers was Carlos María de Bustamante (1774–1848), the author of the Mexican «declaration of independence.» During the war he was four times a prisoner. His greatest literary work was a history of the Mexican revolution in six quarto volumes; and he was the author of several other considerable works on Mexican affairs.

The revolution in the region watered by the Plata was illustrated by the names and writings of Mariano Moreno, the disciple of Adam

Smith; Estebán Lena y Patrón, diplomat, editor, and poet, the author of 'La Libertad de Lima'; the philosophic Juan Crisostomo Lafinur, famed for his beautiful elegy on the death of Gen. Belgrano, the hero of Tucumán; and Vicente López y Planes, who wrote 'El Triunfo Argentino' in honor of the repulse of the English invasion of Buenos Ayres (1806-7), and also composed the national hymn of the republic. During the period under consideration, the literary tone of Brazil presented a more placid character, due to her exemption from the violent contests that were agitating the remainder of the continent. This difference of tone is finely exemplified in the writings of Domingo Borges de Barros, Viscount of Pedra Branca (1783-1855), — more frequently spoken of simply as Pedra Branca.

The Period of Independence.— Of the present 16 independent republics of Latin America, three great countries — Chile, the Argentine Republic, and Brazil — have attained in this century to greater importance than the early seats of aboriginal or viceregal splendor. Chile had been a doubtful appendage of the empire of the Incas; after the downfall of that dynasty, the brave Araucans contested its possession with the Spanish invaders 180 years; and when at length they were driven to the regions south of the Bío-Bío River, the northern portion was held as a part of the vice-royalty of Peru until the time of the revolution. Independence was secured of the vice-royalty in 1817; and the next few years were taken up with domestic wrangling and political experiments, until the present constitution was adopted in 1833. Since that time there has been continuous progress and prosperity. The settlements in the region of the Plata and its great tributaries were made under unusual disadvantages; and it was only in 1776 that Buenos Ayres was made the residence of a viceroy, whose authority extended over the present Argentine Republic, Bolivia, Paraguay, and Uruguay. The existence of this government was neither tranquil nor durable; and active revolutionary measures were begun in 1813. Independence was secured and a federal constitution adopted in 1825. Half a century of domestic factions and foreign wars succeeded; and now the country has enjoyed 20 years of peace and prosperity, during which its growth has been rapid and healthy.

Politics and literature are much allied in Latin America. The beginnings of revolution had little to do with theories of government or abstract rights of man; they aimed at the immediate ends of free trade and relief from foreign domination. There has always been a tendency to run into dictatorial government. There is a permanent party — including the powerful influence of the Church — in favor of a strong personal government and a large amount of interference with individual interests. At the same time there have been large numbers with the apparent ideal of «every man his own lawgiver, judge, and executioner.» The contest has been between these parties, over the question of how much government people require. The Church and the older men generally have upheld rule and authority; literary men — the young, enthusiastic, and poetic — have as generally striven for larger freedom.

Writers on Political Science.— The necessities arising from the acquisition of national independence caused such subjects as political economy, international and constitutional law, and public education, to occupy a prominent place in the minds of the founders of the new republics. Early in the century, treatises on these topics began to appear which won the encomiums of eminent European authorities. The valuable labors of Andrés Bello have been already referred to. Juan Bautista Alberdi, the Argentine jurist (born 1808), is entitled to take rank in the class of publicists represented in Europe by Guizot, De Tocqueville, and the Mills, and by Kent and Story in the United States. He was the author of the Argentine constitution, and of eight substantial works. A celebrated work of more recent date is 'La Reforma Política' of Dr. Rafael Núñez. He is an ultra-conservative, and his great treatise favors a «paternal despotism.» Rafael Seijas of Venezuela is a distinguished jurist who has written ably upon international law; he is also a diligent student of English, French, and Italian literatures, upon which he has given to the public some interesting articles.

After Andrés Bello, few promoters of public education have better earned the esteem of their countrymen than Domingo Faustino Sarmiento, an Argentine born in 1811. While minister to the United States (1865-7) he made a careful study of the school system, and the results of his investigations were given to the world in an essay entitled 'Las Escuelas: Base de la Prosperidad de los Estados Unidos.' He was favored by the personal friendship and assistance of Horace Mann, the best-known educationalist that the United States has ever produced. Sarmiento was president of the Argentine Republic from 1868 to 1874. As a writer he was gifted with great originality and vigor of expression, which make his 'Recuerdos de Provincia' one of the most entertaining books of its kind. His masterpiece is entitled 'Facundo,' in which he presents in a series of glowing pictures a comprehensive survey of the points of difference between civilization and barbarism.

Historians.— History has always been well represented in the literature of Latin America. Most of the States have comprehensive histories, the fruit of much research, and written with careful regard to facts and form. There are also numerous historical works of more limited scope, devoted to certain districts or periods, or gathered around the achievements of individuals.

Father Suárez informs his readers that in collecting material for his history of Ecuador, he examined 10,000 packages of papers filed in the Archives of the Indies in Seville. León Fernández, finding no history of his native state of Costa Rica, set about collecting materials; and in 1881-6 he gave to the world 1,917 closely printed pages of documents, not previously edited, bearing upon the history of a country of less than a quarter of a million of inhabitants, whose first printing-press was set up in 1830. The history of Mexico from the earliest times to the death of Maximilian, by Niceto de Zamacóis, fills 18 thick octavo volumes. Lorenzo Montúfar's 'Reseña Histórica de Centro-América' — a mere outline — makes seven volumes royal octavo; and the recent 'Historia General de Chile,' by Diego Barros Arana, comprises 13 octavo volumes. Another Chilean historian, Benjamín Vicuña Mackenna, has written an account of a single campaign, ‹Historia de la Campaña de Tarapacá,› in two volumes of a thousand pages each; his collected historical works fill 15 volumes. The government of Venezuela is now publishing the historical essays of Arístides Rojas relative to that country in 14 volumes. The third volume of the ‹Historia General de la República del Ecuador,› by Suárez, reaches only to the year 1718. Then there are the exhaustive works relating to Peru, of which we may mention the magnificent treatise of Raimondi, cut short in its fourth volume by the author's death in 1892. The tenth volume of the ‹Historia de la República Argentina› by Vicente Fidel López has just appeared, and its venerable author is continuing the work with an industry unchecked by the weight of his 76 years.

Among special historical works which even the briefest enumeration would include, the most widely known are probably the twin histories of Gen. Bartolomé Mitre of Buenos Ayres (born 1821), bearing the titles ‹Historia de Belgrano y de la Independencia Argentina,› and ‹Historia de San Martín y de la Emancipación Sud-Americana.› Special mention should be given to the standard work of Rafael María Baralt of Maracaibo (1810–60), entitled ‹Resumen de la Historia Antigua y Moderna de Venezuela,' which Arístides Rojas has more recently supplemented by seven «studies» on various epochs and aspects of the national history. Two histories written by Colombians rank very high; namely, the ‹Historia de la Nueva Granada› by José Antonio de Plaza, and the ‹Historia de la Revolución de Colombia,› by José Manuel Restrepo. The historical works of Mariano Paz Soldán are characterized by that patient accumulation of facts which is supposed to distinguish German scholarship; his reputation rests more especially upon his ‹Historia del Perú Independiente de 1819 á 1827,› and his ‹Diccionario Geográfico-Estadístico del Perú.›

Manuel Orozco y Berra gave to the public in 1880 an elaborate account of the ancient nations of Mexico in his ‹Historia Antigua y de la Conquista de México,› in which he goes over the whole subject treated by Prescott, and adds a profusion of further details. Vicente Fidel López, author of the large ‹History of the Argentine Republic› previously mentioned, has written two historical works of great interest to the ethnologist and antiquarian; they are entitled 'Las Razas del Perú Anteriores á la Conquista,› and ‹Les Races Aryennes au Pérou.›

Brazil has produced several historical writers of merit. The standard history is by Fr. Antonio de Varnhagen, and is entitled ‹Historia General do Brazil.› His descriptive passages are often particularly fine. He published in 1860 an interesting little book, ‹A Caça no Brazil,› — the first of the kind that has appeared in South America, — describing the wild animals and the modes of pursuing them in the great forests and on the plains of that country. Pereira da Silva's ‹Historia da Fundação do Imperio Brazileiro› is one of the standard works of Brazilian history.

Literary Critics.— Opinions on authors and books occupy a larger relative space in Latin-American literature than in that of Anglo-Saxon nations. Criticism deals less with the views and statements of an author than with his manner of presenting them; so by treating literature as a fine art, along with painting and music, it becomes in itself a fine art, requiring artistic faculties carefully cultivated.

Criticism, as a fine art, has been cultivated in Latin America with surprising assiduity; and includes among its eminent masters such men as Torres Caicedo, Miguel Luis Amunátegui, and Calixto Oyuela, the author of ‹Estudios y Artículos Literarios.› Rafael M. Merchán, the Cuban exile, of whom it has been elegantly said that he «writes with a gloved hand and a pen of gold,» made his home in Bogotá, and became secretary to the President. His poetic temperament, wide reading, and fine discernment furnish the qualifications that make him above all a critic, and which shine conspicuously in his study on Juan Clemente Zenea and in his ‹Estudios Críticos.›

Of all this wealth of critical discussion, no part affords more attractive reading than the works of Martín García Mérou, recently Argentine minister to the United States. They show a wide familiarity with the literatures of Europe and America, a delicate judgment, and that kind of fairness that can appreciate the merits of one with whom he does not agree. His essay on the poet Echeverría may be cited as one of his most thorough studies.

Those most interested in the subject of Latin-American literature are now eagerly awaiting the great work in preparation by Prof. García Velloso, of Buenos Ayres. It is to be a comprehensive history of the literature of the entire southern continent.

Novelists.— The novel did not begin to assume prominence in Latin America until about 1860; and the class of writers whose specialty is prose fiction is still relatively small. Jorge Isaaks, the Colombian poet, is widely known by his ‹Maria,› a simple and pathetic story of rural life, a translation of which has been extensively read in the United States. His compatriot Julio Arboleda has given the public a bright contrast to this sombre picture, in his sparkling romance ‹Casimiro el Montañés.›

The collection of stories known as ‹La Linterna Mágica,› written by José T. del Cuellar, of Mexico, has been deservedly popular. Ignacio M. Altamirano, a Mexican lawyer and orator of pure Indian blood, has left a novel, ‹Clemencia,› which for style and pathos has seldom been surpassed. The Mexican historian Orozco y Berra wrote a beautiful novel, ‹Escenas de Treinta Años,› relating the experiences of an unfortunate disappointed invalid. Dr. J. J. Fernández Lizardi, generally known by the pseudonym of «El Pensador Mexicano,» has revived the old Spanish picaresque type of romance in his ‹Periquillo Sarmiento.›

The Argentine historian Vicente Fidel López is the author of a thrilling historical novel entitled ‹La Novia del Hereje,› the scene of which is laid in Lima in the time of the Inquisition; but the favorite romance of the region of the Plata is the ‹Amalia› of José Mármol, one of the most beautiful of modern novels. Chile has produced several noted works of fiction, among which the ‹Alberto el Jugador› of the poetess Rosario Orrego de Uribe, ‹La Dote de una Joven,› by Vicente Grez, and the historical novel ‹Los Héroes del Pacífico,› by Ramón Pacheco, are much admired. ‹Contra la Marea,› by the Chilean Alberto del Solar, is one of the most powerful of recent American novels.

Quite a number of romances have been founded upon Indian legends, or tell of Indian life and customs. Two of the best of these are quite recent,— the ‘Painé’ and ‘Relmú’ of the Argentine publicist Estanislao S. Zeballos, who, still young, combines every form of literary activity. The ‘Huincahual,’ by Alberto del Solar, is one of the most able productions of this class, and gives evidence of a diligent study of Araucan customs and character. The Brazilian novelist José Martinião Alencar wrote two famous Indian romances, entitled ‘Iracema’ and ‘Guarany.’ ‘Iracema’ develops the main feature of the story of John Smith and Pocahontas. The other novel tells how a young Indian loves a Portuguese woman. Carlos Gomes has transformed it into an opera which has become well known in Europe, retaining the name of ‘Guarany.’

Besides Martinião Alencar, Brazil has produced during the present century two highly successful writers of prose fiction,— Joaquim Manoel de Macedo and Bernardo Guimarães. Macedo was a doctor of medicine, a professor in the University of Rio, a member of Congress, and a prolific writer in prose and verse. His ‘Moreninha’ (Brunette), published in 1840, undertook for the first time to portray Brazilian society as it really was; it enjoyed extraordinary popularity, as did also his ‘Senhora,’ which some critics consider superior to ‘Moreninha.’ Guimarães is one of the most powerful and original writers of Brazil. ‘Ermitão de Muquem’ is considered his best novel. It is written in three versions or styles: one plain prose, one poetic prose, and one peculiar to the author, like the styles of Bentham and Carlyle. His ‘Seminarista’ is a romance with a tragic outcome, and is directed against the enforced celibacy of the clergy.

Poets and Dramatists.— The Spanish and Portuguese languages lend themselves so readily to versification that the amount of poetry produced is enormous. Juan León Mera published in 1868 a critical history of the poets of Ecuador, at a time when many persons were not aware that that country had ever possessed any. Cortés, in his ‘Parnaso Peruano,’ fills 800 pages with choice extracts from 44 of the leading poets of Peru; and the great anthology of Menéndez y Pelayo, consisting of four large octavo volumes of poetical selections, purports to give «only the very best that Spanish-American writers have produced in verse.»

Four names may represent the different styles of poetry cultivated in Mexico. Manuel Carpio, a physician by profession, was well read in Greek and Roman literatures, and a still more diligent student of Jewish lore. His ‘Tierra Santa’ is a work of great learning, not inferior to Robinson’s ‘Biblical Researches.’ He is best known, however, by his poems; one of which, ‘La Cena de Baltasar,’ shows remarkable descriptive power. Fernando Calderón is distinguished rather by the sweetness than the strength of his verse. The tenderness of his sentiments is well displayed in ‘Hermán, ó la Vuelta del Cruzado.’ He was the author of a comedy, entitled ‘Á Ninguna de las Tres,’ intended as a satire on those who return from foreign travel only to find fault with everything at home. José Joaquin Pesado has at once tenderness, sublimity, and classic finish. In ‘La Revelación’ he has essayed to wake anew the harp which Dante swept; and he has given to his countrymen in their own tongue the odes of Horace and the psalms of David, along with some minor poems of rare beauty. Last of all, in ‘Los Aztecas’ he has sought to restore and interpret the hymns, chants, and lost lore of the primitive races of Anáhuac. Manuel Acuña, whose unhappy life extended only from 1849 to 1873, holds the place among Mexican poets that Edgar A. Poe does among those of the United States. In his nervous, delicate nature, poetry was a morbid secretion, like the pearl in the oyster; and he became the self-appointed priest and prophet of sorrow and disappointment. His most noted poems are ‘El Pasado,’ ‘Á Rosario,’ and a drama entitled ‘Gloria.’

One of the most enduring masterpieces of Spanish-American verse is ‘Gonzalo de Oyón,’ a beautifully wrought tale based upon an episode in the early history of the country. Its author, Julio Arboleda (1817–62), held the foremost rank among the Colombian writers of the first half of this century. Another Colombian writer who reflects the sentiments of the past is Silveria Espinosa de Rendón, who laments the expulsion of the Jesuits in her ‘Lágrimas i Recuerdos.’ In Bogotá, Antonio José Restrepo is the poet laureate. The most celebrated of his longer poems are ‘Un Canto’ and ‘El Dios Pan’; in which the author shows himself to be a liberalist of the most pronounced type, who writes in utter fearlessness of all absolute rulers for man’s mind, body, or estate.

The extensive writings of Esteban Echeverría (1809–51) contain many passages that are weak and commonplace; but he stands forth as the national poet of the Argentine Republic, reflecting the life and thought found on its vast plains and along its mighty rivers. The productions to which his fame is chiefly due are ‘Avellaneda,’ ‘La Revolución del Sud,’ and ‘La Cautiva.’ The last-named poem, an Indian story of the Pampas, deserves a place by the side of ‘Hiawatha,’ which it resembles in the unaffected beauty of its descriptive passages and the flowing simplicity of its versification. Martín Coronado and Rafael Obligado, two of the leading poets of Buenos Ayres, are disciples of Echeverría, though of different types. Coronado’s verse is impassioned and dazzling; while Obligado’s muse loves the contentment of the family hearth or the shady banks of the majestic Paraná, where the stillness is broken only by the cry of a wild bird or the lazy dip of an oar.

The poems of Arnaldo Márquez and Clemente Althaus of Peru take a very high rank for their beauty and tenderness of sentiment as well as purity of style. The ‘Noche de Dolor en las Montañas’ and the ‘Canto de la Vida’ of the Peruvian Numa Pompilio Llona are compositions which will be admired for centuries. The ‘Romances Americanos’ of the Chilean poet Carlos Walker Martínez, and the ‘Flores del Aire’ of Dr. Adán Quiroga of Argentina, are collections of poems of great merit and originality. Compositions of remarkable beauty will be found in the ‘Brisas del Mar’ of the Peruvian Manuel Nicolás Corpancho, the ‘Armonías’ of Guillermo Blest Gana of Chile, and the ‘Flores Silvestres’ of Francisco

Javier de Acha of Uruguay. José Batrés y Montúfar of Guatemala, a lyric poet of merit, is one of the most noted satirists of America. Matías Córdoba and García Goyena of Guatemala have been justly compared, as fabulists, to Æsop and La Fontaine.

Among Brazilian writers of the 19th century, two representative poets may be selected: Antonio Gonçalves Dias and Domingos José Gonçalves Magalhães. Dias was even more esteemed as a patriot than as a poet; and was much employed by the late emperor in carrying out educational and other reforms, in which that estimable sovereign was deeply interested. The successive issues of miscellaneous poems by Dias are now known collectively as his 'Canteiros,' and won the enthusiastic commendation of the Portuguese critic Herculão. He also left some Indian epics, and the two dramas, 'Leonor de Mendonca' and 'Sextilhas de Frei Antão.' He was so far honored in his own country that his fellow townsmen erected a statue to his memory, with an inscription declaring him the foremost poet of Brazil. The best productions of Magalhães are a tragedy entitled 'Antonio José ou o Poeta e a Inquisição,' and 'A Confederação dos Tamayos,' the latter an epic founded on an outbreak of the Tamayo and other Indians.

Summary.— On looking across the Rio Grande at authors and books beyond, one is struck by some points that contrast with our northern life. There, public men are writers. Whether it be that political life stimulates literary activity, or that the latter is a passport to the former, presidents, senators, cabinet officers, judges, and ministers plenipotentiary, all write. Many of them read, write, and speak a number of languages,— an accomplishment so rare in Saxon America that an envoy is sometimes sent on an important mission without being able to speak the language of the country to which he is accredited.

Again, the literary men of the far South, with scarce an exception, write poetry as readily as prose. Nothing could be more incongruous than the idea of the average public man in the United States writing poetry. Something is due to the character of the language, that a stranger does not readily appreciate. In Spanish and Portuguese verse the words roll and swell, liquid and lengthy, like the waves of the sea, and tempt one to prolong the billowy movement. Latin-American verse is glowingly descriptive, or plaintive and tender, with an occasional tinge of melancholy; but it all possesses a healthy and natural tone, and has not yet been infected by the morbid unrest and hopeless cynicism that characterize much of the recent poetry of older nations.

The great bulk of the people from Texas to Cape Horn cannot read and write. Great efforts are put forth to remedy this state of things by general education, and much has already been accomplished. In the United States, books are intended for a reading class numbering many millions, and are made as cheap as possible, so as to come within their reach. In Latin America there are no millions to read, and the best books are addressed to a relatively small class. As sales are limited, large works of general interest or permanent value are published or aided by the governments, or by wealthy and public-spirited individuals.

Of the lighter literature of the southern republics, a large part first appears in the various *revistas* and other literary periodicals maintained in all the principal cities. It consists principally of odes, sonnets, short stories, and essays. These essays embrace every variety of subject: the authors traverse — often literally — the Old World and the New, view them geographically, ethnologically, sociologically, and write under such captions as 'A Winter in Russia,' 'The Bedouins of the City,' 'The Literature of Slang,' or 'The History of an Umbrella.' The subjects are generally treated, so as to be pleasant reading, and afford at least as much entertainment as information.

Novelists and dramatists are under a great disadvantage, having no protective tariff to save them from European, and especially French, competition. Editors and managers find translations cheaper and easier to obtain than native productions. There is happily a growing reaction in favor of native writers who represent American subjects as seen by American eyes. When the cultivated public becomes fully aware of the greater genuineness of these domestic productions, native talent will have an ampler field; and there is every reason to believe that it will be prepared to satisfy the fullest demand.

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Latin Church. See Roman Catholic Church.

Latin Empire. See Byzantine Empire.

Latin Language, The. One of the Indo-European family of languages, spoken in Latium and especially in Rome and extended with the Roman rule over the ancient world; the source from which the Romance languages (Italian, French, Spanish, Portuguese) are derived.

As one of the Indo-European languages Latin shows a relationship in vocabulary, in inflected forms and in syntactical structure to other branches, Greek, Sanskrit, Germanic, Slavic, but according to the theory now generally accepted this indicates linguistic relationship only and does not necessarily imply an ethnological connection between the races speaking these languages. It was long held that the resemblance between the Greek and the Latin was so close as to warrant the belief that the two languages (and races) were derived from a common stock, but this theory (of a Græco-Italian unity) is now generally abandoned. Probably the closest connection of Latin is with the Celtic languages.

Latin was one of a group of dialects spoken in central Italy. The other best known and most closely related Italic dialects are the Faliscan (which is scarcely more than a local variety of Latin) and the Osco-Umbrian. The latter was an extensive family of dialects spoken in the mountain districts of central Italy, especially in Samnium, and in early times was more widely distributed than the Latin and of at least equal advancement. The Oscan is represented by a number of inscriptions, of which the *Tabula Bantina* is the longest, and the Umbrian by the Iguvinian Tables, of some 4,000 words in length.

The Latin language was reduced to writing at an early period by the use of an alphabet derived from the Greek alphabet of the town of Cumæ. Of this earliest period we have scanty records in inscriptions from about 500 B.C. down (the Fibula of Palestrina, the Duenos inscription) and in the rituals of the Salii and the Arval Brethren. These were not wholly intelligible to the Romans of the classical times and are still in part obscure; but enough is clear to show that the language was at that period a raw dialect of limited vocabulary, incapable as yet of expressing the thoughts or emotions of a highly civilized people.

The change from a rustic dialect to a literary language took place in the 3d and 2d centuries B.C. It was brought about by two causes. In the first place, through the extension of Roman power over the whole of Italy, Latin became the language of trade and of official intercourse throughout the peninsula; in this process of expansion the language reflected the expanding interests and necessities of the people who spoke it, becoming by use richer in vocabulary, more varied and at the same time more regular in structure, and gaining by its contact with the Oscan and Umbrian. This process was aided also by the constant practice of oratory, which the workings of a free constitution called forth. In the second place, the contact with the Greeks of southern Italy gave an immense and lasting stimulus to literary production. At first this took the form of the drama and the epic, and the necessities of verse, particularly of the Greek hexameter, required a conventional distinction between long syllables and short, such as the native rhythms, which were mainly accentual, had not required. The quantitive character thus given to the language and the imaginative enrichment which came from its employment in poetry affected chiefly the language of literature. On the other hand, in the spoken Latin, the giving up of the Indo-European accentuation and the adoption of a new accent-law, by which the main accent was restricted to the penult and ante-penult, resulted in the frequent shortening of the unaccented final syllable, especially in iambic words, and in the occasional dropping of final consonants. Acting in different directions, as a conservative force in the literary Latin, as a cause of rapid change in the spoken language, these influences produced the beginning of that separation between the language of books and the speech of the common people, which, though it occurs to some degree in all languages, is a most marked peculiarity in the development of the Latin language.

For about a century and a half before the beginning of our era and for an equal time after that date the Latin of books remained almost unchanged in sounds and forms; its history during this time deals with its growth and change as an instrument of literature. The Classical Period (the Ciceronian and Augustan) saw the culmination of Latin style, first in prose and then in poetry. Cicero was an extraordinary master of style and in his hands the language lost its archaic stiffness of structure and became a flexible and a complex means of expression. Better than any other Latin writer he used the periodic form of sentence, not as a mere rhetorical device, but as a suitable expression for a complete thought, with all its subordinations and interdependence, in a unified and harmonious structure. Cæsar also represents the simplest narrative prose, free from archaisms and absolutely unaffected and unadorned. In verse Vergil and Horace are types of the artistic use of imaginative speech, in which by a careful felicity of selection and combination language is made to convey poetic suggestion, without either the affectation of the Alexandrian school or the heaviness of Ennius or Lucretius.

The change from the Classical Period to the «Silver» Latin of the early empire is likewise chiefly stylistic and from this point of view it must be regarded as a change for the worse. To a considerable extent pleasure in the mere arts and tricks of expression took the place in Ovid and Martial of true poetic force and poetry became contaminated by rhetoric. In prose, however, the rhetorical and individualistic tendencies were less injurious; Tacitus, though he abandoned the periodic structure of Cicero and introduced into prose many words from the vocabulary of poetry, nevertheless used a style suited to his temperament and subject.

It is not worth while to follow in detail the later history of the literary Latin. It was in the main rhetorical and imitative and it lacked that vigor of thought which alone can maintain a vigorous linguistic life. To this general statement there are two exceptions. The Latin of the jurists kept up the tradition of accuracy and clearness, employing a technical vocabulary without rhetorical artifice, and the Christian writers, possessed by the supreme desire to convey a serious message to unlettered readers, continued the spirit, if not the form, of the better Latinity. With these exceptions, however, the Latin of literature is, after the 2d or 3d century, no longer in the fullest sense a living language.

Meanwhile the Latin of daily life, the language spoken by the common people of Rome, by slaves and provincials and soldiers, had continued to exist under the level of the literary language, from which it was separated about 250 B.C. The evidence for the spoken Latin during the later republic and the early empire is somewhat scanty, consisting of occasional inscriptions like the wall-writings of Pompeii or passages in authors like Petronius, in which the colloquial Latin is intentionally imitated. But the effect of the accent in the shortening of final syllables is to be seen even in Horace and Vergil and this tendency leads in some inscriptions to the loss of final consonants. After the 3d century of our era we have increasing evidence of change in sounds and forms. The vowel *e* and the diphthongs *æ*, *œ* were no longer clearly distinguished in sound, and were therefore confused in writing; *au* became *o;* *b* and *v* was interchanged; the softening of *c*, *t*, and *g* before *e* and *i* began; initial *h* was lost or was misplaced (this had begun in the time of Catullus). Still more marked was the loss of the distinction, probably never made with great precision in the ordinary speech, between long and short vowels, and the consequent reappearance of accentual verse. The disappearance of final consonants, especially *m* and *s*, destroyed the distinctive marks of gender and even of case, so that cases, being no longer distinct in form, were not clearly differentiated in usage. In syntax the older paratactic constructions, which are found in Plautus and occasionally throughout Latin literature, again appear and analytic idioms (*habere* as an auxiliary verb) began to displace the inflectional verb-forms; the use of prepositions weakened the force of the cases; conjunctions lost their original meaning, *quod*, for example, driving out other conjunctions. All these are steps toward the passage from Latin to the Romance languages. They went on at different rates in different parts of the empire and under different conditions, but the beginning of many can be traced back to early Latin and they are not to be thought of as accidents by which the Latin language was destroyed, but as entirely normal and natural changes which mark the progress of the language from the inflected stage to the comparatively uninflected condition of the Romance languages. From this point of view the Latin of literature is to be regarded as a deviation, in some sense artificial, from the normal life of the language.

The later use of Latin by scholars as a universal learned language and the employment of a corrupt Latin in diplomacy and government do not come within the limits of this article.

Bibliography.—There is a good sketch of the history of the Latin language in the 'Historische Grammatik d. lat. Sprache,' I. 1, by Stolz, and a longer history and discussion by Weise, 'Charakteristik d. lat. Sprache.'

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Latin Literature. Within the brief limits of the following sketch it will not be possible to describe fully the characteristics of single writers (for these special articles must be consulted); only a general history of Latin literature will be given, with a summary estimate of its value.

A division into periods will be found convenient, though such divisions in a continuous development must not be understood to imply abrupt changes.

1. *The Prehistoric Period down to* 240 B.C.—No complete writings from this period survive in their original form, but from fragments and chance allusions it is known to have been a period of native beginnings, as yet untouched by foreign influences. In poetry, which from its nature takes literary form before prose, we possess partly modernized fragments of religious ritual in verse, the forerunners of a kind of lyric. A few allusions seem to indicate the existence of the custom of chanting lays in honor of national or family heroes, which might under favoring conditions have flowed together into an epic, and many references and some later fragments show that village festivals, in Italy as in Greece, were celebrated with songs and dances of a mimetic and humorous character, out of which a subordinate kind of drama actually arose, even after the introduction of Greek comedy. Semi-ritualistic charms and farmers' maxims, of which Cato gives us specimens, might easily have been collected into a didactic poem on agriculture. In prose the legal codifications were already well advanced, and the many forms of official record furnished the material for history and, indeed, dictated its earliest annalistic form. Oratory, as might be expected, was in constant use in the senate, in popular assemblies, and for purposes of eulogy, and a speech of Appius Claudius Cæcus, delivered in the senate in 280 B.C., was still extant in the time of Cicero. Thus in several directions the germs of a native literature had appeared before the Greek influence was felt.

2. *The Period of Greek Influence, Beginning with* 240 B.C. *and Lasting for about a Century.*—Through the conquest of the Greek cities of southern Italy the Romans first became fully aware of the treasures of Greek literature, by that time practically complete. Its introduction into Roman life was due to a Greek slave, Livius Andronicus, who translated plays of the Greek 'New Comedy' (Meander and others) for presentation at the Roman festivals and put the 'Odyssey' into Saturnian verse to be used as a reading-book in schools. He thus gave a new impulse and direction both to dramatic and to epic poetry and he was followed in the drama by native Italians, Naevius, Plautus, and Ennius, and in the epic by Naevius, who wrote a history of the first Punic war in the native accentual verse-form. Ennius, the most influential writer of the period, continued the epic still further by writing in hexameters a history of the Roman race, which remained the national epic until the appearance of the 'Æneid.' Other dramatic writers followed, the tragedy being less original and less popular than the comedy. Ennius also gave literary form to satire, a peculiarly Italian product, written by him in various meters and on a variety of subjects and put into final form at a later period. The prose of this time was still mainly of a practical character. Cato the Censor wrote out and published many of his speeches for use as political pamphlets, composed a book of maxims drawn from his active life for the benefit of his son, some at least being in the form of letters, and wrote a treatise on farming which, in a partially modernized form, is still extant. The writing of history had already begun, in the Roman annalistic form, though in the Greek language, but Cato wrote a history of Italian towns in Latin. There was also considerable activity in legal writing, though systems of jurisprudence came somewhat later. This last was purely Roman and in general the Greek influence was less felt in prose, and the impulse to stylistic finish was less active than in poetry.

The period was thus one of beginnings in many lines. The stimulus of the Greek literature was almost a tyranny as to the form, especially in poetry, but in the writers of more original mind the Italian spirit and something of the Italian form, like the music and dances of comedy, still maintained itself. In the period of transition to Cicero's time (about 150–84 B.C.) the further growth of oratory, history, and jurisprudence in prose, and the writing of plays on Italian subjects and in native form showed that the Latin spirit was recovering from the first dominance of the Greek artistic form. In particular, it was during this time that the purely national satire received its permanent form and direction at the hands of Lucilius.

3. *The Ciceronian Age,* 83–43 B.C.— In this period, which is defined by the beginning and the end of Cicero's literary activity, Latin prose reached its culminating point, combining at last into a harmonious whole the earnestness of the Roman and something of Greek artistic skill. The practical national tendencies were still exemplified by Varro, who gave a long life to investigation and published works in many fields, in law, history, philosophy, grammar, and agriculture, with an almost exclusive attention to the matter rather than to the style. In history Sallust may be called the first of Roman historians, in the true sense of the word as distinguished from the annalists and antiquarians, but his style is intentionally archaic and not wholly natural. The period was especially rich also in political writings, in the form of biographies and memoirs, among which must be included the commentaries of Cæsar, historical in form, but written for a political purpose, and models of perfectly simple narrative in the purest diction. But the chief figure in the literature of the period was Cicero. He was a man of wide knowledge both of the earlier Roman oratory and of Greek rhetoric; he was equally interested in the theory and in the practice of public speaking, and his warmth of temperament and purity of taste in composition made him an eminent master of style. His writings have remained since his time the models and standard of Latin prose. Aside from his speeches, of which some 50 are extant, he left valuable works on rhetoric, some well-written treatises on philosophy, and a large and extremely interesting collection of letters, gathered and published after his death by his secretary.

In poetry also this period was second only to the Augustan Age. Lucertius, continuing the tradition of didactic poetry, wrote in hexameters an exposition of the atomic theory of Epicurus. The subject was in itself unsuited to poetry, but Lucretius has so infused into it his own moral earnestness and so interspersed and adorned the doctrines with passages of lofty beauty that the work is intensely Roman and is undoubtedly the greatest didactic poem in existence. In lyric poetry Catullus left behind him at his early death a few score of poems, almost all quite short and some of them overwrought with imagery and allusion in the Alexandrian manner, but of the purest lyric strain and in this one respect superior to the 'Odes' of Horace. If the fame of Catullus rested on the 'Attis' alone he would be called a great poet.

The Augustan Age, 43 B.C. *to* 14 A.D.— This period was, in contrast to the preceding, mainly an age of poetry. The loss of political freedom affected unfavorably both the public oratory and the political and historical prose. Scarcely an orator of the period has left more than an empty name and public speaking sank into declamation and rhetorical display. In history there is the one great name of Livy, but even he, though a friend of Augustus, found in the history of the past a kind of refuge from the political hopelessness of his own time. His style, in the narrower sense, was an adaptation of the periodic sentence structure of Cicero to the purpose of narrative, to which it is not entirely suited, but his descriptions — his "pictured page" — are wonderfully vivid. From him and from Plutarch's 'Lives' most of our popular conceptions of Roman history and character are derived.

But the conditions which were unfavorable to the highest kinds of prose composition fostered production in the unemotional and impersonal fields of technical writing. To this period belong the work of Vitruvius on architecture, the extremely learned work of Verrius Flaccus on lexicography and grammar, now unfortunately lost, and some important writers on law. It was, however, in poetry of high quality that the age was especially productive. Vergil, after some imitations of Theocritus and a very perfectly finished poem on farming, left behind him at his death the 'Æneid' in almost complete form, to become at once the great epic of Rome and in later times the most widely known of Latin poems. Horace, a Republican in his youth, who had fought at Pharsalus, continued the tradition of satire after the manner of Lucilius and wrote the four books of the 'Odes,' inferior to the poems of Catullus in lyric feeling, but superior in their attitude toward life and perhaps in their close stylistic texture. He also became at once a classic and has been the favorite poet of many men of society and of affairs. Tibullus and Propertius introduced elegiac poetry and seem in this field to have surpassed their Greek models. Ovid wrote a long poem embodying Greek myths, an account of the festivals of the Roman calendar, and a number of minor poems, all with an unrivaled technical skill; but he was a man of weak fibre and lacking in genuineness and his personal failings have lowered the tone of his writings.

Taken all together, this roll of names, though no one of them is quite of the very highest rank, entitles the Augustan Age to a place among the great periods of literary production.

The Ciceronian and Augustan periods are sometimes put together and called the Classical Period, or, in contrast with that which follows, the Golden Age of Latin Literature.

5. *The Silver Latin,* 14–117 A.D.— Two characteristics mark the literature of the early empire. On the one hand, technical skill in the craft of writing was never greater nor more generally exercised. Verse-composition was common and the versification was accurate and finished. But, on the other hand, the increasing tyrannies of Tiberius, Caligula, Nero, and Domitian suppressed independence of utterance and even of thought and the decrease in race-vigor weakened the nobler impulses to expression. Technical skill was therefore put to frivolous or ignoble uses and was directed by petty vanities into mere affectation, instead of being controlled by a reserved taste and a sober purpose. Poetry borrowed the rhetorical devices of prose and prose used the vocabulary of poetry.

But while this description is fairly applicable to most of the writers of this and the succeeding period, there were not a few writers who, though they were inevitably affected by the character of their times, were yet raised by interest in their subject or by refinement of taste almost to the level of the Classical Period. This was true in a measure of many of the writers on technical subjects, grammar, agriculture, medicine, law; such, for example, was the elder Pliny, who collected a sort of compendium of knowledge in his ‹Naturalis Historia.› The philosopher and poet Seneca has been at times highly esteemed, but it is difficult to acquit him of insincerity and his closet-dramas betray his tendency to bombast. Quintilian, however, was a great teacher of rhetoric in the best sense and a writer of learning and taste, who would have been distinguished in any age. With him may be ranked, though on different grounds, the younger Pliny; the collection of his letters was made by himself and the letters were doubtless written for publication, so that they lack (except the correspondence with the Emperor Trajan) the interest of Cicero's letters, but Pliny was a man of excellent taste and of creditable aspirations and his character as revealed in his correspondence is distinctly attractive. The greatest prose writer of the period was Tacitus, the historian. He had endured and been embittered by enduring the dreadful oppressions of Domitian's rule and under the liberal reign of Nerva and Trajan he used his opportunity to write truthful and independent histories of the empire. His style is individual and difficult from its condensation, but better suited to his subject than the Ciceronian periods would have been, and his treatment of his theme, though not free from prejudice, is extremely powerful. Herodotus and Thucydides in Greek and Livy and Tacitus in Latin are the four great historians of the ancient world.

On the side of poetry, though there were many writers of some merit, only a few deserve mention here. Martial composed epigrams, Lucan wrote an epic of the civil war between Cæsar and Pompey, and Persius and Juvenal were satirists. The latter is, in spite of rhetorical blemishes and a repellant savageness of tone, one of the greater writers in Latin literature and his satire has been the model for much writing of the same kind in English literature.

6. *The Later Empire.*— Of writers after the end of the first century of our era few are of importance from the strictly literary point of view and there is a certain justice in closing the history of Latin literature with Tacitus. But in the long list of writers of the next four or five centuries there are many whose works have, apart from their form, an intrinsic interest, in some cases a very great interest. From them may be selected the following names: In history, Suetonius, Ammianus, and the ‹Scriptores Historiæ Augustæ›; in literary commentary and criticism, Gellius, Donatus, Servius, and Macrobius; in grammar, Marius Victorinus and Priscian. The most original and perhaps in a true sense literary work of these centuries is to be found in the legal writings, from Gaius to the ‹Code of Justinian,› and in the Church Fathers, Lactantius, Ambrosius, Jerome, Augustine, and many others; in writers of both of these classes interest in the subject checked the prevalent inclination to regard the art of writing as an end in itself rather than as a means.

This chronological review of Roman literature may be supplemented by a brief summary and estimate of Latin writers by classes according to their form or subject-matter. In the comparative simplicity of the ancient literatures the connection between writers in the same class was more direct and therefore more noteworthy than it is in modern times.

The Roman drama, having been early checked in its possible growth by the introduction of Greek models, took almost entirely a Græco-Roman form. Of the tragedies nothing has been preserved except the book-plays of Seneca, and the writing of tragedy for the stage had come to an end before the time of Cicero. The form of drama which took its subjects from Roman legend appears to have been only slightly successful and it is evident that the serious drama had little hold upon Roman life. The comedies, even those of Greek form like the extant plays of Plautus and Terence, expressed more of the Italian spirit and retained their hold upon the stage, and the farces, the mimes, and the Atellan plays were even more popular. The Italian interest, then as now, was more in the acting and impersonation than in the dramatic form or story.

In epic poetry the glory of the Homeric poems was so great as to determine, somewhat to its disadvantage, the form of the Roman national epic. It is not unlikely that Ennius was in this respect more truly national than Vergil. The poet of the ‹Æneid› was in truth hampered by the Homeric machinery of gods and heroes and by the supposed necessity of imitating in one part of his poem the wanderings of Odysseus, in another the battles of the Iliad. These things were not real to him; they were epic conventionalities which he felt obliged to adopt, as he adopted at times the phrases and the similes of the Homeric style. In all these respects, in which the ‹Æneid› is most frequently and quite properly compared with the Greek epic, Vergil is plainly the inferior and they are sufficient to exclude him from the small company of the world's greatest poets. But in the occasional passages where he is inspired by the opportunity of expressing his real theme — the greatness of the Roman state — he writes with a proud dignity and a conscious understanding of the meaning of history, to which there is no parallel in the Homeric poems. His verse also is suited to the dignity of his thought; his hexameters are composed as wholes, while the Homeric hexameter appears to retain the traces of its composition out of two short half-verses. The Vergilian verse is less suited to the simplicity of narrative, but is unequaled in elevation.

Didactic writing in prose and verse was especially natural and attractive to the Roman mind and the series of didactic works extends from the earliest times down to the end. The most notable in verse are the great poem of Lucretius de Rerum Natura and the ‹Georgics› of Vergil. Both depend largely — Lucretius wholly — on Greek authorities for their subject-matter, but two more thoroughly Roman poems could not be named. In form the work of Lucretius is incomplete; the ‹Georgics› is one of the most perfectly finished poems in Latin literature.

Lyric poetry in Latin has an especial interest from the fact that the Greek lyrics of the best period are preserved only in fragments and our conception of this important form of poetry in ancient literature must be derived chiefly from Catullus and Horace. Apparently the best qualities of Alcæus and Sappho are better reproduced by the free spontaneity of Catullus than by the careful workmanship and mature intelligence of Horace. We are fortunate in the possession of both. Lucretius, Catullus, Vergil, and Horace are the four cornerstones of Latin poetry.

The elegy is closely allied to the lyric, from which it differs chiefly in the use of the elegiac couplet, hexameter and pentameter. The examples that we have in Tibullus, Propertius, and Ovid do not conform to the rule of ancient grammarians that elegy should deal with melancholy themes. But the somewhat despondent temperament of Tibullus and the simplicity of his treatment are well suited to elegy. Propertius is more virile, but is over-much given to the display of Alexandrian learning. In the amatory elegiacs of Ovid his extraordinary cleverness has a congenial field and his lack of essential manliness is less detrimental than elsewhere.

Epigram and satire were also natural forms of expression for the Italian, and many epigrams are extant in inscriptions or are preserved anonymously in the Anthology. Martial is the only writer whose collected epigrams have come down to us. They are often neat, often amusing, but this form of art is of course not very high. In satire the Romans claimed complete originality and apparently with justice. The satirical spirit may express itself in comedy or epigram or in semi-lyrical iambics like the ‹Epodes› of Horace, but the grammarians meant that in Latin the satire had been given a distinct conventional form — a short poem in hexameters — in which was expressed a distinct tone of critical comment on persons or on social life. In this sense satire can be clearly traced from Lucilius through Horace to Persius and Juvenal. Of the four Horace is incomparably the most humorous and in reality the most penetrating; Lucilius is preserved only in fragments, Persius is obscure, and both the objects of Juvenal's satire and the indignation with which he attacks them are too real to give pleasure.

In the prose literature of Rome oratory and history hold the first place. In both the art took substantial form before the national tendency was overwhelmed by the finished Greek productions. Oratory is represented in the extant literature only by some late Panegyrics and the speeches of Cicero, a small amount in comparison with the volumes of the Attic orators. It is peculiarly unfortunate that we have none of the political speeches which played so large a part in the history of the republic; they would undoubtedly illustrate the prevailingly practical character of Roman oratory and would show how steadily it grew to the height of Cicero's ‹Second Philippic.› Up to this point, while it was increasingly stimulated by the best Greek models, it was able to resist the influence of Greek rhetoric. After Cicero's time the teaching of rhetoric, which had become common in Rome, brought about an undue attention to form and a consequent loss of power.

The writing of history also long served a practical end. It began as a mere expansion of the official annual records, including the names of magistrates, the important public events and the recognized prodigies. This kind of history continued to be written after Naevius and Ennius had composed more elaborate histories in verse, and, even when Roman history was written in the Greek language, it was but little influenced by the great Greek models. It is with Sallust and Nepos that the writing of history really began and its importance in Latin literature is attested by the long line of minor historians.

Roman philosophy can make no claim to originality. It is found, in prose, in Cicero and Seneca. The former gave free renderings of the best Greek works on ethical philosophy with special reference to its value in the training of the orator; the latter wrote without much system brief essays on ethics.

Of epistolary literature, either letters actually sent to the persons addressed or essays in epistolary form, a considerable amount is known through allusions and the two collections by Cicero and Pliny have been mentioned. They are a unique feature of Roman literature, since it happens, perhaps from the concentration of Greek life in single cities, that no such collections are extant in Greek.

Of the technical writings enough has been said. They belong to all periods of the literature and cover almost all fields of study, agriculture, grammar, literary criticism, architecture, medicine, rhetoric, military strategy, engineering, astronomy, law; the first and the last subjects in this list being by far the most abundant and important.

In comparison with the Greek literature the Latin is inferior in imagination and in form — two important characteristics; it is superior in the directness of its human appeal and in its practical worth to the modern world. It is sometimes said to be an imitative literature, but it is rather a continuation of Greek literature in new surroundings. The influence of Greek literature upon Roman is not different in kind from the influence which modern literatures exert upon each other.

A comparison with modern literature is less easy, because the differences are greater. The ancient literatures follow more strictly defined lines of tradition, especially in poetry. The Roman circle of readers was more limited than the modern and literature was therefore less broadly based and less representative of a wide variety of interests. And the comparative absence of the romance or novel and the slight use of the motive of romantic love makes a very obvious difference.

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Latin Union, The. The institution of the Latin Union marks an important epoch in the history of bimetallism, for, while it was the gold discoveries of California and Australia which were the direct cause of the organization of this monetary convention, it was the downward tendency in the price of silver that resulted in the practical suspension of that coinage by the parties to the treaty.

In 1853, when the subsidiary silver of the United States had begun to be seriously affected by the cheapened price of gold, the treasury department of this country found it necessary to reduce the quantity of silver in its small coins in order that they might still remain below the value of gold. A few years passed, and Switzerland also found herself face to face with the same financial problem, but she, instead of following the example of the United States, solved her difficulty by lowering the fineness of standard for her small coins to 800 thousandths fine.

This method of equalizing the coinage naturally had a tendency to act disadvantageously for those countries like France and Italy, where the standard remained much higher than that of Switzerland, for, as the coins of one nation circulated commonly in all the countries that had adopted the franc system, it was soon realized that, in accordance with Gresham's law, the cheaper Swiss coins would eventually supersede the dearer coins. It was unreasonable to suppose that the coins of France or Italy, containing as they did so much more pure silver, could hope to compete with the cheap coins of Switzerland, so long as the latter passed current at the same nominal value.

Such was the fear, and it was not long before these predictions began to be fulfilled. The Swiss coins, being only 800 thousandths fine, soon crossed the French frontier, where they were exchanged for French coins of the same nominal value. The latter were then exported to Switzerland, where, after having been melted and recoined, they netted a considerable profit for the speculator. By April 1864 the situation had become so thoroughly unsatisfactory that the French government was compelled to issue a decree prohibiting the receipt of the Swiss coins at the customs-house and other public offices.

In response to overtures from Belgium a conference of delegates representing four of the interested states — France, Italy, Switzerland, and Belgium — met in Paris 20 Nov. 1865, and agreed to establish a uniform coinage, the new system to be based upon the principles adopted by the United States in 1853. Thus, the silver coins — the 2 franc, 1 franc, 50 centimes and 20 centimes pieces — were reduced from a standard of 900 thousandths fine to a uniform fineness of 835 thousandths, a policy which lowered the small coins of the several countries to the position of a subsidiary currency.

In adopting this policy the members of the Latin Union had not discarded the principles of bimetallism. Gold coins of the value of 100, 50, 20, 10, and 5 francs, and a 5-franc silver piece, were all to be coined at the old standard of 900 thousandths fine, and free coinage, at a ratio of 15½ to 1, was granted to any holder of gold or silver bullion who desired to obtain any of the gold coins or 5-franc silver pieces. The subsidiary currency was formally declared legal tender in all business transactions between individuals of the states that coined them for an amount not in excess of 50 francs.

The treaty under which the Latin Union was formed was ratified by each government, and went into effect 1 Aug. 1866. In 1868 Greece also became a party to the convention, which, by its own terms, was to exist until 1 Jan. 1880, but the downward tendency shown by silver during 1873 compelled the delegates to call another conference. On this occasion the fear most generally entertained was that the German mints would flood the several countries with their demonetized silver. A meeting was held at Paris, therefore, 30 Jan. 1874, at which the full power of free coinage of silver was withdrawn from individuals, and the amount of silver 5-franc pieces to be coined by the several treaty states was greatly reduced.

The last convention of the Latin Union was held 29 Oct. 1897, and the monetary agreement accepted at that time is tacitly continued from year to year, although it may be denounced at any time by any of the contracting states. According to its terms, the five contracting states have adopted a gold and silver coinage of the same fineness, weight, diameter, and current value, and the allowance for wear and tear in each case is the same. The coinage of 5-franc pieces, of gold as well as of silver, is temporarily suspended, and the issue of subsidiary silver is, with certain exceptions for special reasons, limited to 7 francs per head of the population of each state. The most important exception to this section of the convention is in the case of Greece, where the issue is limited to 6 francs per head.

It is further agreed between the contracting countries that each government, in all its public offices, shall accept payment in the silver 5-franc pieces of each of the other states, and in the subsidiary silver to an amount not in excess of 100 francs. Moreover, each state engages to exchange the excess of its issues over its receipts of subsidiary silver for gold or 5-franc silver pieces, and each binds itself that, at the termination of the convention, it will resume also its 5-franc silver pieces, paying in gold a sum equal to the nominal value of the coin resumed. The only exception to this section of the treaty is made in the case of Italy, in which the government is freed from this obligation to take back its fractional coins upon the dissolution of the convention, it being stipulated instead that it will forbid the exportation of such coins while the Union continues, and will not change its present system of subsidiary coinage for five years following its separation from the Union.

The following is a statement of the total issues of the five states as authorized by the last convention: France, 394,000,000 francs; Italy, 232,400,000; Belgium, 46,800,000; Switzerland, 28,000,000; and Greece, 15,000,000.

Latin Versions of the Scriptures. The origin of the Latin versions of the Bible is a subject which is involved in no little obscurity. Beyond the fact that (1) most of the New Testament books existed in Latin at the close of the 2d century; (2) many of the Old Testament books could then be read in that tongue, and (3) that these translations were the work of many authors, little, if any, information is obtainable. Moreover, as the most eminent scholars differ upon almost all the essential points that present themselves in this discussion, it is with difficulty that any of the important facts can be established. Wiseman, about 1830, announced the opinion that the Latin Church not only possessed but one version of the Bible prior to the time of Jerome, but that this version had been prepared in North Africa — not in Rome — and that it had subsequently been subjected to several revisions, for one of which Saint Augustine had been responsible. This was called 'Itala,' from the place in which it was made.

Pope Damasus, in the 4th century, requested Saint Jerome to prepare a revision. He began the work immediately, and in 383 the revised gospels made their appearance. In the same year he revised the rest of the Old Testament and made a cursory revision of the Psalms, using the Greek manuscript known as the LXX. This work, now known as the Roman Psalter, was followed, in 387, by a more careful revision of the Hexaplar text, and it is this work, called the Gallican Psalter, which is now in general use in the Roman Catholic Church.

The first revision of the work of Saint Jerome occurred in 802, when Alcuin revised the text from ancient Vulgate manuscripts, and subsequent revisions were made by Theodulf of Orleans (787–821); Lanfranc, afterward archbishop of Canterbury (about 1080); the Cistercian abbot, Stephen II. (1108); and Cardinal Nicholas (1150). In addition to these direct revisions different corporations issued 'Correctoria,' which contained discussions of the various readings. Among these were the 'Correctorium Parisiense,' which was approved by the archbishop of Sens; the 'Correctorium' of the Dominicans, prepared, about 1240, by Hugo a S. Caro, and a 'Correctorium' compiled by the Franciscans.

The revision of the Vulgate New Testament undertaken by Erasmus in 1516 lost much of its strength, owing to the fact that he had been actuated mainly by a desire to improve the style of the work, but really critical attempts to produce a purer Vulgate were made by Gumelli (Paris 1504), Castellaer (Venice 1511), and Laridius (Cologne 1530). Scholars place little importance upon either of these editions, but they admit that valuable efforts for the restoration of a critical text were made by Cardinal Ximenes in his 'Complutensian Polyglott (1502) and R. Stephens (1528). Many editions of Stephens' work were subsequently issued, and in 1540 the Theological faculty of Louvain entrusted the current edition to Henten of Malines that he might make a careful revision of the text. His first edition appeared in 1547, and was so correct in almost every detail that the edition of 1574, which was made, under the same authority, by Lucas of Bruges, was practically identical with Henten's 1547 text.

Careful as the various editors had been in the work of preparing their texts, there were differences in reading that called for an official edition, a want that was filled in 1590, when Sixtus V. issued a text which he ordered to be received as "true, lawful, authentic, and unquestioned." Two years later the Sixtine Bible was followed by the Clementine edition, but as even this was not a perfect text of the Vulgate, the work of correction was continued, and for more than 40 years it went on almost without interruption, the most eminent scholars in the world having been summoned to participate in the revision.

Latin Writers. The following list of writers presents the more famous names which the general student of literature is likely to meet in his reading. The authors are arranged according to the year of their birth so far as it can be determined. See also LATIN LITERATURE.

LUCIUS LIVIUS ANDRONICUS. c. 284 — 204 B.C.
With his translations of Greek tragedy and comedy Latin literature is said to begin, 240 B.C. He also translated Homer's 'Odyssey.' We have a few fragments.

GNAEUS NAEVIUS. c. 269 or 264 — c. 199 B.C.
Reckoned the first native Roman poet. He was the first to compose a Latin play. His greatest achievement was an epic on the Punic War. Only fragments survive.

TITUS MACCIUS PLAUTUS. c. 254 — 184 B.C.
Roman comic poet. Twenty of his comedies are still extant.

QUINTUS ENNIUS. 239 — 169 B.C.
The "Father of Roman Literature." Wrote tragedies and comedies, and other poetry. His chief work is an epic poem, 'The Annals,' covering the whole history of Rome.

MARCUS PORCIUS CATO. 234 — 149 B.C.
Author of the first Roman historical work in Latin prose. He published orations and didactic treatises. His work on 'Agriculture' is the oldest volume of Latin prose extant.

MARCUS PACUVIUS. c. 220 — c. 132 B.C.
Roman tragic poet. His writings are now preserved only in fragments.

PUBLIUS TERENTIUS AFER. c. 184 — 159 B.C.
Extant works, six comedies.

GAIUS LUCILIUS. 180 — 103 B.C.
First Latin satiric poet. We have only fragments.

LUCIUS ACCIUS. 170 — B.C.
Author of adaptations of Greek tragedies, original Latin tragedies, and various prose works. Fragments extant.

MARCUS TERENTIUS VARRO. 116 — 27 BC.
Most learned of ancient Roman scholars. The major portion of his prose and poetry is lost, but we have considerable remains of his works on 'The Latin Language' and on 'Agriculture.'

MARCUS TULLIUS CICERO. 106 — 43 B.C.
Of his numerous writings, we have over 50 orations, many rhetorical and philosophical treatises, and about 800 letters.

GAIUS JULIUS CAESAR. 100 — 44 B.C.
His memoirs, 'The Commentaries,' alone remain.

CORNELIUS NEPOS. c. 99 — c. 24 B.C.
Author of biographies of many eminent men.

TITUS LUCRETIUS CARUS. 96 (probably) — 55 B.C.
Famous for his didactic poem 'On the Nature of Things,' which we still have.

GAIUS VALERIUS CATULLUS. 87 or 84 — c. 54 B.C.
First important and perhaps the greatest Latin lyric poet. We have a collection of over a hundred of his poems.

GAIUS SALLUSTIUS CRISPUS. 86 — 34 B.C.
Best known by his monographs on Catiline's conspiracy and the Jugurthine war.

PUBLIUS VERGILIUS MARO. 70 — 19 B.C.
Most representative Latin poet. His greatest works are the 'Eclogues,' the 'Georgics,' and the 'Æneid,' but we also have some of his minor poems.

QUINTUS HORATIUS FLACCUS. 65 — 8 B.C.
Left satires, epodes, odes, and epistles, but is most distinguished for the perfection of his odes.

TITUS LIVIUS. 59 B.C. — 17 A.D.
Wrote a history of Rome in 142 books, of which we have 35.

ALBIUS TIBULLUS. c. 54 — c. 19 B.C.
An elegiac writer, from whose pen we have about two dozen poems.

LUCIUS ANNAEUS SENECA. c. 54 B.C. — c. 39 A.D.
Of his rhetorical works we have about six books.

SEXTUS PROPERTIUS. c. 49 — c. 15 B.C.
Elegiac poet, from whom we have four books of verse.

PUBLIUS OVIDIUS NASO. 43 B.C. — 17 or 18 A.D.
His important extant poems are the 'Art of Making Love,' 'Remedies for Love,' the 'Metamorphoses,' '*Epistulae ex Ponto*,' *Tristia, Fasti, Heroides.* A famous tragedy, the 'Medea,' has not survived.

GAIUS VELLEIUS PATERCULUS. c. 19 B.C. — 30 + A.D.
Author of a compendium of Roman history which is still extant.

VALERIUS MAXIMUS.
We have his collection of anecdotes in nine books.

LUCIUS ANNAEUS SENECA. c. 4 B.C. — 65 A.D.
From him have come a satire on Claudius, moral essays, philosophical epistles, physical treatises, and a few tragedies.

AULUS CORNELIUS CELSUS. c. 2 A.D. — ?
Author of an encyclopedic work, of which we have only the eight books on medicine.

PHAEDRUS.
Author of an extant collection of fables.

POMPONIUS MELA.
His geographical work in three books is the earliest work of the sort that we possess.

LUCIUS JUNIUS MODERATUS COLUMELLA.
Author of an important work in prose and verse on agriculture, in 12 books.

QUINTUS CURTIUS RUFUS.
'History of Alexander the Great, in 10 books, all of which, except two, have survived.

GAIUS PLINIUS SECUNDUS. 23 — 79 A.D.
Author of the 'Historia Naturalis,' an encyclopedic work in 37 books, still extant.

SILIUS ITALICUS. c. 25 — c. 101 A.D.
Composed an extant epic poem on the second Punic war, in 17 books.

AULUS PERSIUS FLACCUS. 34 — 62 A.D.
Writer of six satires, still extant.

Marcus Annaeus Lucanus. 39 — 65 A.D.

Of numerous works in prose and verse we have only his epic, the ‘Pharsalia.’

Petronius Arbiter. ? — 66 A.D.

Author of a satirical romance in at least 20 books, of which we have considerable fragments.

Titus Calpurnius Siculus.

Left us seven eclogues and a poetical panegyric.

Gaius Valerius Flaccus Setinus Balbus. — c. 90 A.D.

Composer of an extant poem on the Argonautic expedition, in eight books.

Marcus Fabius Quintilianus. Between 35 and 40 — c. 95 A.D.

Known chiefly by his treatise in 12 books upon the training of an orator.

Publius Papinius Statius. c. 40 — 96? A.D.

There have survived of his works five books of occasional poems (the ‘Silvæ’), and two epics, a Thebaid and an Achilleid.

Marcus Valerius Martialis. c. 40 — c. 102 to 104 A.D.

The world's greatest writer of epigram, from whom we have 1,575.

Publius Cornelius Tacitus. c. 55 — c. 120 A.D.

One of the chief ancient historians. His surviving works are a treatise on oratory, a biography of Agricola, a monograph on Germany, his ‘Annales’ and ‘Historiæ.’

Decimus Junius Juvenalis. c. 60 — c. 140 A.D.

Composed 16 poetical satires, which we have.

Gaius Plinius Caecilius Secundus. 62 — c. 113 A.D.

Of his published speeches only the panegyric of Trajan has reached us, but his nine books of letters in semi-essay form, and a tenth containing his correspondence with Trajan, have survived.

Gaius Suetonius Tranquillus. 75? — 160? A.D.

Latin biographer, best known by his extant ‘Lives of the Cæsars,’ although we have fragments of other biographies.

Lucius (?) Annaeus Florus.

Composed an extant epitome of Roman history in two books.

Marcus Cornelius Fronto. c. 100 — c. 175 A.D.

Besides less important works in incomplete form, we have most of his correspondence with Marcus Aurelius.

Gaius. c. 110 — c. 180 A.D.

The famous jurist, large amounts of whose writings have come down to us.

Marcus Aurelius Antoninus. 121 — 180 A.D.

Besides his letters in Latin, we have the well-known ‘Meditations,’ written in Greek, in 12 books.

Lucius Apuleius. c. 125 — ? A.D.

Composed works on a great variety of subjects, of which few have reached us. Most important is the novel ‘The Golden Ass.’

Aulus Gellius. c. 130 — ? A.D.

His miscellanies, the ‘Attic Nights,’ in 20 books, have reached us almost intact.

Marcus Minucius Felix.

Author of a dialogue, the ‘Octavius,’ which is our earliest extant work in Latin Christian literature.

Quintus Septimius Florens Tertullianus. c. 150 — c. 230 A.D.

The great Christian apologist. We have numerous theological treatises from his pen.

Thascius Caecilius Cyprianus. c. 200 — c. 255 A.D.

Author of numerous theological works, many extant.

Marcus Aurelius Olympius Nemesianus.

We have a portion of his didactic poem on the chase.

Arnobius. ? — 326? A.D.

Author of a Christian apology in seven books, which have come down to us.

Lactantius Firmianus. — after 315 A.D.

Known as the Christian Cicero. We have his chief theological works in prose and verse. Most important is his ‘Institutiones Divinæ.’

Eutropius. 4th century.

A historian whose epitome of the entire history of Rome, in 10 books, is still valued.

Hilarius (Bishop of Poitiers). — 367 A.D.

A Christian controversialist and commentator on the Bible, of whose numerous works we still have remains.

(Pope) Damasus. 305 — 384 A.D.

One of the first Christian poets. Epitaphs and poetical eulogies of departed Christians have come down to us.

Decimus Magnus Ausonius. c. 310 — c. 395 A.D.

A Roman poet from whom we have many works in various departments of literature, epigrams, elegiacs, epistles, etc.

Ammianus Marcellinus. c. 330 — c. 400 A.D.

Composed a continuation of ‘Tacitus,’ of which we have only 18 books of contemporary history.

Hieronymus. 331 — 420 A.D.

Famous for his translation of the Bible and his commentaries. A Latin version of Eusebius' Chronological Tables, many letters, and Christian biographies require mention.

Ambrosius. c. 340 — 397 A.D.

One of the Church Fathers. His writings include letters, orations, hymns, and didactic works, of which we have large amounts.

Quintus Aurelius Symmachus. c. 345 — c. 405 A.D.

Besides fragments of his orations, we have official reports, and 10 books of letters which are of great historical value.

Aurelius Prudentius Clemens. 348 — c. 410 A.D.

The greatest poet of his century. We have hymns and other Christian poetry.

Claudius Claudianus. ? — c. 408 A.D.

Last important non-Christian poet. Extant are historical and mythological poems and many shorter pieces. Most famous is his epic, ‘The Rape of Proserpina.’

Meropius Pontius Anicius Paulinus. 353 — 431 A.D.

A Christian writer from whom we have letters and poems.

Aurelius Augustinus. 354 — 430 A.D.

Widely known by his ‘Confessions,’ he has also left us letters, sermons, theological treatises, and his famous work, in 22 books, on ‘The Kingdom of God.’

Macrobius Theodosius. 4th/5th century A.D.

A commentary on Cicero's ‘Dream of Scipio’ and a book instructive to the student of Roman literature and antiquities, which he called ‘Saturnalia,’ have been preserved.

Martianus Capella. 4th/5th century A.D.

We have his encyclopedic work, in nine books, on the ‘Seven Liberal Arts,’ which was of great importance in mediæval education.

Leo (the First, surnamed “the Great”). c. 395 — 461 A.D.

Sermons and letters of his composition are extant.

Gaius Sollius Apollinaris Sidonius. c. 430 — c. 480 A.D.

A collection of his poems and nine books of letters are instructive for the life of his time in Gaul.

Blossius Æmilius Dracontius. 5th century A.D.

We have from him poems that are very creditable for this age, on mythological and Christian subjects, as well as two epithalamia.

Magnus Felix Ennodius. 473 — 521 A.D.

A prolific writer in several fields, whom we know through his letters, speeches, a panegyric, and numerous poems.

Anicius Manlius Torquatus Severinus Boethius. c. 480 — 524 A.D.

Translator of many Greek philosophical and mathematical books. His famous ‘Consolations of Philosophy’ is often accounted “the last work of Roman literature.”

Flavius Magnus Aurelius Cassiodorus Senator. c. 480 — c. 575 A.D.

Historical, theological, and encyclopedic works, a considerable portion of which has survived.

Priscianus. 6th century A.D.

Besides some unimportant works, we have his eight books on the Latin language, the most influential grammatical work in that tongue.

Venantius Honorius Clementianus Fortunatus. c. 535 — c. 600 A.D.

Best known through his epic poem on Saint Martin of Tours, although others have come down to us, together with lives of the Saints in prose.

Gregorius of Tours. 538 — 593 A.D.

Author of theological books, including lives of the Saints. Most important to us is his ‘History of the Franks’ in 10 books.

(Pope) Gregorius (the First). c. 540 — 604 A.D.

We have theological works composed by him, and over 800 letters of high value to the historian.

Isidorus (Bishop of Seville). c. 570 — c. 636.

A theological, historical, and grammatical writer of great influence upon the Middle Ages. Chief among the works which we have from him is his ‘Origines,’ in 20 books.

Walton Brooks McDaniel,
Asst. Prof. of Latin, Univ. of Pennsylvania.

Latins (*Latini*), the ancient inhabitants of Latium, in Italy. Janus, Saturn, Picus, and Faunus, who were deified by their subjects, are represented to have been the most ancient Latin kings. These ancient Latins formed a league of 30 cities, of which the town of Alba Longa became the head. Although Rome was a colony from Alba she became powerful enough in the reign of her third king, to seize upon that city, and raze it to the ground. Under Servius Tullius, Rome entered the Latin confederacy, and in the reign of his successor, Tarquinius Superbus, was acknowledged as head of the league. On the fall of the Tarquins the Latins regained their independence, and struggled long against the republic to maintain it; it was finally lost, however, by the decisive victory of the Romans near Mount Vesuvius (340 B.C.).

Lat′itude, a term used in astronomy and geography. The geocentric latitude of a heavenly body is its angular distance from the ecliptic, as seen from the earth's centre; its heliocentric latitude is its angular distance from the ecliptic, as seen from the sun's centre. The geographical latitude of a place is the altitude of the celestial pole above the horizon; or it is the arc of the celestial meridian intercepted between the zenith and the equator; its geocentric latitude is the angle at the earth's centre intercepted between the place and the terrestrial equator. To determine geographical latitude, the altitude of the pole is found indirectly from observations of a circumpolar star, or from meridian altitudes of the sun or known stars. At sea the sun's meridian altitude is observed with a sextant, its declination being given in the astronomical ephemeris. See also LONGITUDE.

Latitudina′rian, a term applied to those English divines of Charles II.'s time, who, from opposing strenuously both the High Church party and that of the Dissenters, incurred the enmity of both. It denotes one who commends or sanctions deviations from the strict principles of orthodoxy, and it is frequently used as a term of reproach.

Latium, lā′shĭ-ŭm, a name given to the residence of the Latins, in Central Italy, on the Tyrrhenian Sea, extending between Etruria and Campania. In the earliest times there was a large laurel grove situated on the coast, at the mouth of the Tiber, which extended as far as the city of Laurentum, to which it gave name. Farther on lay the little river Numicus and the sources of the Juturna; and still farther to the east was situated the city of Lavinium. Ancient Latium was much more thickly peopled and much more highly cultivated than the present Campagna di Roma, to which it pretty nearly corresponds; and it must have been healthier, though it was always considered an unhealthy region.

Latona, lā-tō′nạ, was the mother of Apollo and Artemis. During her pregnancy she was persecuted by Hera, by whose command the dragon Python threatened her with death, and the earth was not permitted to allow her a place for her delivery. After long wanderings she found rest on the floating island of Delos. The giant Tityus having attempted to offer her violence, was killed by Apollo and Artemis. Latona is represented as a mild, benevolent goddess, in a sea-green dress. With Artemis she cured the wounded Æneas, and crowned him with glory. When Artemis fled to Olympus from the anger of Hera, Latona carried to her her quiver and arrows, which she had left behind. She was worshipped chiefly in Lycia, Delos, Athens, and other cities of Greece. In Crete a festival was celebrated in honor of her, called *Ecdysia.*

Latour d'Auvergne-Corret, Théophile Malo de, tā′ō-fēl mä′lō dė lä-toor dō-vārn-yē-kor-rā, French soldier: b. Carhaix, Brittany, France, 23 Nov. 1743; d. Oberhausen, Bavaria, 27 June 1800. He early decided to become a soldier, and when the French Revolution broke out was among the first to rally round its standard, and distinguished himself in the army of the Pyrenees. Higher appointments were offered him but he declined, declaring that he was only fit to command a company of grenadiers, and was consequently named by Napoleon «First Grenadier of France.» His corps generally made the vanguard, and was called «the infernal column.» In 1799 he fought under Massena in Switzerland, and fell while attached to the army of the Rhine. His heart was embalmed and carried in a silver box by one of the company in which he had served; his name was always called, the oldest sergeant answering — «Died on the field of honor.» As an author he made himself known by a singular work on the early history of Brittany, entitled, ‹Nouvelles Recherches sur la Langue, l'Origine, et les Antiquités des Bretons› (1792).

La Trappe, lä träp, the name of a Cistercian abbey founded by Count Rotrou of Perche in 1140. It was known as Notre Dame de la Maison Dieu and from its situation in a damp unhealthy glen, accessible only by a narrow stony passage was called La Trappe («the trap»). The monks were as distinguished for austerity during the 14th and the 15th century as they subsequently became for licentiousness and violence when they were known as the «Bandits of La Trappe.» The monastery, however, passed into the hands of Armand Jean le Bouthilier de Rancé in the middle of the 17th century. This brilliant abbot had early abandoned himself to wordliness, but became converted, introduced Benedictine monks into La Trappe and enforced severe discipline. The brethren rose at 2 A.M., retired at 7, slept on straw, were forbidden wine and flesh, spent each evening some time in digging their own graves, and never spoke excepting to say to each other, «Memento mori.» Rancé discouraged literary pursuits but enforced constant manual labor; he died in 1700, and the Trappists were driven out of France by the Revolution. They founded a house at Valsainte, Switzerland, which was destroyed by the French in 1798, but they were again put in possession of La Trappe on the Restoration of the Bourbons. In 1829 the Trappist houses were closed by a royal decree, and all but nine monasteries were suppressed; these, however, were compelled to seek refuge in Algiers 1844, and the United States in 1848, where they established houses in Kentucky and Iowa. Consult: Gaillardin, ‹Les Trappistes ou l'Ordre de Citeaux au XIX. Siècle, Histoire de la Trappe depuis sa Fondation› (1844).

Latrobe, lạ-trōb′, **Benjamin Henry,** American architect: b. Yorkshire, England, 1 May 1764; d. New Orleans 3 Sept. 1820. He studied at the University of Leipsic, served in the Prussian army as cornet of hussars (1765–8), became an architect in England, in 1798 was appointed engineer of London, and came to Norfolk, Va., in 1796. He built the James

River-Appomattox canal and the Richmond penitentiary; removed to Philadelphia, and there designed the bank of the United States, the bank of Pennsylvania, the old Art Academy and other structures; and supplied the city with Schuylkill water in 1800. The Roman Catholic Cathedral at Baltimore is also his work. In 1803 he was appointed surveyor of public buildings in Washington, and later was chosen architect of the Capitol. He effectively introduced the natural products of the States as architectural features, particularly in the corn-stalk pillars with capitals of the ears. After the burning of the capital by the British in 1814, he was appointed to rebuild it, but in 1817 resigned.

Latrobe, John Hazlehurst Bonval, American lawyer: b. Philadelphia 4 May 1803; d. Baltimore 11 Sept. 1891. He was the son of Benjamin H. Latrobe (q.v.). He studied at the United States Military Academy, was called to the bar in 1825, from 1828 until his death was counsel for the Baltimore & Ohio Railway Company, was the founder of the Maryland institute, invented a stove commonly known as the «Baltimore heater,» was long identified with the American Colonization Society, and succeeded Henry Clay in its presidency in 1853. He also became president of the Maryland Historical Society, and published a ‹Biography of Charles Carroll of Carrollton› (1824), a ‹History of Mason and Dixon's Line› (1854), ‹Personal Recollections of the Baltimore & Ohio Railroad› (1858), and other works.

Latrobe, Pa., town and borough in Westmoreland County, on Loyalhanna Creek and on the Pennsylvania railroad, 40 miles east of Pittsburg. It is the centre of a large agricultural district. There are valuable deposits of coal and iron ores and mining is carried on to a considerable extent. Latrobe has a large number of manufactories, including steel works, cork works, paper, flour and lumber mills, glass-houses, brick-yards, etc. Pop. (1900) 4,614; (1903) 5,000.

Latro'bite, a mineral named after C. I. Latrobe. It is found massive and crystallized in forms belonging to the triclinic system; but the crystals are not well defined; color, pale pink; scratches glass; specific gravity, 2.8; opaque; lustre vitreous. It is composed of silica, alumina, and lime, being a rare variety of anorthite (q.v.) or lime feldspar. See FELDSPARS.

Latrodec'tus, a genus of spiders of the loose-web building family *Theridiidæ,* which contains certain large American species popularly considered poisonous, especially one (*L. mactans*) known in the tropics as the katipo. This spider, according to Emerton, is sometimes half an inch long, with a round abdomen and the whole body black except a bright red spot on the under side and one or more red spots over the spinnerets and along the middle of the back; the small and few males have in addition red vertical stripes on each side. This spider makes a large funnel-shaped nest among loose stones, which may spread out two or three feet. It is found all over the country from Canada to Argentina and Chile, and is everywhere feared, but there is no good reason for considering it any more poisonous than other spiders. Consult: Emerton. ‹The Common Spiders› (1902).

Lat'ten, a species of brass used in the Middle Ages for metal work. Mines of latten are mentioned as existing in the time of Henry VIII., and the metal is often alluded to in ancient public records, without students of antiquity being able to determine what metal is meant. Three varieties were distinguished, the *black,* the *shaven,* and the *roll.* That used by English workmen used to be imported from Germany and the Netherlands, the finest kind being known as Cologne plate. Latteners formed one of the recognized crafts of London. In some localities the term is still applied to plate-tin.

Latter Day Saints, The Reorganized Church of Jesus Christ of (anti-polygamist), a continuation of the Church which was organized at Fayette, N. Y., 6 April 1830, with six members. This organization was effected by Joseph Smith, Oliver Cowdery and others. Joseph Smith, who was chosen president, was born at Sharon, Vt., 23 Dec. 1805. Subsequently with his parents he removed to Palmyra, N. Y., where, on the occasion of a religious revival in 1820, while alone at prayer he was visited by a heavenly personage who forbade him joining any of the churches in the neighborhood, as their creeds were all wrong. On the night of 21 Sept. 1823 he was again visited by the angel who told him of gold plates containing an account of the former inhabitants of America, which, with the Urim and Thummim, were buried in a hill near by. He visited this place but was forbidden to remove them at that time. Exactly four years later he was allowed possession of them. With the aid of Oliver Cowdery and others as scribes, and the use of the Urim and Thummim, he completed the translation of the plates, or Book of Mormon, by June 1829. March 1830, three witnesses, Oliver Cowdery, David Whitmer and Martin Harris, were permitted to see and examine the plates. They signed a statement that the voice of God to them declared the record true. Eight other witnesses saw and handled the plates. All these witnesses continued to bear this testimony until death.

From the time of organization the church rapidly increased. In January 1831, the headquarters were established at Kirtland, Ohio; and in the following year a great many located in Jackson County, Missouri, which was appointed the place of Zion. Here they were persecuted and mobbed; and in the fall of 1833, driven from their homes by violence. Three years later, the exiles from Jackson County, joined by the Saints from Kirtland and the east, located in Caldwell County. In 1838 a religious persecution resulted in imprisoning the leaders and driving the body of the Church from the State. In the spring of 1839, no charges having been sustained against the leaders, they were permitted to escape, and soon joined the body of the Church near Quincy, Ill. They purchased the town of Commerce, afterward called Nauvoo, and rapidly gathered there. For five years they enjoyed comparative peace and prosperity.

On 27 June 1844, the Prophet Joseph Smith, and his brother Hyrum, were murdered by a mob at Carthage, Ill. This threw the Church into much confusion. The membership at this time numbered about 150,000. The quorums were as follows: (1) The First Presidency, consisting of the President and two counsellors, organized in 1833; (2) The Twelve Apostles organized in 1835, consisting at Joseph Smith's death of Brigham Young, president, Heber C. Kimball, Orson Hyde, Orson Pratt, William Smith, Parley P. Pratt, John Taylor, John E. Page, Wilford Woodruff, Willard Richards, George A. Smith, and Lyman Wight; (3) Seventies, composed of one or more quorums of missionaries of 70 men each, organized in 1835; (4) High Priests, a quorum without definite number, composed of local presidents; (5) Elders, organized into quorums of 96 each. Quorums of priests, 48 each; teachers 24 each; and deacons 12 each. The first bishop was Edward Partridge, ordained in 1831. He died at Nauvoo in 1840 and was succeeded in January 1841, by George Miller, who was acting in 1844.

The question now was, who should succeed Joseph Smith. The prophet himself had chosen and designated his son Joseph; but he, being only 12 years of age, a number of aspirants came forward, the more important being Sidney Rigdon, the only surviving member of the First Presidency; James J. Strang; William B. Smith, one of the Apostles, who, as brother of the prophet, claimed to be guardian for young Joseph, son of the prophet; and Brigham Young, who, together with eight other apostles, claimed the right of the Twelve to lead the Church. Young had the largest following; and in 1846 left Nauvoo for the West. (See MORMONS.) While at winter quarters near Council Bluffs, Iowa, in December 1847, he assumed the presidency of the Church, and led his followers to Salt Lake Valley, where he introduced such doctrines as Adam-God, blood atonement, and polygamy. None of these had been accepted by the Church, or taught by its authorities during the life of Joseph Smith.

In 1851, a number of persons and local organizations, some of whom had stood aloof from all factions, started a movement that resulted in a conference at Beloit, Wis., June 1852. This conference renounced all allegiance to Young, William Smith, Strang and others. At a conference 6 April 1853, seven apostles were chosen. Jason W. Briggs was chosen president and representative of the lawful heir in the presidency. Other officers were chosen, and thus the reorganization of the original Church was inaugurated. At a conference at Amboy, Ill., 6 April 1860, Joseph Smith, eldest son of the Prophet, accepted the presidency of the Church. 'The Saints' Herald,' the official publication of the Church, was commenced 1 Jan. 1860, at Cincinnati, Ohio. It was removed to Plano, Ill., March 1863. Since 1881 it has been published at Lamoni, Iowa. Joseph Smith has been its editor-in-chief since 1865. The Church held annual and semi-annual conferences until and including 1882, when the semi-annual were discontinued. The headquarters were at Plano, Ill., from 1863 to 1881; since then at Lamoni, Iowa. The quorums of the reorganization are organized in the same order which existed at the death of Joseph Smith. The doctrines are the same as promulged during his life, as follows:

> A belief in God the Eternal Father, his Son Jesus Christ, and the Holy Ghost.
>
> That men will be punished for their own sins, and not for Adam's transgression.
>
> That all men may be saved by obedience to the laws and ordinances of the gospel, namely, faith in God and the Lord Jesus Christ; repentance; baptism by immersion for the remission of sins; laying on of hands for the gift of the Holy Ghost; the resurrection of the body; that the dead in Christ will rise first; that men shall be judged, rewarded, or punished, according to the degree of good or evil they shall have done.
>
> That a man must be called of God, and ordained by the laying on of hands of those who are in authority, to entitle him to preach the Gospel, and administer in the ordinances thereof.
>
> In the same kind of organization that existed in the primitive Church.
>
> That in the Bible is contained the word of God, so far as it is translated correctly. That the canon of Scripture is not full, but that God, by His Spirit, will continue to reveal His word.
>
> In the powers and gifts of the everlasting gospel, namely, the gift of faith, discerning of spirits, prophecy, revelation, healing, visions, tongues, and the interpretation of tongues, wisdom, charity, brotherly love, etc.
>
> That marriage is ordained of God; and that the law of God provides for but one companion in wedlock, for either man or woman, except where the contract is broken by death or transgression.
>
> That the doctrines of a plurality and a community of wives are heresies. The Book of Mormon says: "Wherefore, my brethren, hear me, and hearken to the word of the Lord: For there shall not any man among you have save it be one wife, and concubines he shall have none.
>
> That the religion of Jesus Christ, will, if its precepts are accepted and obeyed, make men and women better in the domestic circle, and better citizens, and consequently better fitted for the change that cometh at death.
>
> That men should worship God in "Spirit and in truth;" and that such worship does not require a violation of the constitutional law of the land.

The Church has been more aggressive in its fight against the crime of polygamy than any other organization. The local work is divided into the following organizations according to reports of 1903: Two States, Lamoni, Iowa; and Independence, Mo.; both organized in 1901; 74 districts; 62 in the United States, 2 in Australia, 5 in England, 2 in Wales, 2 in Canada, and 1 in Nova Scotia. The reorganization supports Graceland College and a home for the aged, both at Lamoni, Iowa. The reorganization has a membership of about 50,000. It is prosecuting missionary work throughout the United States, the Canadas, Australia, New Zealand, Society Islands, Sandwich Islands, the British Isles, Scandinavia and other countries.

HEMAN C. SMITH, *Church Historian.*
By H. H. SMITH.

Latticeleaf, lăt'ĭs-lēf, or **Lattice-plant** (also called laceleaf and water-yam), a remarkable aquatic plant (*Aponogeton fenestralis*) of Madagascar, noteworthy for the structure of its leaves. The blade resembles latticework or open needlework, the longitudinal ribs being crossed by tendrils, and the interstices between them being open. The root, which is fleshy, and resembles that of the yam, is farinaceous and edible.

Laud, lâd, **William,** English prelate: b. Reading, Berkshire, 7 Oct. 1573; d. London 10 Jan. 1645. He was educated at Oxford; took priest's orders in 1601; became vicar of Stanford, Northamptonshire, 1607, and rector of West Tilbury, Essex, 1609; was made archdeacon of Huntingdon in 1615 and dean of Gloucester 1616, and as king's chaplain in 1617 accompanied James I. to Scotland, where he attempted to enforce Episcopacy with no success. In January 1621, he became a canon of Westminster and in the following June bishop of St. David's. After the accession of Charles I., Laud was translated in 1626 to the see of Bath and Wells, and in 1628 to that of London. In 1630 he was elected chancellor of the University of Oxford, which he enriched with a valuable collection of manuscripts, establishing also a professorship of Arabic. In 1633 he was promoted to the see of Canterbury. In 1634 he instituted rigorous proceedings against all who would not conform to the Church of England, and sought to extinguish all forms of dissent by means of fines, imprisonment, and exile. When the Long Parliament met (1640) the archbishop was impeached for high treason at the bar of the House of Lords by Denzil Holles and committed to the Tower. After three years he was brought to trial, but the lords deferred giving judgment. The House of Commons, however, passed a bill of attainder (January 1644), declared him guilty of high treason, and condemned him to death. He met his end on the scaffold at Tower Hill with great firmness. Consult: S. R. Gardiner, ‘The Personal Government of Charles I.’ (1871), and ‘The Fall of the Monarchy of Charles I.’ (1881); and ‘Lives’ by Hutton (1885); Benson (1887); Simpkinson (1894).

Laudanum, lâ'dạ-nŭm. See OPIUM.

Laudonnière, René de, rė-nā dė lō-dŏ-nẽ-ãr, French navigator. Nothing is known of the date of his birth or death. His first appearance is in 1562 when he shared in Ribault's attempt to establish a Huguenot colony at Port Royal in South Carolina. He built a fort and founded a colony in 1564 at a point 12 miles up the Saint John's River, Florida. But his colonists were more men of adventure than of industry and were much molested by the Indians. They eventually compelled him to sanction an expedition against the Spaniards in Cuba. But the colony fell subsequently into such straits that 3 Aug. 1565, when Capt. John Hawkins reached Fort Carolina, as they had named their settlement, he found them without supplies or ships. On 29 August Ribault arrived with seven ships and 300 men, and superseded Laudonnière, who was ordered home to defend himself against charges of treason and tyranny. In Ribault's absence the Spaniards attacked Fort Carolina and massacred the colonists. Laudonnière escaped, took refuge in England, and did not return to France till 1566.

Laughing Gas, a name given to nitrous oxide after its remarkable physiological effects were discovered by Sir Humphry Davy in his ‘Researches,’ published in 1800. The effects are generally of a pleasurable kind, and the person under the influence of the gas is more or less excited, dancing, singing, laughing, or indulging in other violent motions. This by prolonged inhalation ceases, and stupor and anæsthesia, or insensibility to pain, supervene. Hence the use of this gas in dental and surgical operations. See ANÆSTHETICS.

Laughing Jackass, the jackass-kingfisher (q.v.).

Laughing Philosopher, a characterization of Democritus of Miletus (q.v.). He laughed at the follies of man, and is distinguished by this epithet from the «weeping philosopher,» Heraclitus, who mourned for human depravity and infatuation.

Laughlin, lăf'lĭn, **James Laurence,** American political economist and educator: b. Deerfield, Ohio, 2 April 1850. He was graduated from Harvard in 1873. In 1878 was appointed instructor of political economy there and was assistant professor 1883–7. From 1887 to 1890 he was president of the Manufacturers' Mutual Insurance Company of Philadelphia; in 1890–2 professor of political economy at Cornell; and in 1892 became head professor of the same department in Chicago University. In later years he has given special attention to the study of financial questions; in 1894–5 he prepared a scheme of monetary reform for the San Domingo government which was later adopted; and he has been a member of the monetary commission created by the Indianapolis Monetary Conference in 1897. He is a member of the International Institute of Statistics and of the Political Economy Club, of which he was one of the founders. He has written: ‘Anglo-Saxon Legal Procedure in Anglo-Saxon Laws’ (1876); ‘Study of Political Economy’ (1885); ‘History of Bimetallism’ (1886), a comprehensive treatment of the subject; ‘Elements of Political Economy’ (1887); ‘Gold and Prices since 1873’ (1887); ‘Facts about Money’ (1895); ‘Report of Monetary Commission’ (1898); ‘Principles of Money’ (1902); ‘Reciprocity’ (1903); and has prepared an abridged edition of Mill's ‘Principles of Political Economy’ (1884) with a short biography and a sketch of the history of political economy. He is editor of the ‘Journal of Political Economy,’ and was one of the founders of the ‘Quarterly Journal of Economics’ to which he has contributed frequently.

Laughter, a movement of the muscles of the face, correlated with other movements of the entire body, usually indicative of mirth or happiness. The expression of laughter is not always indicative of a psychical appreciation of enjoyment, for it is well-known that idiots are prone to laughter which is often without any such significance. Many idiots constantly show a laughing countenance, the smile being more or less stereotyped; or they may grin, giggle, or chuckle at the slightest stimulus, whether of food, color, music, or personal contact. It is probable that in such cases laughter is purely an expression of physical contentment, rarely associated with higher or more complex ideas.

In children, laughter is more sensible, but the expressions of joy usually contain an element of uncontrolled exuberance. Thus they clap their hands, stamp their feet and jump around in pure excess of vital spirits. In adults the subject of laughter is extremely complex. As a rule, during laughter, the mouth is more or less open, the corners being drawn backward and usually somewhat upward. The upper lip is commonly raised. The drawing-back movement is seen best in the broad smile, or in moderate laughter; in out-and-out mirth the teeth are usually exposed by the raising of the upper lip. The cheeks are ordinarily drawn upward at the same time, and wrinkles are formed under the eyes. This movement in old persons makes a very characteristic feature, and the wrinkles so frequently found in their faces largely assist to interpret the sense of contentment indicated. Associated with laughter, there is often a change in the character of the eye. The bright and sparkling eye described by

Darwin and others who have devoted much time to this subject is the eye of laughter. Often tears suffuse the eyes and destroy this appearance of brightness, but this is usually due to excessive laughter.

Numerous signs are produced during these expressions of joy. During laughter, the movements of the chest and larynx are almost exactly opposite to those that accompany the screams and cries of distress. In these latter the expirations are prolonged and continuous, and the inspirations short and interrupted; whereas in joy the expirations are usually short and the inspirations long.

«In all races of men,» says Darwin, «the expression of good spirits seems to be the same, and it is easily recognized»; and he adds that «from the natives of New Zealand to the highly civilized Caucasian, much the same forms of emotional expression are to be observed.» Laughter is often an indication of general character; it is seldom two persons laugh exactly alike; and the study of laughter becomes a study of muscular movements. The «spontaneous, hearty laughter of sincere feeling is very different from the affected and constrained laughter of insanity.» Moreover, there are laughs which betoken peculiar constitutions of mind and character; laughs that are mechanical, nervous spasms, expressing nothing and expressed when there is nothing to laugh at, or perhaps something not to laugh at; laughs which, when they have not been acquired and are unconsciously formed, are signs of neurotic instability, but sure signs of guile when they are affected and consciously used — untrustworthy, anyhow, as laughter. Maudsley describes what he terms a «*quasi*-pathological laugh,» which is the abortive and incoherent laugh of the person of insane temperament, which is laughter pulled up abruptly, followed by a sudden facial seriousness, or a change which affects only a part of the features, while the rest are unmoved. Consult: Darwin, ‘Expression of the Emotions in Man and Animals’ (1892); Hughes, ‘Die Mimik des Menschen’ (1900).

Laugier, Paul Auguste Ernest, French astronomer: b. Paris 1812; d. 1872. He studied at the Polytechnique and at the Paris Observatory under Arago. In 1843 he was elected to the Academy of Sciences, and was afterward attached to the Bureau of Longitudes. He was favorably known for his work on the subjects of solar equator and sun-spots.

Laumontite, lâ′mȯn-tīt, one of the zeolite family of minerals. It usually occurs in masses made up of white, vitreous to pearly, monoclinic prisms. It is a hydrous silicate of aluminum and calcium, $H_4CaAl_2Si_4O_{14} + 2H_2O$. Upon exposure the normally colorless and transparent crystals quickly lose part of their water of crystallization and become white, opaque, brittle and much below the normal hardness of 3.5 to 4. Laumontite is rarer than most of the zeolites with which it is associated in many localities. Especially fine specimens are found at Nagyag, Transylvania, in Nova Scotia, New Jersey, Lake Superior, etc.

Laun, Friedrich, the pseudonym of the German novelist Friedrich Schulze (q.v.).

Launceston, läns′tȯn, England, a borough and market town in the county of Cornwall, 24 miles north by west of Plymouth, and 2 miles west of the Tamar. It is situated on the side of a hill, is generally well built, and has a fine church, built of granite in the 16th century and restored in 1852; several chapels; a guildhall in castellated style; a masonic hall; a town-hall (1887); excellent market-places; a grammar, national and board schools. There are ruins of the old castle, and of a fine priory. Agriculture, tanning, and iron-founding are the chief employments. From 1832 till 1885 Launceston returned a member to Parliament, and before 1832 it was represented by two members. This town was long the capital of Cornwall; but Bodmin is now the assize town. It gives name to one of the six parliament divisions. Pop. (1901) 4,053.

Launceston, Tasmania, city in the county of Cornwall, 133 miles north of Hobart, at the confluence of the North and South Esk rivers, the united stream taking after this the name of the Tamar, which is navigable up to the town from the sea, a distance of 40 miles. The streets are regularly laid out and lighted by electricity. The principal buildings are the town-hall; the Albert Hall; the mechanics' institute, with library; a Church of England grammar-school; Wesleyan Ladies' College; a convent school, and other educational institutions; a new post-office; a custom-house; a museum and art gallery; the Academy of Music; military barracks; jail and court-house; hospital, etc. Wheat, oats, peas, and potatoes are the chief crops grown in the neighborhood, but fruit culture is steadily extending. Pop. (1891) 17,208; (1901), with suburbs, 20,358.

Launch, (1) in ship-building, a term comprehending the apparatus for launching a ship. (2) The largest boat belonging to a ship of war. It is only used for service which cannot be performed by the smaller boats, being hoisted on board and kept on deck just abaft the foremast, where it serves as a receptacle for lumber and stores. In large men-of-war the launch is sometimes decked over, and is capable of mounting several light guns. The corresponding boat of merchant vessels is called the long boat. The launch is from 30 to 40 feet long, having a beam from .29 to .25 of its length. It has 10 or 12 oars, and is carvel-built.

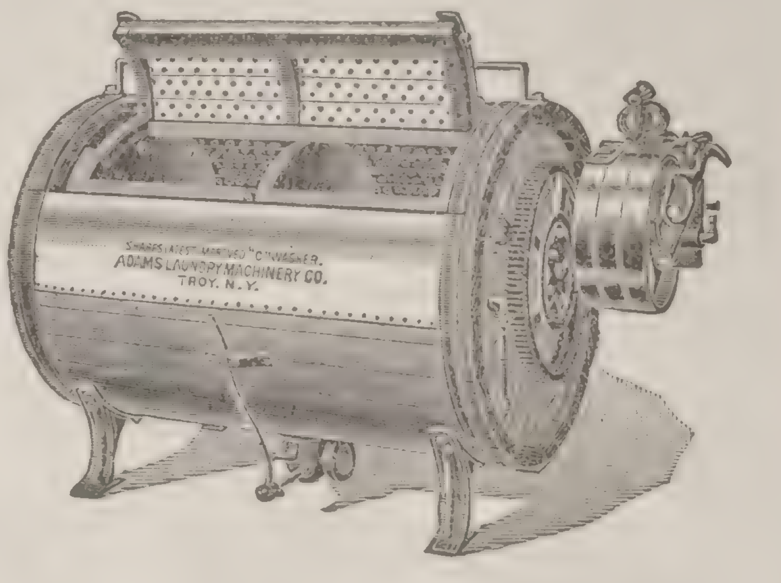
Launder, in mining, a wood water-gutter or pipe. A trough for conveying water to a stamp-mill or other hydraulic apparatus for comminuting or sorting ore. Also a trough or box to receive the slimes from the stamps.

Laundry Machinery. Laundry machinery as it is understood from the commercial standpoint, includes a class of mechanical devices developed during a comparatively recent period, to supplant the primitive processes of laundering that have existed during all time. While the use of laundry machinery in crude forms dates back for a considerable period, the past three or four decades mark the era of the development and manufacture of power machinery for laundering purposes, in a sufficient degree to warrant recognition as an independent branch of industry. This is due to the fact that the steam laundry is a modern institution; and the development and extent of manufacture of laundry machinery has gone hand in hand with the growth of the laundry interest. The steam laundry of to-day performs on a large scale, and by improved mechanical devices, the processes of cleansing, that for centuries had been confined to hand work in connection with the running stream, or the wash tub of later years. The growth of the laundry as an organized business has been so rapid during the past quarter of a century, that its changing needs have made, and still keep, the invention and production of laundry machinery in a state of constant development of new ideas and forms. So that while the laundry machinery business has passed the embryotic stage, it may fairly be said in the opening years of the 20th century to be in an era of great advance, holding and to hold a much more important position as an independent and recognized branch of mechanical industry. The city of Troy, N. Y. (the birthplace of the collar, cuff and shirt industry, as set forth in an article under that head) was practically the home, and for many years was the centre, of the steam laundry interests of the country; an interest which has now extended to every city or place of any importance in the land. So general is the recognition of this fact, that the name «Troy Laundry» is still retained by hundreds of laundries in various parts of the United States, and is even seen abroad. It was natural, therefore, that the earliest organized movement to produce the machines demanded for laundering purposes should have been made in Troy. That city has always been and still remains a strong factor in the laundry machinery industry, which, however, with its diversified and growing interests is now located and strongly intrenched in various sections. All the manufacturies of laundry machinery are, however, located east of the Mississippi River.

The introduction, use and development of laundry machinery has been much more rapid and general in the United States than in Europe. American manufacturers are competing actively for the trade of all foreign markets. The greatest limitation to the development of the trade abroad is the conservatism of foreign nations in adopting the more advanced methods of laundering calling for the modern types of American machinery. While there are very many forms of laundry machinery in use, the most prominent examples of the art are included in those that perform the three most important functions of laundering, namely washing, drying and ironing.

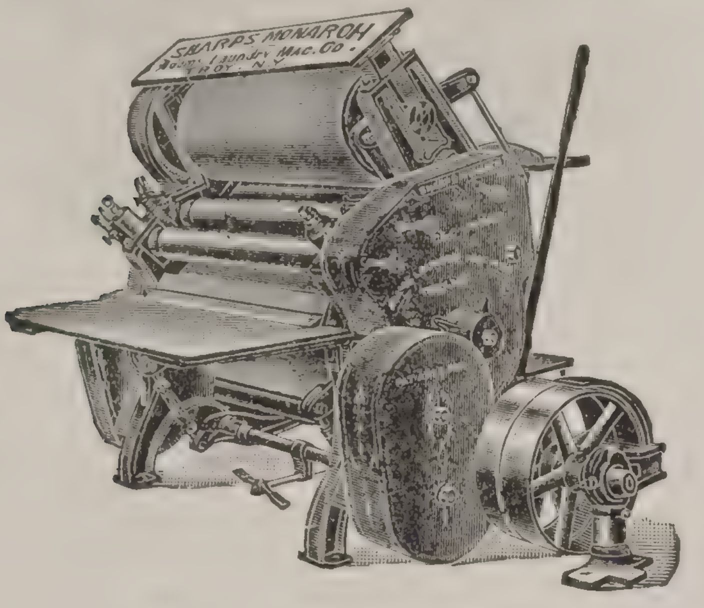
Washing Machines.— The first process, washing, is performed by two types of machines, the dash wheel and the reverse wheel. The dash wheel consists of a large cylinder divided into pockets by partitions and revolving in one direction inside of an outer case. This machine is used principally in new work laundries. The more generally used washer is the reverse wheel. In this the goods are placed in an inside cylinder having perforations to admit the free passage of water, steam and soap among the goods. This cylinder runs in an outside shell or case, the water and steam being let in by pipes, and by automatic reversing devices the inside cylinder revolves several times in one direction, then an equal number in the opposite one. This action loosens up the goods and subjects them freely to the action of water and soap, and so removes the dirt from the garments. The inside cylinders are made of wood or brass and the outside cases of wood, galvanized iron or brass.

Drying Machinery.— The next process is that of drying. The goods are first taken from the washer and placed in what is known as a wringer or centrifugal extractor. This machine consists of a perforated copper basket, revolving rapidly inside an iron or steel curl or case, and making from eight to fourteen hundred revolutions per minute. The water is thrown out through the perforations in the basket by centrifugal force, and in about twenty minutes the goods are ready to be taken out partially dried. The drying process is completed by the use of a dry-room. The improved types include the cabinet room, made up of a series of racks or trucks arranged with bars or hooks to hold the collars, cuffs, shirts or other garments, and running on tracks into a cabinet made of wood or metal. The heat is supplied by a series of steam coils arranged horizontally or longitudinally in the room. Fans are used to circulate the heat among the goods and accelerate the rapidity of the drying process. The most recent development of the drying art is the automatic dry room. In this the goods are hung on hooks attached to an endless chain or wire cable, which enters into and occupies the room in a series of loops, and passes out at the other end of the room. The goods are dried in one time of passage, and are removed from the hooks by an automatic device so that they fall dry, into baskets on the outside of the room.


ADAMS LAUNDRY MACHINERY CO.
TROY. N. Y.

Reverse Washer.

Ironing Machinery.— The third general division of laundry work is the ironing, for which many forms and styles of machines are used. For collars and cuffs, it is done on machines consisting of a combination of revolving covered drums coming in contact with revolving heated rolls, the goods being ironed as they pass through. The covered drum is wound with layers of felt, cotton flannel and muslin, forming a padding much the nature of that which covered the old-fashioned family ironing board. The heated rolls are highly polished and are heated by gas or steam. Formerly all these machines required the goods to be passed through several times for a perfect finish. The more modern types of ironers are known as «one pass machines.» These have a series of heated rolls and drums so that the collar is put in at the front of the machine and comes out at the back perfectly ironed. Some of these ironing machines of modern production have a capacity of from 250 to 300 dozen collars or cuffs per hour. The length of the ironing surface of the heated rolls of collar and cuff ironing machines of different sizes varies from 12 to 48 inches. For the ironing of flat pieces such as sheets, table linen and towels, a machine known as the mangle is used, by which the goods are dried on revolving cylinders heated by steam. In the recent types of mangles great capacity is attained; in some the length of ironing surface reaches ten feet and requires several operators to feed the machine. For shirts, a separate class of ironers is required. These are the bosom, body, sleeve and band ironers. The general principle and operation are, however, the same as in the collar and cuff ironers, previously described. The most recent development of shirt ironing machinery is a series of machines steam heated, and on which the finish is produced by pressing instead of ironing.



Collar and Cuff Ironer.

Other important machines not described above and which are used in laundering are starchers, shapers and dampeners. There are many other forms of laundry machinery made to cover parts of processes, and new forms and types are constantly being invented and put on the market.

JOHN T. BIRGE,
Vice-President and Treasurer, Adams Laundry Machinery Company.

Launitz, Robert Eberhard, Russian-American sculptor: b. Riga, Russia, 1806; d. New York 1870. He studied under Thorwaldsen in Rome; emigrated to America in 1828, and in 1833 became a member of the National Academy. Among his works are the Pulaski monument at Savannah, Ga., and the battle monument at Frankfort, Ky.

Laupen, low-pĕn, town in Canton of Bern, Switzerland, situated at the junction of the Sense and Saane, 10 miles southwest of Bern. It was the scene of a victory of Bern over Fribourg and allies in 1339.

Laura, the French lady celebrated by Petrarch as the object of his life-long passion: b. Eaumont, Provence, 1308; d. Avignon 6 April 1348. Petrarch has told us that he saw her for the first time in the Church of Santa Chiara at Avignon, on Good Friday 6 April 1327; that she was the mother of several children and died on Good Friday at the hour in which he had first seen her, and was the same evening laid to rest in the Franciscan Church. It would appear that Laura was the daughter of Audibert de Noyes and was married to Hugo de Sade and bore him 11 children. There is no ground for supposing that Laura was a mere creature of the poet's fancy. But consult: Minich, ‹Sulla Persona della Celebre Laura,› in ‹Atti dell Instituto Veneto› (Vol. IV., series 5, 1877–8); D'Ovidio, ‹Madonna Laura› (in the ‹Nuova Antologia› 15 July, and 1 Aug. 1888).

Laura, a small monastic community, such as was common in Egypt, Palestine and Syria. It formed a mean between the solitude of the hermitage, and the community life of the mediæval monastery. There was a superior, but no very definite rules. The cells were separately clustered like an encampment round the chapel. The brethren only met together twice a week, and subsisted on bread and water. Three monks occupied one cell, under Pachomius. A famous laura was founded by Chariton, a hermit, at Pharan near Jerusalem, and others in the 5th century by Sabas, a celebrated hermit. The Empress Eudocia, wife of Theodosius II. also instituted a laura. The derivation of the term laura is uncertain.

Laura'ceæ. See LAUREL.

Lauraguais, lō-rä-gü-ä', an ancient division of Languedoc, France, situated near Castelnandary. It now forms parts of the departments of Aude, Tarne, and Haute-Garonne.

Lau'reate, Poet. See POET LAUREATE.

Laurel, lâ'rĕl, Miss., town in Jones County, on the Gulf & S. I., and the New Orleans & N. W. R.R.'s. In 1890 this was a village of 100 people, while in 1903 it had 7,000 population. The town owes its beginning to the sawmills of Eastman, Gardiner & Company, and of the Kingston Lumber Company. These sawmills have timber sufficient to last them at least 25 years. Laurel has the following important industries in addition to its sawmills: Laurel Cotton Mill, having 10,000 spindles and 640 looms, and employing 400 hands; Laurel Oil & Fertilizer Company — using 40 tons of cotton-seed daily; Lindsey Wagon Company; Brick & Tile Company, having a capacity of 30,000 bricks per day, and Mississippi Knitting Mills, with a capacity of 125 pairs of hose per day. It also has many smaller factories, as a machine shop, foundry, cotton compress, ice factory and electric light and power plant. The town has two national banks.

Laurel, a tree or shrub of the order *Lauraceæ,* having alternate, simple, often evergreen, exstipulate leaves; panicles or umbels of perfect flowers and one-seeded drupes or berries. The species, of which there are about 1,000, mostly tropical, are divided into about 40 genera and are most largely represented in Brazil and southwestern Asia. Among the best-known American members are the red bay (*Persea carolinensis*), sassafras (*Sassafras officinale*), pond spice (*Litsea geniculata*) and wild allspice (*Lindera benzoin*), all of which are found east of the Mississippi. The tropical species are, however, more important. Among them are avocado or alligator pear (*Persea gratissima*), cinnamon, camphor-tree and cassia (*Cinnamomum*), and greenheart (*Nectandra rodiæ*). The name is usually restricted, however, to trees of the type-genus *Laurus,* the few species of which are natives of southwestern Asia, but have become naturalized in the Mediterranean region, and are characterized by dark, evergreen leaves, small, diœcious or perfect, inconspicuous flowers in little axillary umbels, and small, succulent, purple, cherry-like berries. They sometimes attain heights exceeding 50 feet, but are usually scarcely more than a third of this height. The most popular species is the poet's or wreath laurel (*L. nobilis*), called in America sweet-bay. See Bay.

Among the numerous other shrubs known as laurels are the mountain-laurel (q.v.) and other species of *Kalmia,* the Portugal laurel (*Prunus lusitanica*), the cherry-laurel (*Prunus laurocerasus* and *P. caroliniana*), and the ground-laurel (*Epigæa repens*), better known as "trailing arbutus."

Laurel-magnolia, the sweet-bay. See Bay.

Laurence, lâ′rĕns, **Saint,** Roman Christian martyr: d. Rome 10 Aug. 258. He was of Spanish race, and when, in the Valerian persecution Pope Sixtus II. was carried to martyrdom, Laurence as deacon and treasurer of the Church refused to give up the keys of the treasury, and according to tradition was put to death by being laid over a fire on bars of iron. The Escurial was built by Philip II. in fulfilment of a vow made on St. Laurence's day, 10 August, to the honor of that saint, the ground plan being after the pattern of a gridiron.

Laurence, Samuel, English painter: b. Guilford, Surrey, 1812; d. London 28 Feb. 1884. He was one of the most successful portrait painters of his day, and had as sitters many of his most eminent contemporaries; including Whewell, Browning, Carlyle, Dickens, Froude, F. D. Maurice, Thackeray, Tennyson and Lowell.

Laurens, lâ′rĕns, **Henry,** American patriot and statesman: b. Charleston, S. C., 1724; d. there 8 Dec. 1792. He was a mercantile clerk in London and Charleston, and in the latter place established a successful business. An opponent of royal aggression, he was involved in numerous disputes with the crown judges regarding their decisions in marine law and the admiralty courts. Having withdrawn from active business, in 1771 he went to England, and was there one of the 38 Americans who in 1774 signed a petition to advise Parliament against passing the Boston port-bill. In 1775 he became a member of the first South Carolina provincial congress, in 1776 vice-president of the council of safety in that colony, and from 1 Nov. 1777, to 10 Dec. 1778, was president of the Continental Congress in succession to Hancock. He sailed in 1779 as minister to Holland for the negotiation of a treaty with that country, but his packet, the Mercury, was captured by the British, he was examined by the privy council, and from 6 Oct. 1780 was imprisoned for about 15 months in the Tower on suspicion of high-treason. Having been exchanged for Cornwallis, he was sent to Paris, where with Adams, Franklin, and Jay, he signed the preliminary treaty of peace with Great Britain 30 Nov. 1782. His 'Correspondence,' edited by Moore, was published in 1861.

Laurens, Jean Paul, zhŏṅ pōl lō-rŏṅ, French artist: b. Fourquevaux, department of Haute-Garonne, in 1838. He studied in the Ecole des Beaux-Arts at Toulouse, and became a pupil of Cogniet and Bida in Paris. His work is distinguished for boldness and vigor, and the tragic elements of his subjects are heightened by the dramatic realism of the artist. In point of moderation in treatment, and of taste in coloring, his compositions have received some adverse criticism, but his powerful effects are not called in question. In 1891 he was elected a member of the Académie des Beaux-Arts and president of the Société des Artistes Français. Among his pieces are: 'Death of Tiberius' (1864); 'A Voice in the Desert' (1868); 'Execution of the Duc d'Enghien' (1872); 'The Pool of Bethesda' (1873); 'The Interdict' (1875); 'The Austrian General Staff around the Deathbed of General Marceau' (1877); and 'Napoleon and Pius VII. at Fontainebleau' (1894).

Laurens, John, American soldier: b. South Carolina 1753; d. there 27 Aug. 1782. He was the son of Henry Laurens (q.v.). He was educated in England, and in 1777 became an aide to Washington, whose secretary he also frequently was. From the battle of Brandywine (11 Sept. 1777), he participated, it is said, in all actions in which Washington commanded. He was severely wounded at Germantown, commanded the light infantry when the united American and French troops under Lincoln and D'Estaing attempted the capture of Savannah, and aided in the defense of Charleston when besieged by Clinton. In the spring of 1781 he was sent to France to obtain money and supplies. Contrary to diplomatic precedent, he requested and obtained an audience with the king, and secured the necessary assistance. He captured one of the two redoubts at Yorktown, and received Cornwallis' sword. He was killed in a skirmish on the Combahee River, S. C. What Washington called his "intrepidity bordering on rashness" won for him the sobriquet of "the Bayard of the Revolution." His correspondence, with a memoir by William Gilmore Simms, was privately printed in 1867.

Laurens, Joseph Augustin Jules, zhō-zĕf ō-güs-tăṅ zhül lō-rŏṅ, French painter: b. Carpentras 1825. After studying painting under Delaroche, he traveled in Persia, Turkey, and Asia Minor. As a landscape painter he obtained wide recognition and was also highly successful in his lithographic copies of Diaz, Bonheur, Corot, Tryon, etc. His pictures in color include: 'Vue de la Grande Chartreuse' (1840); 'Les Environs de Vaucluse' (1845); 'Forêt de Fontainebleau'; 'L'Hiver en Perse' (1867); and 'Le Rocher de Vannes' (1897); which last is in the Luxembourg. He has published with original illustrations 'Voyage en Turquie et en Perse' (1856).

Laurent, Auguste, ō-güst lō-rŏṅ, French chemist: b. La Folie, Haute-Saône, 14 Nov. 1807; d. Paris 15 April 1863. In 1838 he became professor to the Academy of Sciences of Bordeaux, which post he held for eight years. In 1848 he was made assayer to the mint and chemical adviser of the minister of war. His researches were very numerous, embracing all departments of the science, organic and inorganic, and opening up new fields and new views. He was one of the champions of the unitary system against the dualistic held by most of the chemists of the time. He was opposed also to the electro-chemical theory, which his investigations into the derivatives of naphthaline did so much to shake, and maintained the doctrine of types — forms of constitution of bodies which admitted of parts being substituted by other elemental or compound substances without the type of the original body being altered. His views on general chemical theory appeared in a posthumous work entitled ‘Méthode de Chimie,’ translated into English by Odling, and published by the Cavendish Society 1855.

Laurentian (lâ-rĕn′shĭ-ăn) **Mountains,** a range in British North America, extending for over 3,000 miles from Labrador to the Arctic Ocean, forming the watershed between Hudson Bay, the Saint Lawrence, and the Great Lakes, and dividing the same bay from the sources of the Mackenzie River. The average elevation of this range is about 1,500 feet, while some of the peaks attain a height of 4,000 feet. The rock formation belongs to the sedimentary deposits known as the Laurentian system.

Laurentian System. The term Laurentian has been applied by certain Canadian geologists to a great series of rocks, partly of sedimentary and partly of igneous origin, that is typically developed on the Laurentian Hills north of the St. Lawrence River. Similar rocks occur elsewhere along the Height of Land, from Labrador to the western end of Lake Superior. The rocks are of very ancient date, but the exact significance of the term Laurentian as a time division or as a lithologic name is in dispute. The typical Laurentian includes a series of gneisses, mica schists, quartzites and crystalline limestones with intrusive granites and green stones. The total thickness may be 30,000 feet. The term Laurentian is little used by American geologists, and about all that can be said of the age of the Laurentian rocks as a whole is that they are certainly pre-Cambrian.

Lauric Acid, or **Dodecoic Acid,** a fatty acid occurring (as glyceryl ether) in the berries of the bay-tree (*Laurus nobilis*), in pichurim beans, in cocoanut oil, and elsewhere. It may be prepared from the oils in which it occurs by saponification, followed by the fractional precipitation of the acids by means of barium acetate. Lauric acid has the formula $C_{12}H_{24}O_2$, and is insoluble in water, but very soluble in both alcohol and ether. From its solution in alcohol it crystallizes in the form of silky needles, melting at 110° F. With the metals it forms a series of salts called laurates, which, with the exception of barium laurate and the laurates of the alkali metals, are mostly insoluble in water. The glyceryl ether (also known as trilaurin, or laurostearin), has the formula $C_3H_5(C_{12}H_{23}O_2)_3$, melts at 113° F., and may be obtained from bay-berries by extraction with alcohol.

Laurie, low′rĭ, **Simon Somerville,** Scottish educator: b. Edinburgh 13 Nov. 1829. He was educated at the University of Edinburgh; for five years was a teacher on the Continent; and returning to Scotland held important positions in connection with education. In 1876 he was appointed to the professorship of the institutes and history of education in the University of Edinburgh. He has published many works, among which are: ‘Philosophy of Ethics’ (1866); ‘Language and Linguistic Method in the School’ (1890, 3d ed. 1899); and ‘Historical Survey of Pre-Christian Education’ (1895, 2d ed. 1900).

Laurier, lō′rĭ-ā, Sir **Wilfrid,** Canadian political leader: b. St. Lin, L'Assomption County, Quebec, 20 Nov. 1841. He studied at L'Assomption College and law at McGill University (Montreal); in 1865 and 1866 was a vice-president of the Institut Canadien (Montreal), which formed the nucleus of a movement toward intellectual liberalism on the part of the younger French and was strongly opposed by the clergy; and in 1866 opened a law office at Arthabaskaville. In 1871 he was elected to the Quebec legislature, where his first speech was considered as a national event by his countrymen, and in 1874 was chosen at the general election to the Ottawa House of Commons for the Drummond and Arthabaska district. He was soon recognized as one of the most eloquent speakers of the Canadian Parliament and became the first. His speeches on certain questions were considered by many as the best which had ever been delivered in the House. At the outset he was regarded as the leader of the Liberals in Quebec province, and in 1877 was selected for the portfolio of inland revenue in the Mackenzie administration. In 1878 he retired upon the return to power of Sir John Macdonald and the Conservatives. On 7 June 1887, he succeeded Blake as chief of the Liberal opposition, though he himself advised the choice of an English-speaking Protestant; and in 1896 he became the first French-Canadian premier of the Dominion. In that post he has observed a policy of discrimination in favor of British products and of protection against the United States for at least so long as Canadian products are denied American markets. He has rendered great service through his strong opposition to antagonisms of creed and race. Of all the representatives of the colonies in England on the occasions of the Queen's Jubilee and of the coronation of Edward VII., he was the most remarked by the refinement of his manners and of his eloquence, and was recognized in Paris as in London as one of the most eloquent speakers of our time either in French or in English. While a great admirer of England's political institutions, he is an ardent Canadian and a thorough believer in Canada's destiny. He opposed the imperialistic policy of Chamberlain and contributed more than any other man to prevent him from drawing the colonies into the «vortex of warlike imperialism,» to use his expression. He has had to pass through all kinds of political and religious difficulties, and has given evidence of qualities and talent which would have made him distinguished as a speaker and a statesman in any country of the world.

Consult his ‘Speeches,’ edited by Barthe (1890); Willison, ‘Sir Wilfrid Laurier and the Liberal Party’ (1903); and Daniel, ‘Laurier and His Time.’

Laurium, lâ′rĭ-ŭm, Mich., village in Houghton County; on the Copper R. and Mineral R. R.R.'s. It adjoins Calumet, and is 7 miles from Lake Superior and 12 miles north by east from Houghton. It is situated in the Keweenaw Peninsula, in the northern part of the State, in one of the richest copper regions of the United States. There is considerable local trade. Copper mining is the chief occupation. Pop. (1903) 9,000.

Laut, Agnes C., Canadian author: b. Ontario 11 Feb. 1872. In childhood she was taken to Winnipeg. She entered Manitoba University and studied there into the junior year, during which she withdrew on account of ill health, afterward spending her summers in the Rocky and Selkirk mountains. In 1895–7 she was an editorial writer for the Manitoba *Free Press,* Winnipeg; subsequently became correspondent of Canadian and English papers and of newspapers and magazines in the United States. She has written ‘Lords of the North’ (1900); ‘Heralds of Empire’ (1902); and ‘The Story of the Trapper’ (1902).

Lauzon, Jean de, zhŏṅ dė lō-zŏṅ, French colonial administrator: b. 1582; d. 1666. He was a member of the Hundred Associates, who organized to promote the settlement of New France. He seems to have directed most of his energies toward acquiring landed property in Canada for himself and his family, and gained for his son the sole right of fishing on 60 leagues of the St. Lawrence, with a title to the adjacent lands. His own title to the island of Montreal he sold to the Jesuits. He was for five years governor of New France (1651–5), but his policy was feeble and short-sighted. He returned to France before his second term was over.

Laval-Montmorency, François Xavier de, fraṅ-swä ksăv-ē-ā dė lä-väl-môṅ-mō-rŏṅ-sē, French Roman Catholic prelate: b. Laval, France, 30 April 1623; d. Quebec 6 May 1708. He became a priest in 1645, and in 1651 was appointed missionary bishop of Cochin-China, a post which he declined to become archdeacon of Evreux. In 1659 he came to Canada as apostolic vicar, with the dignity of bishop of Petra *in partibus.* There he established (1663) the Quebec Seminary. In 1674–83 he was titular bishop of Quebec. He was an active and influential figure in governmental affairs. Laval University at Quebec is named in his honor.

Laval University, Montreal, Canada, was founded at Quebec, in 1852, by the seminary of that city, which gave it the name of its own founder, Mgr. François de Montmorency-Laval, first bishop of Quebec. The directors of this institution obtained then from Her Majesty Queen Victoria a charter which in confirming the rights and privileges they had enjoyed up to that time also conferred upon them university rights and privileges, for the instruction of youth in secondary and professional studies.

In 1876, following a request from Mgr. Bourget, bishop of Montreal, to secure a Catholic university in his episcopal city, the Sacred Congregation of the Propaganda enjoined Laval University to establish a branch at Montreal, to give therein the same instruction as at Quebec. This curriculum was inaugurated in 1878, in the faculties of Theology and Law, in 1879 in the faculty of Medicine, and in 1887 in the faculty of Arts. By virtue of the apostolic constitution Jamdudum, of 2 Feb. 1889, the branch is to-day practically independent of the establishment at Quebec. It receives its degrees from that University Council, but enjoys its own government and a complete local administration. It comprises four faculties, those of theology, law, medicine and of arts (sciences and letters), three aggregated schools, the Polytechnic, the School of Comparative Medicine and Veterinary Science of Montreal, and that of Dental Surgery. The French language is used in all sections except that of Theology, where Latin prevails. The professors of the faculty of Theology are appointed by the Grand Seminary of Montreal, directed by the priests of Saint Sulpice. The ordinary course is three years and three months. Some pupils prolong their stay six months to prepare themselves for doctorship. A greater number, after completing their course at Montreal, go to take their degrees in Rome, where the Seminary of Saint Sulpice of Montreal, has opened a college for Canadian students.

The faculties of Law and Medicine are installed in an edifice on Saint Denis Street, where they have large class rooms, sectional libraries, play rooms, a gymnasium, etc. The faculty of medicine has a lecture room, a dissecting room and four laboratories, for chemistry, histology, bacteriology, and medical electricity. The present faculty of Medicine continues the School of Medicine and Surgery of Montreal, founded in 1845 and affiliated to the Victoria University, of Coburg (Ontario), from which it received its degrees until the year 1890. At this period the school had its charter modified by the Quebec government and allied itself to the Montreal section of the faculty of Medicine of Laval University, with which to-day it forms one body. It receives its degrees from Laval University, but has maintained its charter and autonomy.

As the scientific and literary course which is usually followed by this faculty in the English universities is given, in this province, to Catholic youths by the colleges and seminary schools affiliated to Laval University, where the pupils obtain the degrees of bachelor of letters, of sciences or arts, a complete instruction of this kind is not imposed on the University. Two courses relevant to this faculty, are actually given there, that of French Literature, founded in 1898, by the late Abbe Colin, superior of the seminary of Saint Sulpice of Montreal. Up to that time this course had been given by a Fellow of the Paris University. The second course has for its object Ecclesiastical Public Law, and comprises 20 lessons. The other professors, ecclesiastic or lay, of the Faculty of Arts give a regular course in the colleges affiliated to the University, or are occasionally called to give public conferences at the University.

The Polytechnic School of Montreal, founded in 1874 and aggregated to Laval University in 1887, is largely supported by the government of the Province of Quebec. It corresponds by the nature of its curriculum, to the faculty of applied science in other universities. It prepares for the different branches of civil and industrial engineering, such as public works, railways, engines, mines, bridges, and steel construction, etc.

The School of Comparative Medicine and Veterinary Science of Montreal exists since 1886. Aggregated to the University, it is under the control and submissive to the inspection of the Minister of Agriculture of the Government of Quebec, from which it receives a grant. Its system requires a three years' course and the final degree is that of doctor of veterinary medicine. The school has a very interesting pathological museum at the University. The number of pupils, nearly all from this province, is not great, but it tends to increase as the farmers are beginning to recognize the value of the services which can be rendered them by veterinary doctors, who are well up in their profession. The School of Dental Surgery of Montreal is the continuation of the French section of the College of Dentistry of the Province of Quebec founded in 1894. It was affiliated to Laval University in February 1904, and obtained legal existence by an act of the Legislature of Quebec, in the month of May of the same year. This school, intended for the French Canadian youth of this country and the need for which arose from the rapid progress Dental Surgery has made within the past few years, is now launched, left to its own resources and depending solely on the devotedness of its professors. The course covers a period of four years and the final degree is that of Doctor of Dental Surgery. The Infirmary is open every day from 1 October to 1 April, from 9 A.M. until noon, and the poor receive, under the direction of competent professors, gratuitous attention or at a slight outlay to cover the cost of material. An ecclesiastical vice-rector, chosen by the bishops of the province of Montreal is appointed by the University Council of Quebec. He represents, for discipline and general administration the University, the Corporation of Administrators and the Bureau of Governors; an executive committee of five members, delegated by the bureau, assists him in the management of current affairs and in the execution of the decisions of the Corporation and Bureau.

The Archbishop of Montreal, by rank of vice-chancellor, controls the nomination and dismissal of the professors, and exercises a strict surveillance over doctrine and discipline. He is by right the president of the Corporation of Administrators, which owns the University and manages its finances. The suffragan bishops of the ecclesiastical province of Montreal, the delegates of all the affiliated colleges and seminaries, of the same province, the delegates of faculties and former graduates also sit in this corporation, which generally operates through a bureau of governors, composed of eminent personages in finance and the liberal professions.

G. BOURASSA,
Secretary of the University.

Laval University, Quebec, Canada. The first establishment of higher education in Lower Canada was founded in 1852. The directors of the Seminary of Quebec, the pioneer institute in the educational field, secured from her majesty, Queen Victoria, a charter which conferred on the seminary the privileges of a university. A petition signed by the archbishop and bishops of the ecclesiastical province of Upper and Lower Canada was presented at Rome, requesting that the Seminary of Quebec be accorded the customary rights of a Catholic university, and in particular that of conferring diplomas in Theology and Canon Law. Pius X. did not at once grant what was asked. At that time Great Britain refused to recognize the ecclesiastical titles given by the Holy See; she also denied legal existence to the Catholic University of Dublin, and they feared in Rome that the foundation of a Catholic university in Quebec would prove an impossibility. For this reason they wished to be assured of the grant of a royal charter before they extended canonical privileges. As soon as the official document was received from London, which was towards the end of December 1852, an authentic copy was forwarded to Rome and on 6 March 1853 the Holy Father sent a brief which granted to the Archbishop of Quebec the right to confer theological degrees upon those who completed their ecclesiastical studies at the Quebec University.

In the Royal Charter, the Roman Catholic Archbishop of Quebec, by virtue of his office, is named the visitor of the university, which shows the broad-mindedness of the English government which permitted the French-Canadian Catholics to organize their university teaching without any control save that of an archbishop of their own nationality and faith. The state renounced all interference in questions of programme or inspection. The visitor received the most extensive powers, he was given the right to veto on all regulations and nominations, and on presentation of the council, he could appoint the professors of the Faculty of Theology. As to the office of rector, the highest in the university, it devolves, by right, by the terms of the charter upon the superior of the Seminary of Quebec. This office is, therefore, essentially temporary, since the superior of the seminary, elected for three years and re-eligible after the first triennial, cannot occupy the post entrusted to him longer than six consecutive years, unless a special authorization be accorded by ecclesiastical authority.

The charter also provides for the establishment of a council which conjointly with the rector administers the affairs of the university. This council is composed of all the directors of the seminary and of the three oldest titulary professors of each faculty. It has the power to make the statutes and regulations which it may judge suitable, with one condition, that these statutes and regulations contain nothing contrary to the laws of the United Kingdom or of Canada.

This council held its first session on 21 Feb. 1853, when it resolved that Laval University should include four faculties: those of Theology, Law, Medicine, and Arts. Each faculty is provided with a special council which discusses and submits to the university council all questions which may directly interest one or the other of these faculties.

The Faculty of Theology was not immediately created at Quebec. The number of aspirants to the priesthood was limited and the needs of the parochial ministry so urgent and so multitudinous that the seminarians could not be allowed the time to devote themselves freely to the study of the higher ecclesiastical sciences. It was only in the year 1866 that the basis of a Faculty of Theology was laid. The Faculty of Medicine, on the contrary, was organized and put in motion in the year 1853. A School of Medicine already existed in Quebec. The directors of the university found therein a certain number of professors who were prepared to give medical instruction. The School of Medicine was willing to efface itself and make way for the budding faculty of Laval, and six of its professors resigned and accepted professorships at the university. The course in Medicine was fixed at four years. As there were two large hospitals in Quebec, those of the Hotel-Dieu and the Navy, the students of the faculty were enabled to follow numerous and various clinics.

It was not such an easy task to organize a Faculty of Law, and in the year 1854 the first steps towards this end were taken. However, of all the branches of the University, teaching of law was the one for which the greatest need existed, as there was no school of law in Quebec. There were many distinguished lawyers who could have filled professorships but, they lacked the enthusiasm to devote themselves to teaching and were not willing to sacrifice, however little, without sufficient compensation, a numerous clientele. There was great difficulty in realizing the plan first conceived. After various proceedings, two professors were found, one being a judge of the Superior Court, who was named dean. In 1855 the university council was able to add four other representatives to the Faculty of Law. Unfortunately the greatest number of these professors were prevented by reason of their external occupations, from preparing and giving their courses so much so that during several years the teaching of the Faculty of Laws was limited to the courses of Civil and Roman Law. In 1857, it was necessary to call a professor from France to give lectures on Roman law.

The Faculty of Arts was to be the least favored of all the faculties. The students who had received at the colleges and seminaries the basis of a literary or scientific education were not inclined to further pursue these studies. Being obliged to earn a livelihood by entering one or the other of the liberal professions they commenced their studies in Theology, Law or Medicine immediately upon terminating their classical course. They had neither time nor money to devote to the study of the higher branches of letters and sciences. For this reason Laval University did not deem it opportune to establish, in the first years of its existence, professorships of advanced instruction in the Faculty of Arts. In 1855 a Faculty of Arts was outlined.

Laval University had by virtue of its charter the power to confer diplomas of bachelor, licentiate, or master, and of doctor in the Faculties of Law, Medicine and Arts. It could not confer degrees in Theology. The papal brief accorded by Pius IX. granted this privilege to the Archbishop of Quebec. The university did not receive all the rights of a canonical university until the year 1876.

In 1870 the Faculty of Medicine of Laval had the favor and honor of being affiliated to the Royal College of Surgeons of London. This granted the university and the students of the Faculty of Medicine the following privileges: (1) The enrollment examination of Laval University is recognized as equivalent to the preliminary examination of the Royal College of Surgeons of London; (2) the certificates of assiduity gained by enrolled students of the medical course are recognized by the Royal College; (3) Doctors in Medicine of Laval University are admitted to the examination for diploma as member of the Royal College of Surgeons of London.

In 1865 the rector asked and obtained from Rome an indult which gave the Archbishop of Quebec the power to confer degrees in Theology upon all students of the grand seminaries of the Canadian province. In 1866 Laval University organized its Faculty of Theology.

The library of the Quebec Seminary included at the time of the foundation of the university over 15,000 volumes, 1,000 volumes for the Faculty of Law, and 2,000 volumes for the Faculty of Medicine, were then added. In 1876 this library contained about 55,000 volumes. At the present time it contains over 140,000. The seminary cabinet of physics is one of the most complete in America.

In 1897–8 a bacteriological laboratory was installed and in the following year a laboratory in experimental chemistry for analytical work was placed at the disposal of the students. The university has a number of splendid museums as follows: (1) Invertebrate Museum, comprised of several distinct collections. The entomological collection numbers over 14,000 specimens of insects from all parts of the world. The Conchyliological collection contains nearly 1,000 species of Canadian and foreign mollusks. (2) Museum of Ethnology, in three divisions: (a) the Indian collection; (b) the Chinese and Japanese collection; (c) the general collection. (3) Religious Museum, containing religious souvenirs, etc., and particularly the lead tomb with remains of the wooden coffin in which reposed for nearly two centuries the remains of Francis de Laval, first Catholic bishop of Canada and founder of Quebec Seminary. (4) Museum of Paintings, containing many old and valuable paintings by the old masters. (5) Mineralogical and Geological Museum, containing over 5,000 specimens. (6) Botanical Museum; (7) Zoological Museum; (8) Numismatic Museum containing over 3,000 coins and medals.

The Faculty of Theology numbers (1904) over 120 students. In 1902, 84 students enrolled and followed the course of the Faculty of Law and 97 students that of Medicine.

O. E. Mathieu, Ptre,
Rector of the University.

La Vallière, Louise Françoise de la Baume le Blanc de, loo-ēz frän-swäz dė lä bōm lė blän dė lä vä-lē-ār, French mistress of Louis XIV.: b. Tours 7 Aug. 1644; d. Paris 6 June 1710. She was descended from an ancient and noble family, and in 1661 was brought to court by her mother, where Louis presently noticed her. Her manners were amiable and winning, and her sweet and tender disposition rendered her attractive. What is still more extraordinary, notwithstanding her equivocal position, she possessed extreme, indeed morbid, delicacy and modesty. She bore Louis four children, but was always painfully sensible of the disgrace of their birth. Two of them died in infancy. When superseded by Madame de Montespan she retired into the Carmelite convent in the suburb of St. Jacques, where she took the veil in 1675. She is considered the author of 'Réflexions sur la Miséricorde de Dieu' (1680), a copy of which dated 1688, with corrections by Bossuet, was discovered in the Louvre in 1852. A collection of her letters was published in 1767. Madame de Genlis wrote a historical romance founded on the events of her life, and Lebrun executed a penitent Magdalene, of which the face is from her portrait.

Lavater, Johann Kaspar, yō′hän käs′pär lä′vä-tĕr, Swiss physiognomist: b. Zürich 15 Nov. 1741; d. 2 Jan. 1801. As a youth he was not distinguished for studious methods, but early manifested a fervent piety and remarkable powers of persuasion in public discourse. He developed a distinct poetic gift, and was first known through his verses in 1767. Two years later he took orders, became pastor of a Zürich church in 1764, and served in that calling with different churches in his native city until his death. He also enjoyed a contemporary popularity through his mystical writings, now almost forgotten. He is best remembered as the originator of a system of physiognomy, which, although of little practical account to-day, is often referred to by students and writers. The book in which he set forth his system is entitled ‘Physiognomische Fragmente zur Beförderung der Menschenkenntniss und Menschenliebe’ (‘Physiognomical Fragments for the Promotion of a Knowledge of Man and of Love of Man,’ 1775–8). It was ornately published, with a profusion of striking illustrations, including portraits of distinguished persons, features to which its fame is considered to have been largely due. Yet Lavater's observations display a penetration and insight into human nature and its varying traits which entitle him to some consideration as scientist and philosopher, and there is a residue of his teachings which the inquiring world still appreciates. He enjoyed an intimate acquaintance with Goethe, who contributed to the ‘Fragments’ a chapter on the skulls of animals, and strikingly portrayed Lavater in ‘Wahrheit und Dichtung.’ Goethe afterward became estranged from him, accusing him, not without some grounds, of hypocrisy and superstition, but probably in fact repelled by Lavater's intellectual bigotry. Still Lavater was a man of large and open heart, personally and socially as hospitable as he was mentally intolerant, and with characteristics of true saintliness. During the French occupation of Switzerland he gave proof of his patriotism, and his death resulted from a wound inflicted by a French soldier at the capture of Zürich in 1799. There are several English translations of the ‘Fragments.’ Consult: Lives by Gessner (1802), Heisch (English, 1842), Muncker (1883); and monographs by Steck (1884) and Von der Hellen (1888). See PHYSIOGNOMY.

Lavedan, Henri, ŏn-rē lä-vė-däṅ, French journalist, critic, novelist, and playwright: b. Orleans 1860. He contributed under the pseudonym of «Manchecourt» a series of brilliant articles to ‘Vie Parisienne,’ ‘Gil Blas,’ etc., and in fiction has published: ‘Mam'zelle Virtue’ (1885); ‘Queen Janvier’ (1886); ‘Lydie’ (1887); ‘Inconsolable’ (1888); ‘High Life’ (1891); ‘A New Game’ (1892). Among his plays the most notable are: ‘A Family’ (1890), awarded a prize of 4,000 francs by the French Academy; and ‘Prince d'Aurec’ (acted in 1892).

Laveleye, Emile Louis Victor de, ā-mēl loo-ē vēk-tōr dė läv-lā, Belgian political economist: b. Bruges 5 April 1822; d. Doyon, near Liège, 3 Jan. 1892. He was educated at the Collège Stanislas, Paris, and at the University of Ghent, where he studied law, and in 1864 became professor of political economy in the University of Liège. Among his numerous writings are: ‘History of the Provençal Language and Literature’ (1846); ‘The Question of Gold’ (1860); ‘Property and its Primitive Forms’ (1874), his best known work; ‘The Religious Conflict in Europe’ (1875); ‘Contemporary Socialism’ (1881); ‘Elements of Political Economy’ (1882); ‘Money and International Bimetallism’ (1891); ‘Government in Democracies’ (1891).

Lav′ender, a genus (*Lavandula*) of perennial herbs, sub-shrubs and shrubs of the order *Labiatæ,* consisting of about 20 species, native to the Mediterranean region and southwestern Asia. The best known are true lavender (*L. vera*) and spike lavender (*L. spica*), which like other members of the genus have narrow leaves crowded near the ground, and blue or violet two-lipped flowers in whorls which form more or less interrupted spikes. All the lavenders contain similar volatile oils (oil of lavender, oil of spike, etc.), for which the plants are cultivated, and which are obtained from the flowers by distillation with water. The principal use of these oils is in perfumery, but they have been used in medicine as stimulants, tonics and stomachics. The dried flowers are placed with clothing laid away in bureaus and chests, partly because their aroma repels moths, but chiefly for the sake of the pleasant odor imparted to the garments. The perfume called lavender water is a solution of oil of lavender in spirit, along with attar of roses, bergamot, musk, cloves, rosemary, and other ingredients, which after standing for some time is strained and mixed with a certain proportion of distilled water. Lavender plants do not thrive as well in America as in English gardens, but succeed best in light, dry, friable soil, well exposed to the sun. They are best propagated by means of cuttings of one year's growth; seeds are unreliable, since they are slow to germinate and usually produce plants of inferior quality.

Laveran, Charles Louis Alphonse, shärl loo-ē äl-fôṅs lä-vė-räṅ, French physician: b. Paris 1845. He was graduated at the School of Military Medicine of Strasburg in 1867. In 1873 he was made a member of the faculty of Val de Grace, and after traveling in Algeria, was appointed professor of military hygiene and clinical medicine in that institution. In 1894 he was appointed director of the Eleventh corps in the Army Medical Service, and subsequently physician-in-chief of the Lille Hospital, and member of the French Academy of Medicine. He is the greatest living authority on malaria, of which disease he discovered the plasmodium. His most important published works are: ‘Traité des Fièvres palustres’ (1884); and ‘Traité de Hygiène militaire’ (1896).

Laverdière, lä-vãr-dē-ãr′, **Claude Honoré,** Canadian author and teacher: b. Province of Quebec 1826; d. 1873. He was educated for the priesthood, which he entered 1851, and was appointed professor in Quebec Seminary and assistant librarian in Laval University. His claim to recognition rests on the efforts he made to unearth and publish to the world the heroic achievements of early French-Canadian settlers and explorers. His works are of extreme value and interest, and include: ‘Jesuit Relations’ (1858); ‘History of Canada.’ He also edited ‘Voyages of Champlain,’ with notes and a life of that explorer. A collection of French-Canadian songs and hymns was also made and published by him.

Lavigerie, Charles Martial Allemand, shärl mär-sē-ăl äl-mäṅ lä-vēzh-rē, French missionary: b. Bayonne 31 Oct. 1825; d. Algiers 26 Nov. 1892. After passing through the Seminary of Saint Sulpice at Paris he was appointed professor of ecclesiastical history to the Sorbonne in 1853. In 1863 he was made bishop of Nancy, and four years later archbishop of Algiers. His life work began by the establishment of his Central-African mission. On being made ecclesiastical administrator at Tunis he began fighting the slave-hunting and slave-barter which desolated the dark continent. For this purpose he agitated in the chief capitals of Europe, and secured pledges from England and Germany to enforce rigidly the anti-slavery article of the Kongo Conference. In 1890 he urged in France the Church's acceptance of the Republic, in which counsel it was considered that he was not without the concurrence of Leo XIII. He was made cardinal in 1882. His published works include ‘Œuvres choisis’ (1884).

Lavisse, Ernest, ėr-nā lä-vēs, French historian: b. Nouvion-en-Thiérache, France, 17 Dec. 1842. In 1888 he was appointed to the chair of modern history in the Paris Faculty of Letters and in 1892 was elected to the French Academy. His historical researches have chiefly to do with Germany, and among important works by him are: ‘The Mark of Brandenburg under the Ascanian Dynasty’ (1875); ‘Studies of the History of Prussia’ (1879); ‘Frederick the Great Before his Accession’ (1893); ‘The Three Emperors of Germany: William I., Frederick III., William II.’ (1888).

Lavoisier, Antoine Laurent, äṅ-twän lō-rŏṅ lä-vwä-zē-ā, French chemist: b. Paris 26 Aug. 1743; d. there 8 May 1794. He was the son of a wealthy tradesman; was educated at the Collège Mazarin; studied mathematics and astronomy under Lacaille, chemistry in the laboratory of Rouelle, and botany under Jussieu. In 1766 he received a prize offered by the Academy of Sciences (of which in 1768 he became an associate), for an essay on lighting the streets of Paris. Soon after this he traveled through France collecting material from which he constructed the first geological chart produced in that country, during the same period publishing a number of scientific treatises. In 1769 he was appointed farmer-general of the revenue. By means of his wealth and influence he secured special advantages for extending his investigations, which were also stimulated by the new discoveries of Priestley, Cavendish, and Black. In 1776 he was director of the government powder-works; sat on the commission of weights and measures in 1790; and in 1791 became commissary to the treasury. In May 1794 he was accused before the Convention as an ex-farmer-general, condemned by the Revolutionary tribunal, and guillotined. To Lavoisier modern chemistry looks as its chief founder; he organized its methods, reformed the old nomenclature, and virtually established for this science a new terminology. By his work mainly the old phlogistic chemistry was displaced, and he shares with Joseph Priestley (q.v.) the distinction due to the discovery and analysis of oxygen, to which he gave its name, Priestley having already called it «dephlogisticated air.» «Lavoisier,» says Huxley, «first showed, by the most conclusive experiments, what was really the composition of atmospheric air» (1777). His chief works, as containing his most important discoveries, are his ‘Traité élémentaire de Chimie’ (1789); and ‘Mémoires de Physique et de Chimie’ (1805). Among his others are: ‘Sur la Combustion en général’ (1777); ‘Réflexions sur le Phlogistique’ (1777); ‘Considérations sur la Nature des Acides’ (1778); ‘Méthode de Nomenclature chimique’ (with Guyton de Morveau, Berthollet, and Fourcroy, 1787). His complete works were published by the French government under the title of ‘Œuvres de Lavoisier publiquées par les Soins de son Excellence, le Ministre de l'Instruction publique’ (1864–93). There are many accounts of his life and work. Consult: Grimaux, ‘Lavoisier d'après sa correspondance, ses Manuscrits, ses Papiers de Famille et d'autres Documents inédits’ (1888); and Schultze, ‘Lavoisier, der Begründer der Chemie’ (1894).

Law, John, of Lauriston, Scottish speculator: b. Edinburgh 21 April 1671; d. Venice 28 March 1729. For the purpose of remedying the deficiency of a circulating medium, he proposed to the Scottish Parliament the establishment of a bank with paper issues to the amount of the value of all the lands in the kingdom; but this scheme was rejected. In consequence of a duel he fled from his country and visited Venice and Genoa, from which cities he was banished as a designing adventurer. He accumulated a large fortune by gambling, and at length secured the patronage of the Duke of Orleans, regent of France, and in company with his brother William established his bank in 1716 by royal authority. It was at first composed of 1,200 shares of 3,000 livres each, which soon bore a premium. This bank became the office for all public receipts, and there was annexed to it a Mississippi company, which had grants of land in Louisiana, and was expected to realize immense sums by planting and commerce. In 1718 it was declared a royal bank, and shares rose to twenty times their original value. A vast quantity of paper money was issued, the credit of which was unquestioned, whilst the national bonds remained at a price far below their nominal value. In 1720 Law was made a councillor of state and comptroller-general of the finances; but the shares sank in value as rapidly as they had risen. He was obliged to resign his post, after five months, and for personal safety to quit the kingdom. He lived afterward in great obscurity, finally settling at Venice, and died still occupied in vast schemes, and fully convinced of the solidity of his system, the failure of which he attributed entirely to enmity and panic. Various opinions have been entertained of the merit of his project, and by some it has been thought to have possessed feasibility, had it been carried more moderately into practice. A volume entitled ‘Œuvres de J. Law’ was published (1790). Consult Wood, ‘Memoirs of the Life of John Law’ (1824); Mackay, ‘Memoirs of Extraordinary Popular Delusions’ (1850); Thiers, ‘Histoire de Law’ (1858).

Law, John, American lawyer: b. New London, Conn., 1796; d. Indiana 1873. He was graduated at Yale and admitted to the bar in 1817, but soon after emigrated to Indiana, where he settled at Vincennes. He was quickly brought to the front as a lawyer; became successively prosecuting attorney, judge for eight terms, and in 1838 receiver of public moneys. In 1855 he was appointed judge of the Court of Land Claims. He afterward served in the 37th and 38th Congresses on committees on library, agriculture, and Revolutionary pensions. He was descended from a long line of lawyers, which included the chief justice of the Connecticut supreme court, Jonathan Law, and was president of the Indiana State Historical Society.

Law, William Arthur, English playwright: b. 22 March 1844. He was educated at the Royal Military College, Sandhurst; served eight years in the army and retired as lieutenant. He acted at the Theatre Royal, Edinburgh, Surrey Theatre, and in the provinces, 1872–4, and in 1881 was engaged at the Savoy Theatre. Among his dramatic productions may be mentioned: ‹A Night Surprise› (1877); ‹Enchantment› (1878); ‹Castle Botherem› (1880); ‹All at Sea› (1881); ‹Nobody's Fault› (1882); ‹A Mint of Money› (1884); ‹Gladys› (1886); ‹Culprits› (1890); ‹The New Boy› (1894); ‹The Sea-Flower› (1898); ‹New-Year's Morning› (1900); and ‹A Country Mouse› (1902).

Law (Lat. *lex,* from *lego,* to collect), is in its general sense, a rule of action; in a more restricted signification, a rule of human conduct, or collectively a body of regulations adapted to a particular subject. The term may be variously defined, according to its application. The laws of nature, as expounded by men of science, are general propositions as to the order in which physical events have occurred, and will probably recur; the moral law, or the law of God, is a body of truth perpetuated into the form of rules for the guidance of human conduct. But when we speak of law we usually mean to indicate the law which is set and enforced by civilized states. Law, in this sense, derives its sanction, or binding force, from the penalties by which men are constrained to obey it or punished for breaking it. In the civil code of Louisiana, law is defined as a «solemn expression of the legislative will.» Law, regarded as a body of rules for the direction of the individual in his relations with society, is known under various subdivisions, as civil law, criminal law, common law, martial law, constitutional law, international law, merchant law, and canon law, in matters of ecclesiastical jurisdiction. The earliest source of law is custom; the customary rules of a primitive community formed the basis of a civil law at Rome, as they form the basis of the common law in England and the United States. Customary law is rigid and formal; in a progressive society it is relaxed and improved by the use of legal fictions, by the influence of equity, and by legislation. At Rome, for example, the growing commerce of the city compelled the prætor to go beyond the civil law (which was a law for Romans only), and to devise a new law of nations, based on principles of equity, such as all civilized men could understand. When the Romans began to study Greek they identified this law of nations with the law of nature, as expounded by the Stoics (q.v.). The civil law, amended and rationalized by successive prætors and emperors, has furnished most of the nations of modern Europe with the greater part of their legal rules and ideas; even England, while refusing to borrow directly from the *Corpus Juris Civilis* (body of the civil law), has derived no small part of her law from that source. Scotch law has largely drawn its principles and nomenclature from Roman law. It is usual to distinguish public law (constitutional and criminal) from private law (which applies to personal status, family relations, property and contract). Constitutional law is of especial importance in the United States. Canon law is not received, as an entire system, by any modern state; but its rules are followed in defining the powers and functions of ecclesiastical persons. The law of nations, or international law, is also divided into public and private.

Sacred Law.— Prior to the codex or early codes containing laws for the people, there were sacred books and doctrines which contained moral and spiritual rules and regulations for human conduct. The four famous law books of India were ‹The Sacred Laws of the Aryas,› ‹The Institutes of Vishnu,› ‹Manu, the Moses of India,› and ‹The Minor Law Books.› In China was ‹The Book of Rites,› a work devoted to rules of ceremony and of behavior, together with the ‹Four Books› of Confucius (q.v.), of equal canonical authority. There was also the Egyptian ‹Book of the Dead,› and the Mohammedan ‹Koran› (q.v.).

Laws of Moses.— The great Jewish historian and law-giver, Moses, of the tribe of Levi, is considered the author of the first five books of the Old Testament — Genesis, Exodus, Leviticus, Numbers, and Deuteronomy — or, as they are collectively called, the ‹Pentateuch,› or the ‹Five Books.› The Decalogue given through Moses, and many of the broader provisions of the Mosaic laws, form the basis of all present moral and legal codes. His institutions breathe a spirit of freedom, purity, intelligence, justice, and humanity, unknown to contemporary nations, and above all, of supreme love, honor and obedience to God. They molded the character of the Hebrews, and transformed them from a nation of shepherds into a people of fixed residence and agricultural habits. (See MOSES.)

Early Law-Makers.— Among the early books on law was Aristotle's lost work on ‹Constitutions,› there being 158 of these, one ‹The Constitution of Athens,› being left to us in its entirety. Among creators of early constitutions was Solon (q.v.), the illustrious legislator of Athens and one of the seven sages of Greece. He framed a new code of laws and obtained from the citizens an oath that they would observe them for 10 years. It was Solon who declared

> Ill fares the State where License reigns;
> But law brings order and concordant peace.

Among the law-givers of the period were Gellius, Cicero, Cæsar, Pliny, and Marcus Aurelius (q.v.), whose rules of civil law laid the foundation for Justinian's work. This was called ‹The Pandects,› and was a digest of Roman law from the commentaries of the great jurists, made by 17 famous lawyers in 530–3 A.D.

Law in the Middle Ages.— In the 15th century Irnerius, a famous jurist at Bologna, revised the study of Roman law, and in the 16th century appeared the ‹De Jure Belli et Pacis› of H. Grotius (q.v.), the distinguished Dutch scholar. This work and others have had no small influence on the laws of the present day. In the 17th century Samuel Puffendorf (q.v.), eminent German publicist, produced ‹The Elements of Jurisprudence,› and ‹The Law of Nature and Nations,› which to an extent superseded the works of Grotius. Early in the 18th century Emmerick Vattel (q.v.), the Swiss publicist, wrote his famous work, ‹The Law of Nations, or Principles of Natural Law Applied to the Conduct and Affairs of Nations and Sovereigns.› It was translated into various languages, and partly superseded the productions of Grotius and Puffendorf. Then followed Coke and Blackstone (q.v.), the eminent English lawyers, with their invaluable ‹Commentaries›; Kent, Maine, Bryce, and others who are famous as law-makers and interpreters of the early codes.

The Ancient Codes.— In the days of the early Roman emperors began to appear the *Codex* or code; collections of laws and constitutions, the earliest being those of Gregorianus or Gregorius and Hermogenianus. The ‹Codex Theodosianus› was executed by a commission of eight persons, appointed by Theodosius the Younger, in 429. The work was published and promulgated as laws in 438, and was declared to be a substitute for all the constitutions made since the time of Constantine.

In 528 the emperor Justinian appointed a commission of 10 persons, one of whom was the celebrated Tribonian, to compile a code, incorporating the previous codes of Gregorianus, Hermogenianus, and Theodosius, and also the Constitutions, Rescripts, and Edicts, subsequently issued. The work was performed in 14 months, and it was then declared that the new code should supersede the older compilations. The code of Justinian is of great importance for church history and law, as many edicts of the Christian emperors concerned religious questions. The Gothic codes or laws of the barbarians were all collected in a single code which bore the title of *Codex Legum Barbarorum.* Of these various systems, the first was that of Alaric, king of the Visigoths, augmented by the legislative labors of his successors. To this code was given the title of the Gothic law, *par excellence,* and it was the best and fullest of all the barbarian codes.

Charles VII. was the first of the kings of France who attempted, by a series of general *ordonnances,* to introduce something like uniformity into the legislation of France; and several of his successors, in particular Louis XI. and Henry III., entertained the idea of establishing a single code for the whole kingdom. A code having this object in view was subsequently prepared by Michel de Marillac, and published in 1629. It consisted of 471 articles, and is spoken of by French jurisconsults in terms of the highest praise. In Spain in the 13th century Alphonso X., the most learned prince of his race, prepared the Spanish code called ‹Las Partidas,› and executed the Alphonsine Tables.

The Code Napoleon (q.v.) was adopted in France in the 19th century. There were five codes, namely, the ‹Code Civil,› published in 1804; the ‹Code de Procédure Civile,› published in 1806; the ‹Code de Commerce,› published in 1807; the ‹Code d'Instruction Criminelle,› published in 1808; and the ‹Code Pénal,› published in 1810; the first was called by way of eminence, by a law of 3 Sept. 1807, ‹Code Napoléon.› At the restoration its name was changed back to ‹Code Civil,› and during the time of the second empire it was again called ‹Code Napoléon.› The first book is entitled ‹Of Persons,› and in 11 titles treats, (1) of the enjoyment and privation of civil rights; (2) of civil acts, such as the registry of births, marriages, and deaths; (3) of domicile; (4) of absentees; (5) of marriages; (6) of divorce; (7) of the relations of father and son; (8) of adoption and official guardianship; (9) of the paternal power; (10) of minority, guardianship, and emancipation; (11) of majority, of guardianship of persons of age (interdiction) and judicial counsel. The second book is entitled ‹Of Property and the Different Modifications of Ownership,› and in four titles treats (1) of the distinction of property into real and personal (*immeubles et meubles*); (2) of ownership; (3) of usufruct, of use and habitation; (4) of servitudes (easements, *des servitudes ou services fonciers*). The third book is entitled ‹Of the Different Modes of Acquiring Property,› and in 20 titles treats, (1) of successions; (2) of donations *inter vivos* and testaments; (3) of contracts, or conventional obligations in general; (4) of engagements formed without a convention; (5) of the contract of marriage and the rights of the parties respectively; (6) of sale; (7) of exchange; (8) of the contract of letting to hire; (9) of partnership; (10) of loan; (11) of deposit and sequestration; (12) of contracts connected with chance (*aléatores*), such as wagers and life-rents; (13) of powers of attorney; (14) of becoming security; (15) of transactions; (16) of bodily duress in civil cases; (17) of furnishing security; (18) of mortgages; (19) of taking and setting off by execution; (20) of prescriptions. Under the first empire the adoption of the ‹Code Napoléon› was made obligatory on all the countries subject to the French. After the battle of Leipsic, in 1813, which freed Germany from the power of France, it ceased to be obligatory in the German states, but it continued to influence considerably their legislation. At present this code is recognized in the kingdom of Belgium (with some modifications), in the grand-duchy of Baden, in the kingdom of Italy, and elsewhere in Europe. In the United States it was a model for the code of Louisiana. (See Code.)

Legal Acts.— An act in law may be defined, (1) Anything officially done by a court, as the phrases «Acts of Court,» «Acts of Sederunt,» etc. (2) In bankruptcy, an act the commission of which by a debtor renders him liable to be adjudged a bankrupt. (3) In civil law, a writing which states in a legal form that a thing has been said, done, or agreed. (4) In evidence, the act of one conspirator performed in pursuance of the common design may be given in evidence against his conspirators. (5) Acts done, distinguished into acts of God (q.v.), of the law, and of men. (6) Legislative acts, enacted by a congress, legislature, parliament, etc. A statute, law, or edict, consisting of a bill which has been successfully carried through Congress, Parliament, or Legislature, and received the approval of the executive or chief ruler. (See Act.)

Jurisprudence is the general title covering the entire field of law, the science and study of law, and the knowledge of the laws, customs and rights of men in a state or community, necessary for the due administration of justice. The various classifications of jurisprudence (q.v.) alphabetically arranged are as follows:

Admiralty Law in England and the United States is a system of jurisprudence administered by admiralty courts, which have jurisdiction over all marine torts, contracts, injuries, or offenses. Its civil jurisdiction extends to cases of salvage, bonds of bottomry or hypothecation of ship and cargo, seamen's wages, seizures under the laws of imposts, navigation, or trade, cases of prize or ransom, charter-parties, contracts of affreightment between different states or foreign ports, contracts for conveyance of passengers, contracts with material-men, jettisons, maritime contributions, and averages, and generally to all assaults and batteries, damages, and trespasses taking place on the high seas. Its criminal jurisdiction extends to all crimes and offenses committed on the high seas or beyond the jurisdiction of any country. (See ADMIRALTY LAW.)

By-Law is a law of a city, town, corporation or society. (See BY-LAW.)

Canon Law is the body of ecclesiastic Roman law. (See CANON LAW.)

Civil Law is the ancient Roman law, with the various modifications thereof which have been made in the different countries into which the law has been introduced. (See CIVIL LAW.)

Common Law is a rule of action which derives its authority from long usage or established custom, which has been immemorially received and recognized by judicial tribunals. As common law can be traced to no positive statutes, its rules or principles are to be found only in the records of courts and in the reports of judicial decisions. Common law is distinguished from the statute law and from equity. It is wholly overruled by the statute law. (See LAW, COMMON.)

Constitutional Law, a system of law established by the sovereign power of a state for its own guidance; the body of written public law. (See GOVERNMENT; LAW, CONSTITUTIONAL.)

Consuetudinary Law is that law which derives its binding character, not from the expressed, but from the tacit, consent of the general will of the community. As it is generally transmitted orally from age to age, it is often spoken of as the unwritten law.

Criminal Law is that branch of municipal law which relates to crime. (See LAW, CRIMINAL.)

French Law is the name given Norman dialect, or Old French, which was used in judicial proceedings from the days of William the Conqueror to Edward III.

Law of Merchants is the system of law which the courts of England and the United States apply to mercantile contracts. It is a branch of the common law, inferior in importance to no other, and in many respects quite distinct from any other. The principal subjects embraced within it are the law of shipping, including that of marine insurance; the law of negotiable bills of exchange and promissory notes; and the law of sales; all of which topics are treated of in this work specifically. The merchant law has grown up gradually, and, during the larger part of its existence, slowly. It originated undoubtedly in the customs of merchants. That it stands out in English law more prominently and distinctly than in any other general system of municipal law, may be reasonably ascribed to the greater extent of the commerce of England for many ages. It occupies a similar place in our law, in part because we inherit the law of England, and in part because the same extent of commerce which produced this system of law in England preserves it in the United States. In the earliest records of English law, we have distinct intimations that England in all periods of its history from the reigns of its Saxon monarchs, had many ships and many merchants; that questions in relation to the interests and contracts of merchants came not infrequently before the courts; and that these questions were decided even then by a reference to the customs of merchants, which was sometimes only understood, but in other cases was distinctly expressed. In doing this the courts only obeyed a necessity, which was felt wherever commerce existed and was respected. It is not to be concealed, however, that the courts did this with some reluctance, and by steps which followed each other only at long distances. The reasons for this are obvious, and may be discerned the more easily because they have not yet ceased wholly to operate.

The common law was, at a very early period, a quite complicated but well arranged and exceedingly systematic body of law. To know this was the privilege of a few — to administer it gave wealth and dignity to a very few. The law was then a monopoly, and one of very great value, and it was guarded carefully by those who possessed it. Merchants did not wantonly disregard it; but they were compelled to find, or to invent, for the various exigencies of their commerce, rules and principles different from those which had grown out of the feudal system, and were intended mainly to govern titles to land and the relations of feudal rank, and were admirably adapted for this purpose. When these mercantile contracts came before the courts, the same necessity which had led merchants to find and introduce their new rules, acted upon the courts, and induced the courts, more or less willingly, to accept these rules as their rules also, and thus to make them law. But while some of these rules were only modifications of the existing rules of the common law, others of them were very distinct exceptions, and some were positive contradictions. It was perhaps wise in the courts to regard with jealousy rules of law made by no sovereign authority, and neither evidenced nor promulgated in any authentic way. Nor are we obliged to attribute to mere selfishness of any kind the reluctance of the courts of law to admit these usages to the full force of law, at all periods and even at the present day. But at all times the established rules which governed the business and the contracts of any set of men, must have been recognized as law; and even the Roman civil law acknowledged the binding force of mercantile usage as constituting law. In 1765, Lord Mansfield (q.v.) declared "the law of merchants and the law of the land is the same," and so the customs of merchants became the common law.

Law of Equity.— In England in the 18th century the law courts were divided into courts of law and courts of equity. In the law courts the parties were compelled to proceed strictly according to the law and the practice, and the forms of pleading were so intricate that many cases were decided on the pleadings without the merits of the case ever being heard; and often when the cause was heard it was impossible to administer justice on account of the form of action, the parties to the action, and the cause of action on which suit had been brought. In the courts of equity they were not restricted by the technical pleadings; amendments could more readily be granted; the parties to the action could be changed by either dropping some or adding others; and the decree could be framed to meet the particular question involved; so that justice would be done to all the parties interested. After the Revolution the United States adopted the English system; but while some of them have kept strictly to that system and have had distinct courts of law and equity, other States have law and equity administered by the same judges and courts, at one time sitting as courts of law and at another time as courts of equity. Equity is divided into three great classes or divisions: Equitable titles, equitable rights, and equitable remedies. Equitable titles are those which are recognized only by a court of equity, as where, when a person gave value for a chose in action which was assigned to him, the assignment was not recognized at law, as it would violate the rules against champerty and maintenance, but equity allows the assignee to bring suit in the name of the assignor. Equitable rights arise where a guardian enters into a transaction with his former ward a very short time after the ward has obtained his majority. If within a reasonable time the ward returns what he received from the guardian, the guardian will, in equity, be compelled to return the property to the ward. Equitable remedies arise in those cases in which the law recognizes a right but cannot enforce it, as where a contract is made for the sale of a piece of property, if the seller refuses to convey, the purchaser's remedy at law is for damages for breach of the contract; but in equity the court will decree specific performance. (See EQUITY.)

Law of Honor.—(See HONOR.)

Law of Nations.— According to Wheaton this «may be defined as consisting of those rules of conduct which reason deduces, as consonant to justice, from the nature of the society existing among independent nations, with such modifications and deviations as may be established by general consent.» International jurisprudence is a science of modern origin. In its present sense the law of nations was quite unknown to the two great states of Greece and Rome. In Greece the amphictyonic council bore in some sort the character of an international tribunal, but it concerned itself chiefly with the internal affairs of the members of the league; the few relations which Greece maintained with foreign nations were defined by special compacts, and the general principles of right were rarely invoked in their adjustment. The works of Cicero, Livy, and other writers of the best age of Rome, contain allusions which imply a recognized law of nations; yet it is certain that the Roman law, as it existed at the dismemberment of the Empire of the West, embodied no system of rules for governing the intercourse of states, or for deciding questions of right which might arise between them. During the Middle Ages, the pope was often the judge and arbitrator in the affairs of nations. His authority reached its height when Alexander VI. presumed to parcel out the New World to Spanish and Portuguese princes. It is now generally recognized that Hugo Grotius was the first to give a new form to the law of nations, or rather to create a science of which only rude sketches and undigested materials were scattered over the writings of those who had gone before him. Hallam says that the publication of the treatise by Grotius marks an epoch in the philosophical, and it may be said in the political history of Europe. It was very early translated into various European languages, and great jurists made it the subject of elaborate commentaries. In 1656 it was made the text of lectures on public law in the University of Wittenberg, and in 1661 a professorship was created in Heidelberg for expounding the law of nature and of nations from the writings of its author. The sources of international law are, according to Grotius, natural law, divine law, customs, and special compacts. In the celebrated reply made by the British government in 1753 to a Prussian state paper, the law of nations is said to be founded upon justice, equity, convenience, and the reason of the thing, confirmed by long usage. The principle of national justice, founded upon the laws of morality, is, then, the basis of the positive law of nations, that is to say, of the treaties, conventions, and usages which compose it. It is the office of right reason to apply this natural law of equity to the circumstances of each case; and it is the art of applying this law, according to justice and guided by reason, which renders international jurisprudence a particular science. Treaties and usages offer evidence of the general consent of nations, and are important sources of the law. The customary law of nations is further expressed in manifestos and declarations of war and in the decisions of prize courts. Finally, the concurrent testimony of the great writers upon the science, and the written opinions which official jurists give to their governments, are further evidence and depositories of the law of nations. (See INTERNATIONAL LAW.)

Law of Nature.— Laws and just rules of conduct which the Creator has prescribed to man, as a dependent and social being, and which are to be ascertained from the deductions of right reason. (See LAW, NATURAL.)

Law of the Land is the due process of law; the general, public, or common law of the land.

Maritime Law is the law of the sea; a branch of the commercial law, relating to the affairs of the sea, such as seamen, ships, navigation, etc. (See LAW, MARITIME.)

Martial Law is the law of military rule or occupation. (See MARTIAL LAW.)

Military Law, a branch of the general municipal law, consisting of rules ordained for the government of the military force of a state government, equally in peace and war. (See LAW, MILITARY.)

Moral Law, a law which prescribes to men their social duties. The moral law is summarily contained in the decalogue, written on two tablets of stone and delivered to Moses for the Israelites on Mount Sinai. (Ex. xx.) (See MOSES.)

Mosaic Law, the institutions of Moses, or the code of laws prescribed to the Jews, as distinguished from the Gospel.

Municipal Law, a rule prescribed by the supreme power of a state, declaring some right, enforcing some duty, or prohibiting some act; a statute; a collection of rules to which men living in civic society are subjected in such a manner that they may in case of need be constrained to observe them by the application of force. (See GOVERNMENT.)

Parliamentary Law is the name given the rules and precedents regulating the procedure of deliberative assemblies. Certain rules of parliamentary procedure have always been necessary for the accomplishment of the purposes for which deliberative assemblies are called. Experience has shown that restrictions must be placed on individual members in the general interest of the whole body; that mere customary rules are insufficient, and hence regular parliamentary codes must be prepared for the government of deliberative assemblies. In both England and the United States parliamentary law has become almost a distinct branch of the law, and its mastery is highly essential to the success of the legislator. The necessary officers of a deliberative assembly are a chairman, usually called speaker, president, or moderator, and a secretary or clerk. It is the duty of the presiding officer to call the meeting to order; to state clearly all questions brought before the assembly; to put motions properly made and in their proper order; to preserve order and enforce the rules of procedure; and decide questions of order subject to the right of appeal to the whole assembly. These are his primary duties, but he may in addition participate in debate, as any other member, and vote in case of a tie. It is the duty of the secretary to keep a record of the proceedings of the meeting, including a correct statement of every motion made and the manner in which it was disposed of; the names of members of all committees appointed; a true copy of every resolution passed with the affirmative and negative votes cast therefor, etc. (See PARLIAMENTARY LAW.) For rules governing debates, motions, appeals, etc., consult Cushing, ‹Manual of Parliamentary Practice,› and Roberts, ‹Rules of Order.›

The Courts and Law Practice.— For a general survey of judicial proceeding and the methods of courts, see the articles, COURT; JUDGE; JURY; JUSTICE. In the practice of law, especially during the 19th century, many new and distinct phases of legal classifications have arisen, such as Corporation Law, Pension Law, Law of Husband and Wife, Divorce Law, the Law of Negligence, the Law of Copyright, Election Laws, Insurance Law, Mining Law, Liquor Laws, Bankruptcy Laws, etc. These are generally treated under their respective titles.

Plaintiff and Defendant.— The parties to an action in law are called plaintiff and defendant, and the former is said to sue or prosecute the latter, hence the word suit instead of action. In some few instances the redress sought by a civil action consists in the recovery of some specific article of property wrongfully and unlawfully taken by the defendant from the plaintiff, but most frequently the object of an action is to obtain compensation in money for an injury complained of, which compensation is technically called damages. The action is said to terminate properly at judgment. Civil actions are those actions which have for their object the recovery of private rights, or of damages for their infraction. Criminal actions are those actions prosecuted in a court of justice, in the name of the government, against one or more persons accused of a crime. Transitory actions are those civil actions the cause of which might have arisen in one place or county as well as another. Local actions are those civil actions the cause of which could have arisen in some particular place or county only. Personal actions are those civil actions which are brought for the recovery of personal property, for the enforcement of some contract, or to recover damages for the commission of an injury to the person or property. Real actions are those brought for the recovery of lands, tenements, and hereditaments. Mixed actions are those which partake of the nature of both real and personal actions. (See DEFENDANT; PLAINTIFF.)

Law of Evidence.— Evidence in law may be oral or documentary. Oral evidence is the statements made by witnesses during a trial; and documentary evidence consists in the production of papers, on which is writing, marks, or characters capable of being read, which are submitted during the course of the trial. Oral evidence must in all cases be direct; if it is of something that was seen, by the person who saw it; if of something heard, by the person who heard it; if of an opinion, by the person who holds that opinion; or if the knowledge was acquired in any other manner, by the person who perceived it in that manner. The general rule is that hearsay evidence is not admissible. Documentary evidence may be either primary or secondary. Primary evidence of a document is where the document itself is produced for the inspection of the court. Either oral or documentary evidence may be given of any fact in issue or relevant to the issue. (See EVIDENCE.)

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Law, American Schools of. Among the notable features of educational progress in the United States during the 19th century, there was, possibly, none more remarkable in scope or destined to exert weightier influence upon the future of the nation, than the marvelous increase in number and growth in importance of our American schools of law. That this statement is conservative rather than extravagant is demonstrated by the fact that while at the opening of that century there existed in our nation but a single professional law school — and that a private enterprise which never conferred a degree — at its close, more than one hundred publicly chartered academic institutions were given official recognition as such by the national commissioner of education.

And the American school of law is to-day an institution peculiar to itself, for the reason that there existed in the mother country from which our common law and so large a proportion of our earlier statute law, as well as the formal machinery of our administration of justice, were derived, no similar scholastic organizations which could serve as models in the development of a system of instruction in jurisprudence.

Among the continental nations of Europe, of course, and particularly among races of Latin derivation, schools of law had been firmly established from a period of remote antiquity and were held in exalted importance.

Thus, great schools of jurisprudence flourished, long prior, even, to the time of Justinian, at Berytus, Rome, and Constantinople, and became especial objects of the sedulous watch, care and protection of that great emperor to whose enlightened supervision the Roman law owed its systematization and codification at the hands of Tribonian and his colleagues. Although, in the earlier period of Roman history and under the Republic, the youthful student who aspired to master the principles of jurisprudence usually attached himself to some lawyer of prominence from whose discourse and practice he might acquire the desired knowledge, this custom became obsolete to the degree that, under the emperors, nowhere in Rome's vast domain, outside of these three schools, of which the Sidonian was pre-eminently the most famous and successful, was professional instruction in law permitted to be given.

The impetus given by these law schools of antiquity, not alone to the study of legal principles but to the cause of learning in all branches, was incalculable. And, similarly, the renaissance of modern education has been justly held to date from the successful effort of Irnerius, at the dawn of the 12th century, to revive scholastic interest in the juridical learning of the civilians. This notable scholar and teacher, himself an alumnus of Constantinople, by the establishment, under the auspices of Frederick I. of Germany, and at the suggestion of Hildebrand's friend, the Countess Matilda, of his wonderfully successful lectureship on the *Corpus Juris Civilis,* provided the actual nucleus around which was eventually assembled the great university of Bologna, forerunner of all modern institutions of the kind.

But such was the history of the growth of the English common-law that slight parallelism existed between the methods by which instruction in its principles and practice could be gained by the neophyte and those open to students of legal science in continental countries and especially among peoples whose jurisprudence was derived from or dominated by the elementary fundamentals of the Roman civil law. Thus, while elaborate and erudite courses in the history and principles of jurisprudence, ancient and modern, including both the canon and the civil law, have for centuries figured prominently in the curricula of the two great English universities, neither the highest proficiency in their scholarship nor any degree in law conferred by Oxford or Cambridge ever led to the bar in England. On the contrary, the wardship of the door to the practice of the legal profession in our mother country has ever been in the keeping of the Inns of Court, curious bodies politic which, while neither hostelries nor seminaries, partook in some respects of the nature of both, and have remained the peculiar custodians of instruction in the arcana of common-law practice and pleading.

Whether or no acceptance be accorded to the view of that eminent American jurist and legal educator, Judge Simeon E. Baldwin, that the unsystematic texture of the common law was less friendly to its pursuit as a scholastic exercise, acquiescence must be full and unreserved in his conclusion that the absence of English law schools in modern times left America no guide in this direction; and that, great as seems the present measure of her success, whatever our country has done she has done for herself, slowly, painfully, with hesitating and uncertain step.

To Tapping Reeve, lawyer, judge and legal writer of eminent distinction, belongs the honor of establishing the first American law school, at Litchfield, Conn., in 1784. Judge Reeve, a graduate of Princeton in the class of 1763, had settled in the practice of law at Litchfield as early as 1772, and had married a sister of Aaron Burr, who was an early student of law under him and an inmate of his household. Under the able guidance of its founder, who remained its sole instructor until his elevation to the judgeship of the Superior Court of Connecticut, in 1798, the Litchfield Law School speedily gained a widespread and favorable reputation. Upon his assumption of the duties of the bench, Judge Reeve associated with himself in the conduct of the school James Gould, the well-known legal author and jurist. The Litchfield school, though, as has been said, never conferring a degree, maintained a successful career for a round half century, and during its existence numbered more than one thousand students upon its rolls. Of its thousand alumni, some forty rose to be justices of courts of last resort in the States of their various residences, while others reached positions of eminence as legislators in both houses of Congress. To the experience of its founder and his colleague in this pioneer school, American students and practitioners of law unquestionably owe the production of two valuable and important text-books, each of which for more than half a century remained a standard of authority in its line. These were Judge Reeve's treatise on the 'Law of Baron and Feme; Parent and Child; Guardian and Ward' (1816), familiarly known as Reeve on Domestic Relations; and Judge Gould's masterly work on 'Common Law Pleading.' In passing, mention should not be omitted of the second proprietary or private law school in America which was that founded at Northampton, Massachusetts, in 1823, by Judge Samuel Howe and Mr. E. H. Mills, a lawyer, who later became a federal senator. The Northampton School, however, had but a brief existence of six years, and its attendance was never large.

Coming now to the question of the establishment of regular academic courses of instruction in law in publicly chartered institutions, while a professorship in English law had been established, largely through the efforts of Thomas Jefferson, in the ancient college of William and Mary in Virginia in 1782, the earliest course of collegiate law lectures ever given in America was that delivered in 1790 by Justice James Wilson, of the Supreme Court of the United States, as incumbent of the chair of Law in the College of Philadelphia, the institution founded by Benjamin Franklin, and merged in 1792 in the University of Pennsylvania. Auspicious circumstances attended this opening of American collegiate instruction in law, the lecturer being not only one of the best read and most deeply learned lawyers of his time, but, by reason of his distinguished record as a signer of the Declaration of Independence, and a member of the Constitutional Convention of 1787, a van-leader of public thought and action. In deference, we may suppose, to his high dignity as a member of the Federal judiciary, his introductory lecture on 15 Dec. 1790, was attended by a brilliant concourse of public officials, including the President of the United States and his Cabinet, as well as the Governor of Pennsylvania, members of congress and of the State legislature. But the course, or rather series, for Judge Wilson delivered three courses of lectures during that academic year, ended with its close; and no further instruction in the subject was attempted in the University of Pennsylvania until 1817, when law lectures were once more given during the period of a single year; following which came another interval of total inactivity in that institution lasting until 1850.

In New York, the history of academic legal instruction began with the appointment of James Kent, in 1793, to a professorship of law in Columbia College, his first course of lectures being delivered to a small class, during the following year, and suceeding courses in 1795 and 1797. Owing to the slight attendance, however, he resigned the chair in 1798, upon his accession to the bench of the Supreme Court of New York, of which he became chief justice in 1804. In 1823, at the age of sixty, having served in the previous year as a member of the convention to revise the State constitution, and having been chancellor of New York since 1814, he retired from the bench and was re-elected to his former chair at Columbia. The incalculably valuable service which he had rendered to the cause of American jurisprudence and especially to the administration, development and extension of equitable jurisdiction, he now supplemented by elaborating his learned and lucid lectures into those incomparable commentaries on American Law in four volumes (1826–30), which for more than three quarters of a century have remained for the lawyers of our country as solid and standard an authority of reference as were the works of Coke and Blackstone to English practitioners. Attendance upon the chancellor's lectures appears, however, to have been perfectly voluntary with the student body, no regular law course being prescribed, no examinations on the subject being held and no degrees in law conferred. In point of fact, no department of law appears to have been regularly organized at Columbia until 1858; and it seems that prior thereto no law school existed in New York city.

Eldest of existing American law schools organized as such is the Harvard Law School, which was established in 1817. While it is true that as early as 1779 Isaac Royall, a Massachusetts citizen, then resident in London, had bequeathed property to Harvard College for the establishment of a chair of law, the fund did not become available until 1815, and the duties of the incumbent, up to the time of the appointment of Hon. Asahel Stearns as university professor of law in 1817, consisted merely in the delivery of 15 lectures annually to the senior class in the college. Prof. Stearns remained 12 years at the head of the law school, and it may justly be said with every desire to render due credit to this distinguished and faithful instructor that they were years of small beginnings and of little advancement for the institution. The Litchfield School enjoyed such a high repute that it easily attracted a far larger and more enthusiastic attendance, while even the Northampton school was a dangerous rival. In 1829, however, a new phase was placed upon the condition and prospects of the Harvard Law School by Hon. Nathan Dane's generous donation of $10,000 for the endowment of a new professorship of law, coupled with his request that Mr. Justice Story, of the United States Supreme Court, Marshall's great coadjutor and the only one of his associates who fairly divides with him the fame of the early administration of that mighty bench, be appointed the first Dane professor.

Simultaneously, John Hooker Ashmun, then head preceptor of the Northampton School, was tendered the chair of the Royall professorship. The average of attendance at the Cambridge school had then sunk to that of a single student, but upon the acceptance of its headship by Judge Story a revival of interest was manifested and the close of his first year's administration saw in the neighborhood of 30 pupils enrolled. The Northampton school immediately ceased to exist and the Litchfield school was abandoned four years later. Prof. Ashmun's death in 1833 was followed by the election, as Judge Story's colleague, of Simon Greenleaf, an advocate of eminence, the first official reporter of the decisions of the Supreme Judicial Court of the State of Maine, and the distinguished author of that treatise on the law of evidence which at once became, as it has since remained, a standard of authority in all countries ruled by English law.

The Yale Law School is second in age only to that of Harvard, and, while ordinarily spoken of as established in 1824, practically dates from the appointment in 1826 of Hon. David Daggett, a judge of the Superior Court of Connecticut, to the professorship of law in the college,— a chair which had been established, indeed, as early as 1801, under the presidency of Rev. Dr. Timothy Dwight, and had been previously administered by the Hon. Elizur Goodrich, but merely as a lectureship on the leading principles of legal science with no view to qualifying students for the bar. Prof. Daggett, however, had been, up to the time of his appointment, associated with a leading advocate, Samuel J. Hitchcock, in the conduct of a private law school in New Haven, and, under his supervision, the Yale department of law speedily took shape as a practical law school.

In 1833, graduates of the Litchfield school established a law school at Cincinnati, and similar schools were founded at Louisville, Ky., in 1846, and at Lebanon, Tenn., in 1847. The number of American law schools, prior to 1850, was thus extremely limited and the aggregate attendance upon their courses was correspondingly small.

Twenty years later, in 1870, the number of law schools had increased to 28, with an aggregate attendance of 1,653 students. In 1880 there were 48 schools, serving 3,134 students; in 1890, 54 schools with 4,518 attendants, and in 1901 the number of schools had reached one hundred, with more than 13,000 pupils enrolled. The report of the United States Commissioner of Education for 1902 gives statistics of attendance at 102 law schools of a total student body numbering 13,912, of whom 165 were women. The distribution of these schools among the various States was as follows: One each in Alabama, Arkansas, Connecticut, Florida, Kansas, Louisiana, Maine, North Dakota, Rhode Island, South Carolina, Washington, and West Virginia; two each in California, Colorado, Kentucky, Michigan, Mississippi, Nebraska, Oregon, Texas, and Wisconsin; three each in Georgia, Iowa, Maryland, Massachusetts, Minnesota, North Carolina, and Virginia; four in Pennsylvania; five in Missouri; six each in the District of Columbia, Indiana, and Ohio; eight each in Illinois, New York, and Tennessee. The significance of this vast and rapid growth may perhaps be more readily grasped when one remembers that from 1875 to 1899, the number of students enrolled in professional schools in the United States increased as follows: In theology, 58 per cent; in medicine, 177 per cent; in law, 343 per cent.

In 1902 there were 148 American schools of theology, with an attendance of 7,343 students, a decrease of 224 students from the number of the previous year, while the number of students in the 102 law schools had increased 270 over that of the preceding year, rising from 13,642 to 13,912.

At 55 law schools, the course essential to graduation covers three years; at 38, a two-years' course leads to a bachelor's degree, while five institutions in the Southern States have only a one-year course. Under the influence of the section on legal education of the American Bar Association, a constant and gratifying advance in the standard of instruction and in the lengthening of the course for the bachelor's degree in American law schools is to be noted. In 1890, only eight schools required three years' attendance for the bachelor's degree, while eight years later progress in this direction had been so great that no less an authority than Joseph H. Choate, in the annual address delivered before the American Bar Association, did not hesitate to declare, "The standard of legal education has never before been advanced to its present height. The young men who come annually from the law schools to recruit our ranks, are better equipped and qualified — far more so, than we ever were — to enter upon the arduous and responsible duties that await them."

The marked elevation in the requirements for admission to American schools of law is shown by the fact that while, prior to 1877, no entrance examinations were prescribed in any of them, and so late as 1890 there was but a single institution demanding a demonstration of precedent educational attainments equivalent to the requirements for college matriculation, nearly one half of the recognized law schools of this country now deny admission to applicants except upon terms that would practically secure their entrance to the average college of liberal arts. The highest standard of admission is that prescribed by Harvard, which for some years past has refused to admit, as candidates for degrees of law, students not holding the degree of bachelor of arts, conferred by some college of recognized standing. In this position, the Cambridge authorities have been followed, not without great hesitation and well-founded reluctance, by Columbia. The strongest objection to such a requirement may be summed up in the statement that, there being no necessary correlation between the courses of study pursued by various students in different institutions leading up to the academic degree, its possession is not strong evidence of any special equipment for the pursuit of legal studies; and that the object aimed at might be better and more directly attained by the establishment of entrance examinations at the various schools of law sufficiently comprehensive in scope and exhaustive in character to establish the applicant's fitness to enter intelligently upon the study of the principles of law. Ninety-seven schools, with an enrolment of 8,464 students, constituting the Association of American Law Schools, have united in the uniform requirement that each school belonging to the association shall maintain an entrance examination equivalent to that required for graduation from a high school.

It is a matter of singular interest that with the steadily advancing standard of entrance requirements, there has followed an almost equivalent decline in the importance of a diploma of graduation from a law school as a factor in securing admission to the bar. Formerly, in many jurisdictions, such a diploma was by statute an immediate passport to the practice of the profession, but with the stiffening of the educational requirements demanded of the law student there has most fortunately concurred a quickening of the conscience of the courts as to their duties and responsibilities in the premises; with the result that the sound judgment of lawyers and legal educators has been gradually led to endorse the proposition that it is neither logical nor desirable for schools of law in no way subject to the supervision of the courts to possess the unrestricted power to create officers thereof. The influence of the American Bar Association and its junior organization, the Association of American Law Schools, has for some years been steadily and wisely directed to securing the abolition of the exercise by law schools of this power, which should properly be exercisable only by the courts. While there can be no doubt of the eventual establishment of this reform universally, a law school diploma still admits to the bar in the States of Alabama, Georgia, Kansas, Louisiana, Michigan, Mississippi, Missouri, Pennsylvania, South Carolina, Tennessee, Texas, West Virginia, and Wisconsin.

In many of the States this matter has now been wisely regulated by placing the matter of admission to the practice of law exclusively within the jurisdiction of State boards of law examiners, the members of such boards being usually appointed in rotation for fixed terms by the justices of the highest appellate courts of the respective States.

As the American school of law was practically compelled to construct its own road to success, it is not unnatural that there should have arisen considerable divergence of opinion and of practice in the matter of methods of instruction. Roughly, it may be said that three systems have prevailed: a system of instruction by lectures and dictation; a system of instruction by the study of and recitation from prescribed text-books of authority; and a system of instruction confined largely to the reading and expounding of selected cases of leading importance, indicated by the instructor, through which the student is encouraged to delve for a mastery of the principles involved. The latter method, first generally introduced on a scientific basis by Prof. C. C. Langdell, Dane professor of law at Harvard, and since greatly elaborated by his colleagues, Professors James Barr Ames, Joseph H. Beale, Jr., and Samuel R. Williston, as well as by Prof. W. A. Keener, of Columbia, and Prof. Ernest Huffcutt, of Cornell, may be justly considered the prevailing system in our law schools of to-day, although justice requires the statement that none of these methods is or ever has been exclusive of the others, but rather that the curriculum of every well-directed law school in the present, as in the past, has ever included a greater or less proportion of attention to each of these systems.

No review of the history of American law schools would be just or complete which failed to note the remarkable debt under which the practice and the administration of law in this country has been placed by the contributions to legal literature made by members of their various faculties in the form of standard text books, usually, if not universally, the outgrowth of carefully prepared courses of lectures primarily designed solely for the guidance of their student bodies. Reeve's on ‹Domestic Relations,› Gould on ‹Pleading,› and Kent's ‹Commentaries on American Law› have already been instanced. Story's treatises on the ‹Elements of Constitutional Law› and on ‹Equity Jurisprudence›; Greenleaf's exhaustive summarization of the law of evidence; and Parsons' great work on the ‹Law of Contracts› constitute three monuments of this sort which alone would reflect imperishable renown on the Harvard Law School, could it point to no other ground of claim to its present distinction. And an interesting parallelism subsists between the facts that, as it was the donation to Oxford by Viner of the profits of his compendious abridgment of English law which furnished the foundation of the Vinerian professorship, the first and greatest fruit of which was the elaboration by Sir William Blackstone of his course of lectures into the imperishable ‹Commentaries on the Law of England,› so it was the donation to Harvard by Dane of the profits of his later abridgment of law which directly stimulated the production of Joseph Story's masterly work on ‹Equity Jurisprudence.›

Other notable instances of legal authorship in point are the great work on ‹Constitutional Limitations,› by Judge Cooley of the law school of the University of Michigan, the elaborate and finished analysis of private international law by Prof. Raleigh C. Minor of the University of Virginia, and the learned exposition of the ‹Law of Estoppel› by Prof. Melville M. Bigelow, of the ‹Law of Wills and Administration› by Prof. James Schouler, and of the ‹Law of Wills› by Prof. George Enos Gardner, of the law faculty of Boston University.

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Law, Canon, the body of laws or rules laid down by the canons for ecclesiastical government, and known as the «Corpus Juris Canonici.» All civil or religious communities, as soon as they come into existence, require governing rules, and those first promulgated undergo modifications, additions, and other development, so long as the community is in existence. Thus, in the early rules of conduct set forth by the Apostles are found the germs of canon law, which attained its fullest development when the papal power was at its height. The oldest canons are called Apostolic canons. The fully developed canon law of the Roman Catholic Church, exalting the ecclesiastical over the civil power, was generally antagonistic to all European temporal rulers, and in England, Henry VIII., by a revision of canon law, left only those parts of it binding which were not opposed to the common or statute law. See Canon Law.

Law, Civil, the laws regulating a country, state, or city, and the term generally used to designate the «Corpus Juris Civilis» or whole body of Roman law, with the numerous modifications which have been made by the different countries in which this body of law has been adopted. The Corpus Juris Civilis dates from the origin of the Roman state, and developed with its growth until the whole collection of laws was gathered by command of Justinian, in the Institutes, Code, Digest, and Novel Constitutions. The most famous modern parallel to Justinian's codification is that of the code promulgated by command of Napoleon I. See Civil Law.

Law, Commercial, the system of law, the «Lex Mercatoria» or «Law of Merchants,» regulating mercantile transactions between merchants belonging to different countries, or merchants generally. It is derived from the customs of merchants, from the imperial code of Rome, the different maritime codes of ancient Europe, and from international law. See Commercial Law; Law — *Law of Merchants.*

Law, Common, in America. The layman who diligently searches the statute books of our several States must not flatter himself that he has so determined his own, or the legal rights and obligations, of his fellow citizens, and, upon that misapprehension, set forth upon such litigious adventures as this assurance would surely provide for him. He may have heard of the common law, and have thought it an obsolete system of jurisprudence, affording an interesting and curious field of study for the antiquarian, but as an active power supplanted entirely by modern statutes, which he assumes to present the whole body of the operative, substantive law. To warn the over-confident student against the consequences of such error, this article may, to some extent, serve a useful purpose. It is intended, however, to set forth briefly, without technical analysis, and in entirely popular form, the origin, development and present influence of that system of administrative law known both to laymen and to the profession under the title of the Common Law; the spirit, the forms and phrases of which still appear in our legislation and in the judicial utterances of the courts of every State of our Union save, perhaps, Louisiana, whose laws have their source in, and take their inspiration rather from, the Code Napoleon, which, in turn, was an offspring of the Roman law. With this exception, and except in the jurisdiction of the Federal Courts of the United States, the principles of the common law have within our Union full vigor and dominion, excepting, always, as they have been expressly modified or annulled by legislation. But even statutes are to be construed in reference to the common law, for it is not to be presumed that the Legislature intended to make any innovation upon the common law further than the case absolutely required, and this rule of construction has been held applicable to acts of Congress, though there is no common law of the United States (Kent's Commentaries, Vol. I., p. 464). The common law must, nevertheless, be invoked in the matter of construction of Federal statutes, for, though its jurisdiction is not conferred upon courts of the United States, where the statutes do not so provide; their powers are purely statutory, but, in their exercise, the Federal Courts give full recognition to the rules of the common law. The same oversight by the common law over legislation was long ago declared by Lord Coke, who held that the common law «doth control acts of Parliament and adjudge them void when against common right and reason.»

Even to-day the most important personal or property rights of the citizen may be determined in our courts upon the authority of some ancient decision recorded in the Year-Books, yet having the same force now as at the time of its enunciation centuries since. And it may further be safely affirmed that no one of the fundamental propositions of the common law relating to the liberties of the citizen, has been wholly abrogated by legislation, the changes in the body of the law by this process having been more by way of development than excision. The sources in which this ancient, but still vigorous, system had its origin are to be sought in a past older than the recorded history of our English ancestors, or of their progenitors. Most of the vital principles which animate its substance may be directly traced to those rules of civil government and those stern precepts asserting personal and property rights first declared by the unwritten law, administered by the rude forest courts of the barbarian ancestor of our Saxon and Norman parents, and already established when Cæsar led his victorious legions to the remoter boundaries of Gaul, where, in battle and in treaty, he came to know and respect those sturdy races whose primitive arms and crude laws have developed into, and still actuate, the powers which to-day and for generations have led in the advance of civilization the world over. Born of the rigor and the necessities of their hardy life, reflecting something of their higher aspirations, expressing, it is true, in its inception, the savage principle that made vengeance the impulse to secure the punishment of an evil-doer, or serve to deter one who would do wrong, this system of law has grown with the growth of the people who framed it. As they emerged from savagery, the law moved onward with their progress, and was modified by their enlightenment. The Roman Conquest left the imprint of its civilization and its distinct influence upon the laws of the northern subjects of the empire. So that by the time of William the Conqueror, though the dominant law by which he and followers were governed, and which he brought with him to England, was still essentially that of the German barbarian, there were grafted upon it many of the precepts, and much of the philosophy, of the Roman jurist. The necessities of the people, the teaching of their experience, usage based upon the morality of the time, were the foundations of their system of law; defined by no written code, claiming nothing of the mystery of an inspired origin, human in its every fundamental feature, sustained by the will, the intelligence, and the virtue of the people, from its beginning to the present day, it has had the vitality of human life itself and has survived through all the violent changes and revolutions of religious faith, and has maintained the vigor of its original purpose, the discharge of its intended functions, the establishment of laws for the conduct of human affairs, the determination and protection of personal and property rights, of men, dealing and dwelling with their fellows — without which no society could long endure.

Lord Hale has said that the common law of England is «not the product of the wisdom of some one man or society of men, in any one age, but of the wisdom, counsel, experience, and observation of many ages of wise and observing men»; and that «Time is wiser than all the wits of the world, and the law which has been tried by it, has its highest possible evidence in its favor.»

That system, ancient in the days of Lord Hale's encomiums, approved by the wisdom of the generations who have followed him, is held in obedient reverence to-day, and each succeeeding age has added to its substance and spirit, some contribution of learning, the results of new observations, of new experience, and of new enlightenment.

The bibliography of the common law is as wide as the field of its jurisdiction, and a recital of the volumes in which its precepts are recorded would far transcend the necessary limits of this article, nor would it lie within the scope of its intent. The subject has engaged the profound study of scholars, inspired the decisions of most learned judges, and by the evidence of its influence historians have traced the progress of nations. Its commentators have uniformly extolled its wisdom, its beneficence, and its unparalleled power, some even in their earnestness having used those reverential phrases which are appropriate to the Holy Scriptures themselves.

«The judges,» Chancellor Kent has told us, «through the whole period of the Year-Books, were constantly urging the sacredness of precedents, and that a counsellor was not to be heard, who spoke against them; and that they ought to judge as the ancient sages taught.» «If we judge against former precedents,» said Prisot, C. J., «it will be a bad example to the barristers and students at law, and they will not give any credit to the books, or have faith in them.»

This adherence to precedent has characterized the slow and conservative development of the system, even to our own time. It is still true that when no statute has expressly abrogated a rule of the common law, it remains the supreme law of our courts, if the facts and circumstances of the particular case make it applicable, even though the source of the rule must be sought in the conflicts of the Saxon sullenly defending his rights against the arrogant Norman baron, or in the controversies of the astute churchmen, who, in spite of hostile statutes, by ingenious turns of argument and construction, defended in the courts lands which they could no longer hold by arms.

A well-considered decision of Chief Justice Holt, Lord Coke, or in later times of Lord Mansfield, has to-day and in our country, all the authority it had when it first fell from the lips of the austere judge and terminated a controversy between litigants whose dust has long since mingled with the English earth. Our courts are bound by the letter no less than by the reason of the adjudication. They must not overrule a decision plainly in harmony with the principles of the law which demanded it, for the function of the court is exclusively judicial, and it may not, because of the apparent hardship of a particular case, usurp legislative power. If the rigor of a rule of the common law bear too hardly upon the citizen, or if it be in conflict with the conscience or conditions of the present day, legislative relief is a sovereign and effectual remedy, and is that which the common law has itself wisely provided, to meet changing conditions and circumstances.

The recorded evidence of the principles of the common law, to which the judges turn for guidance in rendering their judgments according to that law, is preserved in a multitude, ever increasing in numbers, of reports of decisions: first, of the Courts of England, the earliest of which are the Year-Books, black-letter tomes written in crabbed law French, seldom read to-day even by the most studious lawyers, because most of the decisions there recorded have passed by comment and reference into later works, but the decisions themselves are none the less active living factors in the law of to-day. These early reports cover a period of about two hundred years, from the reign of Edward II. to that of Henry VIII. From that time forward, with some early intermission, but later continuously, the adjudications of the English courts of high authority have been carefully, and, for the most part, accurately preserved, and these volumes, with the acts of Parliament, make up the body of the common law as it existed when the American Colonies declared their independence, and as it has been incorporated into our own jurisprudence. The ancient reports are instructive not alone for the letter of the decisions of the judges, but also because they are almost the only written records of the law; the text-books,— indeed, the writers competent to prepare them,— less then than in our time, and in many instances, the annotations of the reporter, are the only statements of general legal principles and have the same weight of authority as the judicial decrees because they reflect the real genius of the law itself.

Lord Coke, Chief Justice of the King's Bench in the time of King James, is a notable illustration of this service to the law. His observations, deduced from the decisions in favor of the rights of the subject, and in restraint of royal prerogative, so angered that monarch that he removed the Chief Justice and directed that his commentaries be eradicated from the books, but that which Coke wrote is the law to-day, and the king who would have stayed its progress, might, indeed, be now forgotten except for this impotent effort, which gives him immortality beside King Canute, who, by his royal will, sought to hold back the waves of the limitless sea. This memorable incident of Lord Coke well illustrates that quality of the common law which has enabled it to survive all changes of dynasties and of nations. Royal ambition, popular violence, religious fanaticism, even the tumult of civil war, could not, except momentarily, change the tenor of its way or obstruct its constant advance toward the establishment of a stable, permanent system of justice. Flexible, and adaptable in its external forms, it absorbed in each period of its transition only those elements which were of permanent value. It never retrograded.

Of the ancient law of England, «planted here by the Conqueror,» Lord Bacon, when entertaining the vain ambition that he could by his own genius embody all its vital principles within the fixed terms and phrases of a code, said, with rare vigor and felicity of speech: «Now of the laws of England, if I shall speak my opinion of them without partiality either to my profession or country, for the matter and nature of them, I hold them wise, just, and moderate laws, they give to God, they give to Cæsar, they give to the subject, what appertaineth. It is true they are mixed, as our language, compounded of British, Roman, Saxon, Danish, Norman customs; and surely as our language is thereby so much the richer, so our laws are likewise by that mixture the more complete.»

Purified, invigorated, by the best thought and by the experience and intelligence of the generations since Bacon lived, the common law of America, imposed upon us by no «Conqueror,» but brought here as their birthright by our fathers, zealously and jealously guarded, and sacred to them as their religion itself, immortal in its vigor and virtue, speaks to-day the very conscience of the state.

It remains only, for the purposes of this article, to briefly trace the processes and channels by which it has become the predominant law of America, wherever the Saxon race has inherited, or after his manner, taken possession of, the earth. If we have in mind our English origin, we shall readily understand why in the deeds by which our lands are conveyed we note a phraseology which had its occasion in feudal tenures, or mark the last struggles of the Roman Church for temporal possession, and why in the courts we still hear the technical words of the pleader used in ancient Westminster Hall, and why we observe the precise and often quaint verbiage of indictments upon which a prisoner is set to trial for his life, to which, indeed, the modern prosecuting officer still adheres with almost superstitious fidelity. Brought over seas by our English ancestors, as the law of England, it, of course, was our law through the Colonial period, and when our conflict with the mother country became inevitable, our patriots invoked the common law, the heritage of all English subjects, as the justification for their action. Their defiance of unconstitutional taxation was not the outbreak of Englishmen reverting to barbarism in the wilds of a new country, or of men impatient of the restraint of just laws, nor was it the outcry of some rabid revolutionary philosophy taught by an alien race, for it was to the constitution of England, embodied in her common law, that the colonists appealed to a king and ministry who had themselves forgotten its precepts. The arguments of the freemen of Virginia or of Massachusetts were the same with those uttered by the liberal nobleman or commoner in the Parliament of England, and the triumph of our revolution was no less a victory for the common law than for the exhausted Americans who had offered their lives and their fortunes to the defense of the principles it had inculcated. Here, again, a king had thought his will more potent than the law, and here again the royal prestige and prerogative met humiliating defeat before the resistless moral force of the law, that had made the people's rights and the constitution the dominant power of government, rather than the arbitrary will or ambition of the sovereign. So sacred to every colonist was this law that in the first intimation of organized resistance to England in the resolutions of the Convention of 1774, it was declared that the colonists were of right entitled to the benefit and protection of the common law of England, and, as well, to that of the acts of Parliament existing at the time of colonization. As the common law had taught our fathers how to win their independence against a tyranny that ignored it, in gratitude, and seeking the preservation of their liberties through its precepts, it was embodied in the constitutions of the new states, where, proof against the vacillation, the passion, or the precipitate action of popular excitement, it should remain, the impregnable fortress, the last sanctuary, of the liberties of the people.

Through the blood of our ancestors, and by rightful inheritance, the common law is our birthright, which scarce needed, therefore, formal adoption by legislation or by the courts. But, that of record it might appear to all men, and be gainsaid by none, it has been inscribed upon the pages of our written law. The Constitution of Massachusetts declares (Article VI. of Chapter VI.): «All the laws which have heretofore been adopted, used, and approved in the Province, Colony or State of Massachusetts Bay, and usually practised on in the courts of law, shall still remain and be in full force, until altered or repealed by the legislature; such parts only excepted as are repugnant to the rights and liberties contained in this Constitution.» Like provision was made in the constitutions of the other original States. The constitution of those States, not existing as colonies, embody by reflection like safeguards for the popular liberty and right, and all directly traceable to the body of liberties of the common law.

The courts, pursuant to the requirements of the constitutions, have declared their perpetual allegiance to the principles of the ancient law. A typical illustration is found in Commonwealth *v.* Knowlton (reported in 2 Mass. Reports, p. 530), where the Supreme Judicial Court declared that «our ancestors, when they came into this new world, claimed the common law as their birthright, and brought it with them, except such parts as were judged inapplicable to their new state and condition. The common law thus claimed was the common law of their native country as it was amended or altered by English statutes in force at the time of their emigration. These statutes were never re-enacted in this country, but were considered as incorporated into the common law. Some few other English statutes passed since the emigration were adopted by our courts and now have the authority of law derived from long practice.

So much, therefore, of the common law of England as our ancestors brought with them, and of the statutes then in force, amending or altering it,— such of the more recent statutes as have been since adopted in practice, and the ancient usages aforesaid,— may be considered as forming the body of the common law of Massachusetts, which has submitted to some alterations by the acts of the provincial and state legislatures and by the provisions of our constitution.»

Again, the Massachusetts court, in Commonwealth *v.* Churchill (reported in 2 Metcalf at p. 118), held that the constitutional provision above referred to was to be «construed as adopting the great body of the common law, with those statutes made before the emigration of our ancestors, which were made in amendment of the common law, so far as these rules and principles were applicable to our condition and form of government.» And in the same case the court declared that it was unnecessary to show affirmatively that such rule or principle had been adjudicated before the Revolution, saying that «before the Revolution we had no regular reports of judicial decisions, and the most familiar rules and principles of law — those which lie at the foundation of our civil and social rights — could not be so proved. No, we rely on usages and traditions, and the well-known repositories of legal learning, works of approved authority, to learn what are the rules of the common law; and we have no doubt that these were the great sources to which the above pregnant provision of our constitution refers.»

Though the Constitution of the United States in no words adopts the common law, as part of its composition, its provisions none the less recognize its existence and continuance as the law of the States, with which the National government might not interfere. It was because of a fear that, through the new Federal Constitution, some untried scheme of government might be imposed upon the people and the States, and in order that the old system of law, known and trusted, might still prevail, safe in the will and obedience of those who knew it best, that it was expressly declared that the Federal Government should have in none of its functions any powers save those expressly delegated to it by the Constitution. (*Re* Barry, 42 Fed. Rep., 113, 118, 120.) But, as has been above noted, the Federal Judiciary, trained to the faith of the common law, have uniformly held that even Federal statutes are to be construed in accordance with the principles of that body of law.

So, by the will of the people, wisely and deliberately exercised and manifest by the declarations of our courts and constitutions, the vast and complex, but stable, system of American law, has been builded upon the ancient foundations of the law of England, and the reflecting citizen of the British Empire, though realizing that the prestige of the arms of England was dimmed by the victories of our Revolution, yet is reconciled when he remembers that the same spirit that gave freedom to Englishmen, inspired the American patriots, and that the colonists demanded only that liberty of person and conscience which the common law had taught them was the birthright of all mankind.

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Law, Constitutional, that part of public law which regulates the political organization of a State and so named because usually embodied in a written instrument called a constitution. It is sometimes spoken of as the organic or fundamental law of the State because it is the basis of all other municipal law. It differs from international law in being wholly municipal in character and from administrative law in that it regulates only in a general way, the organization of the government, leaving the details to be regulated by the rules of administrative law. It differs from ordinary statute law both as to its source and method of enactment and as to its content. While statute law is enacted, modified and repealed by the legislature, constitutional law is usually enacted by a constituent convention especially chosen for the purpose while its validity is, in America at least, usually made to depend upon the approval of the electorate, to whom it is submitted by way of referendum. Hence it is commonly said that constitutional law is enacted by the people, whereas statute law is the work of their representatives. This distinction as to method of enactment, however, is not universal. In some States the same bodies which enact ordinary statute law also ordain and alter the body of constitutional law.

This is true in Great Britain, where the Parliament may alter the constitution in the same manner in which it may enact or repeal an ordinary statute. Likewise in France and in Germany the Parliaments may make amendments to the constitution subject only to the limitation that the French Chambers are required to observe certain formalities which they do not observe in passing ordinary statutes, and in Germany an extraordinary majority is required. In Switzerland the people participate directly in the enactment of their constitutional law, not only through the referendum (q.v.) but also through the so-called initiative by which they are empowered to draw up proposed constitutional amendments and submit them directly to the electorate for approval. For the different types of constitutions see the article Constitution.

The distinction between the content of constitutional law and that of ordinary statutory legislation is largely one of degree and in the States of the American Union this distinction is fast disappearing. Among the proper subjects of constitutional law are (1) the structure and powers of the government including a distribution of its legislative, executive and judicial functions, among separate and distinct organs; (2) a definition of the class empowered to participate in the choice of elective officers and the method by which that choice is to be exercised; (3) the determination of the qualifications, duties and privileges of those empowered to hold government offices and mandates; (4) the creation of a sphere of individual liberty — usually embodied in a bill of rights — upon which the government is forbidden to encroach, and (5) provision for a legal and orderly method of making changes in the constitution so as to avoid the risks and dangers of revolution. In addition to these subjects which may be denominated the essentials of a constitution scientifically drawn, it is common to incorporate therein various provisions relating to education, patents, copyrights, the army and the navy, the militia, corporations, public debts, rules of judicial procedure, regulations concerning official salaries, taxation and administration, etc., which according to strictly juristic tests are more properly subjects for statutory regulation. The effect of this practice has been to introduce into the domain of constitutional law a considerable amount of private law, thus derogating from the principle that the constitution should be exclusively an instrument of public law. On the other hand the usual difficulty of amending the constitution so as to adapt it to new conditions and exigencies has made it necessary to deal with certain subjects by statutory legislation, although they are properly matters that should come within the province of constitutional law. Notable instances are statutes for the government of dependencies. Thus the ordinance of the old Confederate Congress of the United States, passed in 1787, for the government of the Northwest Territory, the various statutes for the organization of the other Territories of the United States, the acts for the government of the Philippine Islands and Porto Rico were of the nature of constitutions of government for the dependencies to which they applied. They were mainly instruments of constitutional public law, although cast in the form of statutes.

A final distinction between constitutional law and statute law is the element of paramountcy which belongs to the former. In all countries where constitutional law is a separate and distinct body of jurisprudence its prescriptions take precedence over all statutory enactments in case of a conflict between the two. In such cases the conflicting statute is said to be «unconstitutional» and is treated as invalid. The power of determining the fact of irreconcilability has been assumed by the judicial branch of the government in the United States and has been so long acquiesced in that the power will probably never be questioned, although it is not expressly conferred by the Constitution. In none of the continental European countries have the judiciaries assumed such power, and in England the «constitutionality» of an act of Parliament can scarcely arise, since that body is legally omnipotent. The rules for the construction of the prescriptions of constitutional law are essentially the same as those for the construction of statutes except that constitutions are more strictly interpreted and constitutional commands are more often construed as mandatory where similar provisions in statutes would be treated as directory only.

In the United States, and in fact in all countries having the federal form of government, there are two bodies of constitutional law, namely, that which is national in scope and that which is local, the former being paramount to the latter in case of conflict. In the United States that part which is federal or national consists of the Constitution «established and ordained by the people» in 1788, including the subsequent amendments thereto, together with the interpretations of the federal judiciary and the usages and customs which have grown up in connection with the administration of the government. Among the important principles which have been developed as a result of judicial interpretation may be mentioned the right of the government to acquire and administer foreign territory, the immunity of the national government, its instrumentalities and agencies from taxation by the States, the right of the government to issue legal tender paper currency both in time of war and in time of peace, the exclusive power of Congress over foreign and interstate commerce, the exclusive power of the States over all matters relating to the suffrage subject to the limitations of the 14th and 15th amendments, the right of the National government to undertake internal improvements, the right of the courts to declare laws unconstitutional, the right of Congress to abrogate a treaty, etc. Among the usages which have become for all practical purposes a part of Federal constitutional law may be mentioned: the ineligibility of the President for a third term, the obligation of presidential electors to vote for the party nominees, the power of the President to remove his appointees without the consent of the Senate, the method of legislation by the committee system, the requirement that representatives in Congress shall reside in the districts from which they are chosen, etc.

Likewise the constitutional law of the individual States is embodied in written constitutions, in most cases prepared by constituent assemblies and approved by the electorate upon referendum, together with the amendments thereto and the interpretations of the State judiciaries. Several of the early State constitutions were prepared and put into effect by the legislatures or by irregular revolutionary assemblies without popular ratification.

With one exception (Delaware), no alteration can be made in any of the existing constitutions without the approval of the people at the polls, and but three of the constitutions now in force were put into effect without ratification by the electorate. The earlier constitutions were brief instruments containing but little more than the law for the organization of the government and the necessary safeguards for the protection of individual liberty, but the later ones are bulky documents containing a vast amount of private law relating to matters which are properly subjects of statutory regulation. This increasing tendency to amplification has resulted from the popular distrust of the State legislatures and the consequent desire to place the regulation of many matters beyond the power of the legislature to alter or repeal it. The effect has been to destroy in a large degree the scientific distinction between constitutional law and statutory law, to retard the constitutional development of the commonwealth, and to add confusion to the task of the student and the practical constitutional lawyer.

In Great Britain the existing body of constitutional law differs in several respects from that of the United States. In the first place it is not so much the result of revolution nor is it so nearly the finished product of a constituent assembly. It is more the product of evolution and growth and is more largely unwritten than that of the United States. Moreover, what is written is scattered through different acts instead of being contained in a single compact instrument. Finally, the Parliament being the chief source of constitutional as well as of statutory law there are no juristic tests upon which a distinction may be founded — a fact which has led Mr. A. V. Dicey, one of the most learned English commentators, to declare that the constitutional law of England is a "sort of maze in which the wanderer is perplexed by unreality." He questions whether English constitutional law is really law, and expresses the opinion that it is only a cross between history and custom, undeserving of the name of law. As the term is used in England, he says, it includes all rules which define the members of the sovereign power and regulate their relations to each other, which determine the mode in which the sovereign power is exercised, which prescribe the order of succession to the throne, which regulate the prerogatives of the chief magistrate, determine the form of the legislature, define the territory of the state, etc. Such of these rules as are enforced by the courts he calls collectively the «law of the constitution.» The others which consist of understandings, habits or practices, and which are not enforced by the courts, he calls the «conventions of the constitution,» or constitutional morality. To the former class belong the rule as to the irresponsibility of the king and the responsibility of his ministers; to the latter belong the rules relating to the executive veto, the initiation of revenue bills and the resignation of ministers. Monsieur Boutmy, a learned French commentator on the British constitution, points out that the principal sources of the constitutional law of England are: (1) Treaties or quasi-treaties, such as the Acts of Union; (2) the common law; (3) solemn agreements, for example, the Bill of Rights; (4) statutes. Of the other European countries the constitutional law (*Staatsrecht*) of Germany is most nearly like that of the United States as to its source, content and dual character. The constitutional law of the French Republic may be dismissed within a sentence. It is embodied in a brief instrument of a few hundred words, contains a bare outline of the organization of the government, does not contain a solitary provision in behalf of individual liberty, and any part or the whole may be altered by the legislature at will.

Bibliography.— Anson, ‘Law and Custom of the Constitution’; Burgess, ‘Political Science and Constitutional Law’; Boutmy, ‘Studies in Constitutional Law’; Cooley, ‘Principles of Constitutional Law’; Dicey, ‘The Law of the Constitution’; Story, ‘Commentaries on the Constitution’; Lebon, ‘Das Staatsrecht der französischen Republic’; Labaud, ‘Das Staatsrecht des deutschen Reiches.’

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Law, Criminal, is the whole body of legal rules and provisions affecting the commission and prosecution of crime. In this article we shall deal only with the general principles of criminal law, as it has also been treated under the titles, Court; Criminology; Law; Law, Natural, etc., and under special cases such as Murder, Perjury, Theft, etc.

The theories and doctrines of criminal law are, perhaps, more thoroughly based upon the principles of natural law (q.v.) than any other branch of legal science. The earliest conception of criminal law could not have taken place long after Cain killed Abel, for it seems to rest upon the principle of vengeance, which is born of even animal instinct. The law of retaliation is older than history, and the idea of amendment for every injury is a part of human nature. All the religions in the world's history have never been able to teach men to «turn the other cheek,» but they have always willingly observed the law of «an eye for an eye, a tooth for a tooth.»

The doctrine of criminal law is that the commission of an unlawful act not only requires the guilty person to make proper amendment in some form to the injured party, but that he shall also suffer just punishment at the hands of the state, in order to prevent the repetition of the crime, as well as to make an example him which would tend to deter others from the commission of crime in general. One of the objects of criminal law is to reconcile the rules of procedure with natural justice so as to insure the safe conduct and tranquillity of the state. It embraces the whole body of rules defining the doctrine and the acts of criminal offense; it prescribes for the apprehension of persons charged with crime, the proper procedure for the trial of such persons, and their just punishment when found guilty. Many conflicting views exist among jurists in relation to the interpretation of criminal law, and there is a strong tendency to codify this branch — for instance, in the State of New York the Penal Code defines criminal offenses and provides for punishment, but it is left for the Code of Criminal Procedure to regulate the apprehension and trial of those charged with the commission of crime. Many of the State constitutions and the Constitution of the United States contain what is practically a codification of the laws regulating criminal procedure.

In ancient times and in the Middle Ages the law exercised the right of public vengeance, which had for its chief object the intimidation of the wrongdoer, and resorted to a great variety of grotesque and revolting punishments. The element of example, however, was not wanting, for the most horrible executions, chastisements, and tortures were devised and carried out in public places for the edification of the curious, whose minds must have been impressed with the horrifying spectacles. But in the 18th century a more enlightened jurisprudence opposed the old theory of public vengeance, and advanced the principle of a legitimate defense restrained within the limits of common interest. It was then, for the first time, recognized that the true and right object of criminal law should look to the amendment of the criminal, the amelioration of his condition, and the ultimate restoration to him of the rights of a free man, thus giving back to the world — not a criminal, but a good and useful citizen. From this standpoint, many members of the legal profession are opposed to capital punishment; and some are against corporal punishment, on the ground that it degrades the criminal and deprives him of all sense of pride and ambition, thus permanently unfitting him for making a return to the world of free society. Both in England and in the United States constant efforts are being made to reduce the number of capital offenses.

Everyone is amenable to punishment for crime, with the exception of infants and those of unsound intellect. And this latter exception is limited; it does not prevail in the case of a person committing crime in a lucid interval. Sometimes the fatuity of old age may save a person from punishment, and punishment is remitted in the case of a person who, although not an absolute idiot, is so weak as to be incapable of understanding the difference between right and wrong. Drunkenness is no excuse for the commission of crime, even if it has produced insanity at the moment of committing the crime. But if drunkenness is only the remote cause of the insanity, and the person is not at the time under the influence of liquor or drugs, the law gives him all the consideration that it would give to any other insane person. The cause of the insanity makes no difference; it is the fact *per se.*

A wide latitude in meting out punishment to those found guilty of crime is wisely permitted the judge, on account of the infinite variety of extenuating or aggravating circumstances which surround many cases. It can readily be seen that no code of laws could be made providing for exact or prescribed degrees of punishment, without thwarting the intentions of justice. And so the sentence is left in great measure to the discretion of the Court.

The details of procedure in criminal cases vary to some extent, according to the crime charged, but are substantially the same in all cases. After the warrant of arrest has been issued and the person charged with the commission of crime is apprehended, he is examined before a justice, at which time he may call witnesses in his defense. The justice may, according to his opinion of the evidence, discharge the accused, commit him to jail to await trial, or admit him to bail. The first step in the trial is the presentment of an indictment to the grand jury. The grand jury having been sworn by the judge, and having heard the witnesses, finds a «true bill» if they are satisfied that there is a *prima facie* case. The cause then goes to trial in open court before a judge and jury. The accused is entitled to counsel, and in case he cannot afford to engage counsel of his own choosing, the State (the judge) assigns counsel for him. The first proceeding is the selection of the jury (q.v.). When all of the twelve seats are filled, the jury is sworn and counsel for the prosecution opens the case. He may be private counsel, engaged by the parties bringing the action, but more often is the public prosecutor — the district-attorney. He examines the witnesses for the prosecution, bringing out all the salient points of the accusation. These witnesses are then cross-examined and re-examined under the rules of evidence (q.v.). Counsel for the prisoner then states the defense and examines witnesses, who are in turn cross-examined and re-examined as before. Then comes the summing up, first by counsel for the prosecution, then by counsel for the defense. The judge then sums up the case and charges the jury, instructing them in points of law on which the case may depend. They then retire and bring in the verdict, which must be unanimous. If they bring in a verdict of guilty, the prisoner is either sentenced or remanded for sentence; if not guilty, the prisoner is discharged. If the jury cannot agree on a verdict, they bring in a «disagreement,» and the prisoner is remanded for a new trial. The prisoner has a right to be present during the trial, but should he so conduct himself as to make it impossible to proceed with the case, the Court may conduct it in his absence. The prisoner then has to face the additional charge of contempt of Court. See articles under titles mentioned in first paragraph of this article; also ACCESSORY; COURTS, MILITARY; INDICTMENT; INSANITY; LAW, MARITIME. Consult: Blackstone, ‘Commentaries on the Laws of England’; Archbold, ‘Pleading, Evidence and Practice in Criminal Cases’ (1900); Bishop, ‘New Criminal Law’ (1900); Harris, ‘Principles of Criminal Law’ (8th ed. 1899); Phillips, ‘Comparative Criminal Jurisprudence’ (1899).

Law, Customary. See CUSTOMARY LAW.

Law, International. See INTERNATIONAL LAW; AMERICAN DIPLOMACY; UNITED STATES, DIPLOMACY OF.

Law, Natural. Many laws have been found necessary to regulate the conduct of man in his various relations to society which are more or less arbitrary according to the requirements of localized conditions, but underlying them all are the laws of nature.

If a man kill an animal, and eat of its flesh, he has no reason to conceal the act; he goes his way with a full stomach and a clear conscience, and no one charges him with the commission of crime. He has simply conformed to the law of nature and answered the instinct of self-preservation. But if a man kill another man, his whole deportment, and even the expression of his features, indicate the consciousness of guilt and fear. Natural law might be said to be the law dictated by conscience, not law deduced from man's education and experience in the world — law regulating his own general rights and duties in relation to the moral government of God, or Nature, and his own moral capacity and accountability.

So natural law covers a man's duty to God, or Nature — the duties of man toward himself, such as self-preservation, temperance, etc.; the duties of man toward other men, or duties which arise from his relations to others near or dear to him; and finally the duties of man, generally and politically, to universal society, especially to the community in which he lives.

At different periods of the world's history men have had various conceptions of justice. Self-preservation was the basis of law among the Sophists of Greece and the Epicureans; the Stoics believed that natural law was founded upon reason and used the term «rational law.» Aristotle conceived natural justice to be partly legal (made by man) and partly natural (dictated by God).

Natural law, or *jus naturale,* as defined by Roman philosophers and jurists, is that law which is naturally discerned by right reason, as opposed to the law found necessary and made by man for the safe conduct of the state under localized conditions, or by agreement for the preservation of international rights. Later, however, they distinguished *jus naturale* from *jus gentium,* the former being known by Ulpian's definition, «Natural law is that which nature has taught all living things,» and the latter including the laws of expressed or implied agreement between men, or humanistic laws. Aristotle interpreted natural law simply as the law of nations; the Stoic conception was that natural law makes all men free, but that the law of nations permits slavery. The Epicureans thought that commercial trade or profit-making came under natural law. In the administration of Roman justice, natural law was often referred to in justification of an act of judgment, but the validity of a Roman law was never questioned because opposed to natural law.

During the Middle Ages natural law seems to have been considered mostly in its humanistic aspect, that is, in its acquired or necessary application to particular conditions. And in the development of English and Continental law there is seen to exist a stronger inclination to consult the flexible laws of human reason rather than the immutable rules of natural law.

During the 18th century the theories and doctrines of natural law formed an important part of the discussions in relation to jurisprudence, politics, and political economy. This was particularly true in relation to the rehabilitation of the laws relating to liberty, personal rights, property-holding, etc. But in the end utilitarianism played a more important part in the period of legal reconstruction and reform. When jurisdiction passed from ecclesiastical authorities to the people at large, the popular theory that consciousness is the true interpreter of law (consult the writings of Marsiglio of Padua), in spite of its moral allurements had to be suppressed to the extent of eliminating its natural anarchistic possibilities. In England the populace gained the privilege of participating in the constitution of government mainly through the forced recognition of the natural-rights theories which they had long asserted against the crown.

The theory of natural law has ever had its adherents and its enemies. One reaction against it was notably set forth by Hobbes (q.v.). It can be variously construed, according to the philosophical reasoning of the definer. Some one reasons that polygamy is against natural law, another claims that marriage should never exist at all; this one claims that it is natural for man to worship a Supreme being, that one says that all religion is superstition and human weakness, and is not a natural desire. Unless, indeed, we assume that fundamentally all men's consciences are the same, the interpretation of natural law is dependent upon the moral sensibilities of the individual. Consult Holaind, 'Natural Law and Legal Practice.' See JURISPRUDENCE.

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Law, Maritime, a system of established legal rules which particularly relates to the affairs and business of the sea, to ships, their officers and crews, navigation, and to marine conveyances of property. The character and pursuits of marine life, and the commerce related thereto are of a nature peculiar to themselves, and these distinctive features were recognized at a very early period in the history of the civil and the common law, and were noted under the collective term merchant marine.

The ships of a nation are considered as a part of its territory wherever they may wander in the pursuits of commerce. Many of the most important principles of international law grew out of maritime transactions between the various countries of the world, and these principles are as sacred and as rigidly enforced as any of the laws founded upon the comity observed between the different powers. While the great mass of maritime law is the same in all commercial nations, yet in each country peculiarities exist as to some of its rules, and as to the manner in which they are enforced. These differences are owing in a large measure to the municipal laws of the various countries, and as a general rule affect only their own merchants or people in their relations to each other; whereas in matters affecting foreigners the law of the whole commercial world is rigidly observed and enforced. Any nation may adopt its own maritime code but still the mutual relations of commerce and intercourse demand that in all essential things there be a well established and generally observed uniform law founded on natural reason and justice. But every nation reserves the right to make such modifications as locality, the changes wrought by time, and the genius of its people and institutions may demand. The maritime law of each nation may be regarded as distinctively its own; the laws adopted by the respective maritime nations make the basis and groundwork of what is recognized as the maritime law of the world; and the laws of the different countries may have their local distinctions and peculiarities without affecting the general and harmonious integrity of the system, as the differences affect only their own citizens.

The High Court of Admiralty erected in England by Edward III. was of very extensive jurisdiction, embracing all maritime matters. The court has existed ever since in some form, although many modifications have been made. Many of the principles of the English maritime court were adopted by the United States when the separation from the mother country took place, in much the same manner that the English common law was adopted by this country. In the United States the Federal courts, more particularly the United States district courts, have jurisdiction in marine matters, both civil and criminal, the jurisdiction of the latter being original, and that of the Circuit and Supreme courts being appellate only. The jurisdiction of the Federal courts extends to navigable rivers of the United States, whether tidal or not, the lakes, and the waters connected therewith; and it has been decided that the jurisdiction of the Federal courts extends to navigable waters of a river lying entirely within one State. It has also been held that French consuls had no jurisdiction within the States, in matters of admiralty relating to French vessels. It has been conceded by the Federal courts that State laws upon the subject of pilotage conferred upon the State courts concurrent but not exclusive jurisdiction with that of the Federal courts.

It is difficult to conceive of a matter connected with marine affairs which has not been provided for in our marine laws, rules, and regulations, or by the decisions of our courts. On the civil side all matters relating to collisions, freights, charter-parties, demurrage (q.v.), salvage (q.v.), bonds of bottomry and respondentia or hypothecation of ship and cargo, seizure under the laws of impost, prize matters, general average, adjustments, libel for seaman's wages, or libel for other causes, liens for labor or materials, furnished for building or repairs upon marine crafts or for marine works, injuries to seamen, negligence of master or owners, surveys of vessels, towage, wharfage, jettison, marine contributions, dockage, and other kindred subjects are taken charge of and adjusted. Under the civil proceedings one of the most important in extent and complication is the law relating to customs. Through the customs and revenue regulations are derived immense sums of money, as a revenue for government, but an important provision connected with them is a fund which is expended in the maintenance of hospitals for the care of sick and injured marines. The admiralty laws have also a criminal jurisdiction, which extends to all crimes and offenses committed on the high seas, beyond the jurisdiction of any country, such jurisdiction, as generally understood, covering a marine league, or about three miles. The criminal jurisdiction of the United States admiralty court extends to the Great Lakes, as it has been held by the courts that the open waters of those lakes are high seas within the meaning of the statute of the United States. A crime committed on board a vessel in one of our navigable rivers would not give the Federal courts jurisdiction of the offense, but such an offense would be cognizable in the courts of the State within which it was committed. An effort has been made, with a good degree of success, to make the practice in our courts uniform in marine matters, so that an action may be heard and determined in the same manner in one State that it would be in another, without being subject to the great and often embarrassing differences which prevail in the different State courts.

It is one of the chief merits of our marine law that it aims to care for our seamen in all of their relations to the hazardous business in which they are engaged. The term mariner includes all persons employed on board vessels during a voyage to assist in their navigation and preservation, and to aid in the purposes for which the voyage is undertaken. This includes masters, mates, sailors, surveyors, carpenters, coopers, engineers, firemen, pilots, waiters, male or female etc. The term shipping applies to all sorts of craft, whether propelled by wind, steam, or other power. It is true that there are certain rules and regulations which, from the necessity of the circumstances, apply specially to craft propelled by steam which do not apply to those which depend upon the wind to send them forward. The United States Congress has enacted laws by which both steam and sailing vessels are to be built, registered or enrolled, manned, victualed, and navigated. Those laws show a constant aim toward a more humane and enlightened treatment of the common sailor than formerly prevailed, and which in some countries prevails to-day. When an American seaman is discharged in a foreign country even with his own consent, or when the ship is sold there, and her company discharged, three months' extra pay is by our laws required to be deposited in the hands of the American consul for the seaman's benefit. Recent laws have prohibited the infliction upon sailors of corporal punishment, once so common, and which doubtless was sometimes as severe as that described by Dana in his ‹Two Years Before The Mast.› Many other changes in the interest of the common sailors have been enacted by Congress, with a view to promote their health, comfort, and financial welfare. The master of a vessel, often called «ship's husband,» while on voyages at a long distance from the home port, or the place where the vessel is owned, is charged with great responsibility, and he is clothed with an authority commensurate with that responsibility, to enable him to act promptly and efficiently in times of emergency and peril. He has full control of the ship and its cargo. He may abandon the vessel or lighten it by throwing the cargo or some portion of it into the sea. In case of shipwreck from which some portion of the cargo is saved, or the ship brought to land in a damaged condition, in the absence of an opportunity to communicate with the owners, he may sell such property as has been saved from the wreck when prudence or circumstances require it. and he has the right to decide what ought to be done under the circumstances. In case of necessity he may, in the absence of opportunity to communicate with the owners, raise money by bottomry loan on the ship or her freight, or by respondentia on the cargo, or upon them all, by bonds pledging them at a high rate of interest, known as marine interest. Such bonds are to be paid when the ship arrives at her destination or at some designated port. If she does not arrive it follows that the bond is not good and payable. The holder of such bonds acquires an insurable interest in the property so pledged, and may secure his loan in an additional manner by insurance. The master may make contract for repairs upon his ship, when beyond the reach of prompt communication with the owners, and his reasonable contracts so made will be binding upon the owners. It not infrequently happens that serious questions arise as to the necessity for any repairs, or as to the extent of such necessity. Such questions may be obviated, in any American port, at least, by the master calling for a survey. The proper course for a master to pursue when within reach of a court of admiralty is to apply to it for directions how to proceed, and the directions of the court will furnish him full immunity when faithfully followed.

Salvage is an important and interesting provision in maritime law. It is such compensation as may be justly due to persons by whose voluntary assistance a ship or its cargo has been saved for the owners when in great peril, or after being abandoned by the officers and crew. The right to salvage depends solely upon the question whether the property has been saved from the perils of the sea. The amount of salvage to which the salvors will be entitled depends very largely upon the extent of the risk or the perils to which the property was subjected, and the perils of making the rescue. In most of the cases reported our courts have given one half of the value of the property saved; in some instances a larger percentage, and in a few cases an award of seven-eighths has been given. Somewhat akin to salvage is the subject of contribution. It sometimes becomes necessary to lighten a ship in a storm by throwing overboard a part of the cargo. If the cargo belongs to several persons and the portion so thrown overboard belongs to one or to only a part of the owners, those whose property has been saved from impending danger by the jettison, as the throwing overboard is called, are required to contribute to the loser in what is termed general average. Demurrage is an allowance for damage by the detention of a vessel. A master is always obliged to proceed with such despatch as he can consistently with safety, and a merchant or other person who loads a vessel or receives a cargo is bound to give it reasonable despatch. It is usual in a charter-party, or verbally, to provide for the number of lay-days in which a vessel shall be loaded or discharged, and for every day in excess of the number so specified the person responsible for such delay is required by the law merchant to make proper compensation.

Consult: Benedict, ‹Admiralty Law›; Parsons, ‹Treatise on Maritime Law› (1858); Pritchard, ‹Digest of Admiralty and Maritime Law› (1887); Abbott, ‹Law of Merchant Ships and Seamen› (1903); ‹American and English Encyclopædia of Law›; article «Admiralty.» See ADMIRALTY LAW; BOTTOMRY; CHARTER-PARTY; COLLISION; FLOTSAM, JETSAM, AND LIGAN; HIGH SEAS; MARINE INSURANCE; RESPONDENTIA; SEAMEN; SHIPPING.

Law, Military, a term which applies to and includes such rules of action and conduct as are imposed by a state upon persons in its military service, with a view to the establishment and maintenance of military discipline. It is largely, but not exclusively, statutory in character, and prescribes the rights of, and imposes duties and obligations upon, the several classes of persons composing its military establishment; it creates military tribunals, endows them with appropriate jurisdiction and regulates their procedure; it also defines military offenses and by the imposition of adequate penalties, endeavors to prevent their occurrence.

Distinction Between Military and Martial Law.— It is proper to observe, at this point, that the terms *military law* and *martial law,* though frequently confused, are by no means synonymous. Military law is in great part statutory in character and regulates the conduct of military persons at all times and in all places, without as well as within the territorial jurisdiction of the United States; that is, military law is applicable to certain persons, not only in time of peace, but in time of war as well, and its operation is not restricted to the territory of the United States, but follows its forces wherever they may go in the performance of lawful military duty or in the prosecution of a legitimate and duly authorized military undertaking. The Naval Articles of War, for example, do not cease to be binding upon the officers and men who constitute the crew of a vessel of war, when they pass from the territory of the United States into the high seas; indeed, by the comity of nations, those laws continue to be operative while such vessel is in the territorial waters of a foreign state. So, too, the Articles of War continue in force and have extra-territorial operation when any portion of the constitutional military forces enters foreign territory in the prosecution of a war lawfully declared by the Congress. The military laws of the United States had the same binding force in the armies of Generals Scott and Taylor while operating in Mexico that they had in respect to those portions of the army which remained within its territorial jurisdiction during that period. Military law has, also, chiefly to do with the acts and relations of military persons; it applies to the conduct of citizens in an exceedingly limited number of cases, in each of which there must be the express authority of an enactment of Congress.

Martial law, on the other hand, is not statutory in character, and arises, in every case, out of strict military necessity. Its proclamation, or establishment, is not expressly authorized by any of the provisions of the Constitution; it comes into being, as will hereafter be seen, only in the territory of an enemy in time of war, or in a part of the territory of the United States in which the proper civil authority is, for some controlling reason, unable for the time to exercise its proper functions. In the former case it is known as *military rule* or the *law of military occupation* and, as such forms a part of the Law of Nations. It disappears when such forcible resistance to the operation of the law has been overcome, or has ceased to exist, and the civil authorities have been enabled to resume the exercise of their appropriate functions.

Other Sources of Military Law.— While military law is in great part statutory, it is the function of the higher civil courts to interpret the statutes enacted by the Congress, and to apply them to cases arising in connection with their execution: and the decisions of such courts are of equal authority with the statutes upon which they are based. Among other forms of written military law may also be mentioned the decisions of the President and Secretary of War in military matters; the opinions of the Attorney General and of the Judge-Advocate General: the general regulations of the Army and the general orders of the War Department. There is also a body of well established usages known among military men as «customs of war,» which correspond, in binding force, to Customs at Common Law.

Courts-martial.— Military Law is enforced by means of certain tribunals, created for the purpose, called Courts-martial. These tribunals are created by the order of a proper convening authority, and are empowered by statute, to determine challenges, to try accusations against military persons, to reach findings of guilt or innocence respecting the same, and to impose appropriate sentences. Their sentences, however, have no legal validity, being in the nature of recommendations merely, until they have received the approval of a military commander, designated by law for this purpose, called the *reviewing authority.* With such approval or confirmation, however, their sentences become operative and acquire the same sanction as the sentences of civil courts having criminal jurisdiction, and are entitled to the same legal consideration. Courts-martial are classified, in accordance with their jurisdiction, into *General* and *Inferior Courts-martial;* the latter term including the Regimental and Garrison Court-martial, and the Summary Court.* The General Court-martial is the highest tribunal known to military law, and has the most comprehensive jurisdiction in respect to both persons and cases. It may try any person subject to military law for any offense over which such tribunals are given statutory jurisdiction. The jurisdiction of the minor courts is restricted as to the persons and cases triable by them, and as to the punishments which they may impose upon conviction.

Courts-martial differ from civil tribunals having criminal jurisdiction, not only in the nature and extent of their jurisdiction, as will presently be seen, but in the manner of their creation. Civil courts, whether of general or special jurisdiction, are created by statutes, which define their composition, endow them with appropriate jurisdiction, and determine the times when, and the place or places where their sessions shall be held. Courts-martial, on the other hand, though authorized by statute, are created, in every case, by proper military orders, issued by commanding officers having authority, under the Articles of War, to call them into being. When the cases referred to them for trial have been completed, or, in certain contingencies, at the discretion of the appointing power, they are dissolved by the authority that created them and simply cease to exist as military tribunals.

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* The several military tribunals now authorized are shown in the following table:

Those having power to try and sentence:	The General Court-martial—Complete jurisdiction.	
	The Regimental Court	Limited jurisdiction.
	The Summary Court	
	The Garrison Court	
Those having power to investigate merely:	The Court of Inquiry.	
	The Regimental Court for doing justice.	

The General Court-martial.— This court has the most extensive jurisdiction, both in respect to persons and cases, of any of the tribunals authorized by the Articles of War. It may try any military offender, whatever his rank, for any act made an offense by military law. This court may be convened at any time by the President, or by the Secretary of War acting in his behalf, by a general commanding a territorial division of an army in the field, or by a general or colonel commanding a separate territorial department. If the convening officer be the accuser or prosecutor, however, the court is convened by the President. In time of war two classes of persons are given authority to convene general courts-martial — commanders of divisions and commanders of separate brigades. This provision applies to the tactical organization of armies in the field, as distinguished from the geographical organization of military divisions and departments into which the territory of the United States and its insular possessions is habitually divided in time of peace.

Composition.—The statutes authorizing the several military tribunals known as courts-martial — contain the requirement that they shall be composed of *commissioned officers* — a term applied to persons in the military service, of and above the rank of additional second lieutenant, who have been appointed by the President, with the advice and consent of the Senate, and whose appointments are evidenced by commissions under seal, signed by the President and countersigned by the Secretary of War. The law requires that «general courts-martial may consist of any number of officers, from five to thirteen inclusive; but they shall not consist of less than thirteen when that number can be convened without manifest injury to the service.» Such judicial powers, therefore, as are vested by statute in a general court-martial become operative and may be fully exercised by a properly constituted tribunal composed of at least five members. A less number is without power to enter upon the trial of a case, to proceed with a trial already begun, or to perform any act of a judicial nature. The number of officers who shall compose a particular court is determined, in conformity to the terms of the statute, by the proper convening authority, and his conclusion in that regard is final.

The Judge-Advocate.— All courts-martial having general, as distinguished from summary jurisdiction, are provided with officers, detailed for the purpose by the proper convening authority, whose duty it is to prosecute cases coming before them in the name of the United States. The appointment of these officers is vested by statute in certain convening officers, who, as a consequence of their power to appoint courts-martial, are authorized to appoint judge-advocates for the same. The office of judge-advocate is a temporary employment created by statute; the general duties of the office are defined in the Articles of War, which empower the judge-advocate to prosecute in the name of the United States. Other statutes and regulations confer upon him the power to summon witnesses and in certain cases to compel their attendance by the issue of compulsory process. The law, regulations, and the custom of service thus vest in the judge-advocate the duty of preparing the case for trial and charge him with the responsibility of conducting the prosecution. In addition to his duty as prosecuting officer in behalf of the United States, the Articles of War provide that the judge-advocate «shall so far consider himself counsel for the prisoner as to object to any leading question to any of the witnesses, and to any question to the prisoner, the answer to which might tend to criminate himself.» The duty of the judge-advocate toward the accused should not be regarded as confined to the limited province of «counsel for the prisoner» as the same is defined in the Articles of War. Where the accused is ignorant and inexperienced and without counsel — especially where he is an enlisted man — the judge-advocate should take care that he does not suffer upon the trial from any ignorance or misconception of his legal rights, and has full opportunity to interpose such plea and make such defense as may best bring out the facts, the merits, or the extenuating circumstances of his case.

Counsel.—An officer or soldier put upon trial before a court-martial is not entitled, as of right, to have counsel present with him to assist him in his defense, but the privilege is one which is almost invariably conceded; and where it is unreasonably refused, such refusal may constitute ground for the disapproval of the proceedings. A court-martial, however, is not required to delay an unreasonable time to enable an accused to provide himself with counsel.

The Inferior Courts-martial.— The Regimental Court-martial.— The Articles of War provide that " every officer commanding a regiment or corps shall be competent to appoint, for his own regiment or corps, courts-martial, consisting of three officers, to try offenses not capital.» In addition to the commanders of regiments, properly so-called, the chiefs of such of the Staff Corps as include enlisted men in their personnel may convene these courts at posts or places occupied by troops under their direct military control and command. The strictly criminal jurisdiction of this tribunal having been transferred to the Summary Court by a recent enactment of the Congress, its functions are now largely restricted to cases which involve the redress of grievances alleged by enlisted men to have arisen in the administration of the commands to which they belong. It can now be lawfully convened for the trial of a soldier only in a case, properly referable to a Summary Court, in which the party defendant, being a non-commissioned officer, formally requests that the charges against him be passed upon by a regimental court-martial, or when such trial has been authorized by the officer competent to order the trial of the accused by a general court-martial.

The Garrison Court-martial.—While the Garrison Court-martial has the same jurisdiction in respect to offenses as the other inferior courts recognized by the Articles of War, its jurisdiction as to persons is considerably more extensive, and it may try enlisted men of any corps or arm of the service who are attached to, or form a part of, the command of the officer who has power to convene it. The regimental and garrison courts are each composed of three officers and, like the general court, are provided with judge-advocates whose duty it is to prosecute in the name of the United States: his duties have already been described. Their procedure is the same as that of the general court save that the testimony is not recorded.

The Summary Court.—This court is composed of a single officer and may be convened «by the commanding officer of each garrison, fort or other place, regiment or corps, detached battalion, or company, or other detachment of the Army.» The court may be appointed, however, and the officer who is to compose it may be designated by superior authority — that is, by the brigade, division, department, or post commander — when such a course is by him deemed either proper or desirable. The terms of the statute in respect to its constitution are thus seen to be extremely general and authorize the court to be convened by the commanding officer of a fort, camp, or other place, the garrison of which is composed of troops of the same or different corps; or by the commander of a regiment, battalion, separate company, or detachment in the field, without restriction as to its composition, for the trial of enlisted men charged with offenses falling within the jurisdiction of an inferior court in respect to the punishment which may be awarded upon conviction. When but one officer is present with a command the law requires that he shall constitute the court, and shall hear and finally determine such cases as are properly referable to it for trial.

As its name implies, the procedure of this court is summary in character. Cases are brought to trial within twenty-four hours after the arrest of the accused, or as soon thereafter as practicable, and the court sits at hours fixed by the post commander in appropriate orders or, in the absence of such orders, at the convenience of the court. The officer constituting the court is not sworn, but performs his duty under the sanction of his oath of office. The accused appears before the court and, as the right of challenge does not exist, is arraigned in the usual manner. If his plea be guilty, he is given an opportunity to make a statement and, if he so desires, to introduce testimony in respect to character. If the plea be not guilty, the trial is proceeded with in the usual manner; the witnesses are sworn, but the testimony is not recorded. The accused is given the opportunity to cross-examine the witnesses and to introduce testimony in his defense. The proceedings, finding, and sentence are approved and made operative by the signature of the reviewing authority, which is entered in the book itself, opposite the record of the trial. The commanding officers who are authorized by law to approve the sentences of Summary Courts have power to remit or mitigate the same. When the commanding officer sits as a Summary Court, no formal approval of the sentence is required by law; but he should sign the sentence, in such case in his official capacity as commanding officer, and date his signature.

Arrest and Confinement.—A military prosecution is instituted, in the case of an officer, by a military arrest. This is imposed by the proper commanding officer and requires the officer arrested to confine himself to his quarters or tent. These limits may be extended by proper authority, but a breach of close arrest is a serious offense at military law, involving the dismissal of the offender. In the case of an enlisted man the offender is placed in confinement pending his trial and, with a view to prevent abuses, it is required by law that —

> No officer or soldier put in arrest shall be continued in confinement more than eight days, or until such time as a court-martial can be assembled."

Jurisdiction of Military Tribunals.— Courts-martial have power to try military persons only for military offenses, save in time of war, when certain persons who accompany the armies in the field are similarly triable. The punishments which a general court-martial may impose include the capital penalty and are specified in the Articles of War; the power of the inferior courts to punish is restricted to three months' imprisonment, with or without forfeiture of pay, including reduction to the ranks in the case of a non-commissioned officer. The procedure of courts-martial is substantially the same as that of civil courts having criminal jurisdiction. The accused may challenge any members for cause stated, but peremptory challenges are not allowed. The court and judge-advocate are sworn and testimony is received under the usual witnesses' oath. The allegations against the accused are embodied in «charges and specifications» which correspond closely to the indictment and counts at criminal law; upon these the accused is arraigned and may plead to the jurisdiction, in bar of trial or in abatement of the action, and the court may decide any issues so arising; when these pleas have been exhausted, or if none of them be resorted to, a plea to the general issue is made, upon which the case goes to trial on its merits. The rules of evidence are those which regulate the admission of testimony in criminal cases in the courts of the United States. The judge-advocate prosecutes in behalf of the United States and, when the prosecution has rested, the witnesses for the defense are heard and the case is submitted on arguments in which the judge-advocate has the right to begin and close. The court is then closed for deliberation and a finding is reached, as to each separate charge and specification, by a majority vote. An appropriate sentence is then imposed, the majority rule prevailing, except in the case of a capital sentence where a vote of two-thirds is necessary. The record is then forwarded to the officer who convened the court whose province and duty it is to take action upon — approve or disapprove, etc.— the proceedings after the same are terminated and the record has been transmitted to him for such action. This officer is ordinarily the commander who has convened the court. In his absence, however, or where the command has been otherwise changed, his successor in command, or, «the officer commanding for the time being,» is invested with the same authority to pass upon the proceedings and order the execution of the sentence in a case of conviction.

In cases, however, of sentences of death or dismissal, imposed in time of peace, and of some death-sentences adjudged in time of war, together with all sentences «respecting general officers,» while the convening officer (or his successor) is the *original* reviewing authority, with the same power to approve or disapprove as in other cases, yet, inasmuch as the law prescribes that the sentence shall not be executed without the confirmation of the President, the latter becomes in these cases the *final* reviewing officer, and the sentence, having been approved by the officer who convened the court, the record is transmitted to him for his action. If, however, the proceedings or sentence are disapproved by the original reviewing officer, the record is not transmitted to the President as there is nothing left in such case for the action of higher authority. Where a general court-martial is convened directly by the President as commander-in-chief, he is of course both the original and final reviewing authority. The authority of a military commander as reviewing officer is limited to taking action upon the proceedings and sentence by approving or disapproving the same, wholly or in part, and directing the execution of the sentence, and to the incidental function, of pardoning or mitigating the punishments which have been approved by him. Action not included within these powers he is not authorized to take. The power to remit or mitigate sentences awarded by military tribunals is conferred, in express terms by statute, which provides that «every officer who is authorized to order a general court-martial shall have power to pardon or mitigate any punishment adjudged by it except the punishment of death or of dismissal of an officer. Every officer commanding a regiment or garrison in which a regimental garrison or summary court-martial may be held shall have power to pardon or mitigate any punishment which such court may adjudge.

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Law of Family, The. The term family is one of extensive import and great flexibility. It may embrace an indefinite number of persons, as those who are related by blood, or who are descended from a common ancestor; or it may mean those who reside under the same roof, as members of the one household. It has no technical meaning, in law; and, as a distinct entity, apart from the members of which it is composed, a family is not the subject of legal cognizance; and, even in respect of the management of the family and the natural and domestic relation of its members to each other, there are many things which, in the interest of society, the law holds sacred, and which public policy will not permit a court of justice to inquire into.

On the contrary, there are individual rights, duties and obligations, due from the members of the family to each other, arising from the social and contractual relations between them, which the law recognizes and enforces; and the collective term, being one of constant use in the framing of statutes, contracts, wills and other written instruments, requiring judicial interpretation and construction, it has long since acquired and now possesses a distinct though not a technical meaning, in law. Hence, for the purposes of determining the personal and individual rights of its members, and in order to arrive at a proper determination of the legal effect of the term, when used in such written instruments, it has become a word of considerable legal importance. This importance, however, arises not so much from the necessity of ascertaining the rights, duties and obligations of the family as a whole as it does from the necessity of determining those duties and obligations which its members, as individuals, owe to each other or which arise from the use of the collective term to designate the members of a class of persons instead of the individuals composing that class.

In contemplation of law, therefore, a family is defined to be a collective body of persons, who form one household, existing under one head and one domestic government, including parents, children and servants, and sometimes boarders and lodgers; and, being a collective body, composed of many individuals, a family may consist of a man's household, including his wife, children or servants; or, it may be composed of his children, without a wife; or, in the absence of children, it may consist of his brothers and sisters, or next of kin, and, upon his decease may even include his heirs. Hence, it is not necessary, to constitute a family, that its head should be a father or mother, for brothers and sisters living together, without parents, may constitute a family, or, a family may consist of a widow, a widower, a bachelor, or a guardian in charge of a minor child, with their servants. In short, every collective body of persons, living together, within the same curtilege, subsisting in common, directing its attention to a common object — the promotion of its mutual interest and social happiness — and which lives with its head, as a part of the household, each member of which is dependent upon him for support, in whole, or in part, constitutes a legal family; and a separate dwelling is not necessary to complete the family, for many families may dwell under the same roof. But, since the law, in its relation to the family, operates only upon its members individually, and not upon the collective unit, as a whole, the subject is referable to the law of domestic relations, in its several branches of husband and wife, parent and child, master and servant and of boarders and lodgers, and, to those rules of construction which the courts have adopted, for the interpretation of those written instruments in which the term occurs; and, therefore, an intelligent understanding of the subject requires a consideration of each of these several branches of the law.

The relation of husband and wife, and parent and child, is based upon natural and moral law. (See Law of Husband and Wife, The.) It is the result of marriage alone; and marriage, being a «status, the result of a contract,» is a civil institution, and needs none of the elements of a contract, for its support. While the relation of marriage, however, is thus primarily founded upon a contract which implies the mutual consent of the parties, when the contract is once entered into, the relation or status of marriage supersedes the contract through which it is brought about, and, when once established, it can neither be canceled, nor altered, by the voluntary consent or will of the parties, upon any new consideration, for it then becomes a civil institution or status, subject alone to the control of the public will and policy, and the rights, duties and obligations incident to the marital relation spring from, and are, thenceforth, governed by the laws of the State, and cannot be dissolved, except by the public consent, or, in the enforcement of some paramount rule of public policy, justifying a partial or absolute divorce. Being, thus, a civil institution or status, based upon natural and moral law, the relation of husband and wife and parent and child involves, in the highest degree, the natural principles of protection and dependence. From this doctrine, and from it alone, comes the rule that the husband and father is the head of the family, and, as such, has the legal right to regulate and control the household; and, in the exercise of this right, he may restrain his wife from squandering his estate, and may preserve his honor, by restraining her from keeping lewd or improper company; he has the right to the custody of his wife and children, and to the services of his wife, during coverture, and of his children, during minority, and, being the head of the family, he has the right to fix its domicil, and it is the duty of the wife and children to dwell with him there. Commensurate with these rights of husband and father, the wife is entitled to his support, affection, society and protection, and the law recognizes his natural and moral duty to maintain, protect and educate his children, and though this duty was unenforceable, by the courts, at the common law, it may now be enforced, in a proper case, under statutory provisions, generally, made for that purpose.

The husband's duty to maintain his wife, and to support and educate his children, is always in proportion to his situation and condition in life; and the duty of a father to provide for the maintenance and education of his children is independent of his obligation to provide for their mother, and is not affected by her misconduct.

Only menial or domestic servants who reside within the master's household are members of his family; and the relation, between them and the master, is purely conventional, arising alone from the contract of employment. By this contract, the servant is bound to render service to the master, in return for which he obligates himself to pay a stipulated compensation; and it is an implied condition of every contract of hiring that the servant shall yield obedience to the lawful and reasonable orders, commands and rules established by the master, for the conduct of his household. The servant is, therefore, to this extent, entirely under the control and direction of the master, and owes him respectful and decorous treatment. However, a servant is not bound to obey the master's unlawful and unreasonable orders, and, while the master has the right to use moderate correction, in the case of an apprentice, he has no right to inflict corporal punishment upon a servant, whether he be a minor or not, to enforce obedience to his commands, or for negligence or insolent behavior.

The servant being a part of the household the master is bound to provide him or her with board, and, where there is nothing, in the contract to the contrary, the servant's right to board continues, even during periods of sickness; but, in the absence of contract, the master is not bound to provide medical attendance to the servant, when taken sick in his service, nor when injured, while acting in the performance of his duties. The master owes the servant the further duty to use reasonable care to protect him from harm, while in the performance of his service, by furnishing him a safe place to work, as well as suitable instruments with which this work is to be done; and, for the master's neglect in these respects, he is liable for injuries occasioned thereby. But, whatever may be the servant's right to recover for breach of the contract of employment, the master cannot be compelled, by decree, order or judgment of court, to retain him in his employ.

A lodger is one who rests, or dwells in a place, for a time, and lodging implies a temporary habitation. The difference, therefore, between a lodger and a tenant is, that while the tenant has exclusive possession of his habitation, the lodger has merely the use of it, without actual or exclusive possession, which remains in the lessor, subject to the use. The relation between a lodger and the family of which he forms a part, is, like that of master and servant, based upon contract, and is subject to its terms; and, it is a general rule, applicable to all such contracts, that when the owner of a house takes a person to reside in a part of it, though such person is entitled to the exclusive possession of the rooms, appointed for his use, with the uncontrolled right of ingress and egress, yet, if the owner retains his character, as master of the house, the person so occupying a part of it occupies it as a lodger only, subject to the master's control. A lodger may be a boarder, but the two terms are by no means convertible because a boarder may not dwell within the family of which he forms a part.

This, in brief, is the constitution of a legal family, with a naked outline of the legal principles governing the rights and duties of its members; but, inasmuch as the general term family is one of frequent and constant recurrence, in statutes, contracts, wills and other instruments, in writing, its legal importance becomes apparent, in connection with the construction and interpretation of such documents, and, for this reason, some brief reference to this branch of the subject is necessary to its clear elucidation and understanding.

Under the homestead and exemption laws, the term family includes a household composed of parents and children, and other relatives, or domestics and servants; and since, in order to constitute a family, there must be an obligation, upon the part of its head, to support the others, or some of them, and a corresponding state of dependence, on the part of those thus entitled to support, something more is necessary, under these laws, to constitute a family, than a mere aggregation of individuals, residing within the same house; and, while some courts have held that a homestead is «one or more persons actually occupying a homestead,» others hold that a single man, or a widower having no persons living with him, other than his servants, is not the head of a family entitled to the benefits of the homestead laws. And, so, while under some exemption laws it is held that a widow, without minor children, occupying a portion of her deceased husband's house, and renting out the farm, upon which it stands, and even a deserted wife, without children, constituted a family; under others it is held that a single man does not constitute a family, although he maintains a household, and has servants and employees to care for it.

Within the purview of a statute providing for the organization of benevolent societies, to secure death-benefits to the «family or heirs» of its members, it is held that where a member was an old man, living, with a young woman, to whom he was not married, but who had lived with him in the same house for many years, and who had treated each other as father and daughter, constituted a family, under the statute, and that she was entitled to receive the benefit, upon his death. And, under statutes, subjecting the wife's property to liability for family expenses, it is held that the term «family» includes those who were living with her, as part of her household, including servants necessarily employed in the family, and constituting a part of it. So, where a statute provides an allowance, for the support of «a widow and her family» from the estate of her deceased husband, for a certain time, after his death, the term «family» is held to include, not only the widow and minor children, but also such persons as constituted the family at the time of his decease, whether servants, or children who had reached their majority; and also, a childless widow, and the children of the decedent's wife, by a former husband, if they were under age, and resided with her, are embraced within the term; but, under these laws, the term «family» does not include assistants, who may be necessary to keep the house and manage a farm, or boarders; and a boarder is not within a statute requiring or permitting service of process upon a member of the family of the person to be served. And, under a statute providing that upon the death of a man, having a family, and leaving a widow and minor child, certain property should not be deemed assets, but should be set apart for the widow, it was held that one who had not lived with his wife, for a number of years, and who, at the time of his death, was not keeping house, and had neither servants nor minor children, but had a daughter living with his wife, had a family, within the meaning of the statute.

In applying judicial rules of construction to the interpretation of contracts, where the collective term family, to designate a class of persons, instead of its members, is used, it is held that where a policy of beneficial insurance provides that, where the benefit is made payable to a class of persons, designated as the «family» or «heirs» of a member, the word «family» means next of kin, or those who would take in case of intestacy; and that the terms of a policy of fire insurance, which requires that «a family should live in the house during the whole year,» are fully complied with where two servants are left to work about the place during the absence of the assured and his family. So, a transportation ticket issued by a railroad company, for the use of «the holder and his family,» is held to enure to the benefit of an adult son living with his father as a member of the family, unless there be some restriction as to the meaning of the term, contained in the contract itself.

Upon the construction of a deed reserving, to the grantor «and his family,» an old burying-ground, with a right of way thereto, it was held that a reservation, to his family, embraced not only the grantor's children, who were members of his household when the deed was made, but also, his heirs or lineal descendants generally.

It is a well recognized principle of law that a family in its collective capacity can have no heirs, and, at common law, bequests to a family were void for uncertainty; but, inasmuch as the modern rule of interpretation is to construe the provisions of a will so as to carry out, as near as may be, the intention of the testator, the effect of this principle is now obviated, by construing the will liberally, in order to give effect to the testator's intention, and, to prevent, where possible, a forfeiture of property. (See WILL.) Thus, where a testator bequeaths property, in trust, the income of which is to be applied to his children and their «families,» the word family is held to include his sons and daughters and their children, so long as they live together and form a portion of the same household, or, from their tender years, are entitled to support, as such. So, in a will providing for a reversion of property to the testator's «family,» the term family is held to mean his widow and child, and, generally, the use of this term, in a will, is construed to include the testator's wife, as well as his children, if there be nothing in the context to show a different intention; but where the will is that of a deceased wife, the husband is not considered a member of her family, because he is neither next of kin nor heir to his wife; and, where it is the husband's will which is the subject of construction, the word family does not necessarily include a stepson, although it has been held that where a testator directs his trustees to maintain his «son, or his family,» the use of the general term includes the son's widow and her children, by him, as well as a child by a former marriage; and, a power given by will, to the testator's widow, to dispose of property for the benefit of herself and «family,» authorizes her to execute the power, in favor of an illegitimate son of one of the testator's children.

And, if a power in a will be given, for the benefit of a married woman and her family, the husband would be excluded from participation in its benefits, unless the words used be controlled or influenced by some expression showing a different intent; and, where a testator made a bequest to his son «for the support of himself and family, and for no other purpose,» it is held that the will created a trust-fund, for the use specified, and the son was not entitled to the bequest, in his own right.

In general, where in devises of real property, and in bequests of personalty, the testator uses the word family to describe a class of persons, without other limitation, it may be safely concluded that the word family, so used, will be interpreted to mean «heirs,» in respect of realty, and «next of kin» in respect of personal property, and the property, so devised or bequeathed, will, therefore, go to those who are entitled to take, as in case of intestacy, under the laws of descent and distribution.

Bibliography.— For reasons stated in the text, there is no distinctive treatise on the «law of family»; but the subject is briefly referred to in law dictionaries and encyclopedias under that title. However, for its consideration, in detail, reference must be had to works treating of the family relations generally, or of the various subjects into which it has been divided, by jurists and text writers, and to treaties upon the construction of statutes and other legal documents. As to these general and special subjects, reference is made to the following, viz.: Bouvier, ‹Law Dictionary,› tit. «Family»; ‹American and English Encyclopedia of Law,› tit. «Family»; Schouler, ‹Domestic Relations› (5th ed. 1895);

Browne, ‹Domestic Relations› (1883); Reeves, ‹Domestic Relations› (1888); Rodgers, ‹Domestic Relations› (1899); Tiffany, ‹Persons and Domestic Relations› (1896); Ewell and Mure, ‹Manual of the Law of Domestic Relations› (1896); Schouler, ‹Husband and Wife› (1882); Stewart, ‹Husband and Wife› (1884); Hochheimer, ‹Custody of Infants› (1899); Tyler, ‹Infancy and Coverture› (1882); Wood, ‹Master and Servant› (1896); Bailey, ‹Law of Master's Liability for Injuries to Servant› (1894).

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Law of Husband and Wife, The. In those communities where the system of monogamy prevails, the law of husband and wife is based upon marriage (q.v.), between one man and one woman, and is to be found in the provision made, by the law-making power, for the regulation and enforcement of the rights, duties and obligations arising from the relation thus established between them. And, in those jurisdictions in which the principles of Anglo-Saxon jurisprudence maintain, the law of husband and wife is embodied in the doctrines of the common law of England, as modified by the application of the principles of equity to the property rights of the wife, and by statutory charges affecting, in this and in other respects, the personal rights and duties of either the husband or the wife.

In its legal aspect, marriage is a status, the result of a contract; but, when the relation of marriage is once entered into, the contract, through which it is brought about, ceases to exist, and thenceforth the relation of husband and wife is governed alone by the laws of the State in which it exists, and it cannot afterward be modified or changed by the voluntary consent of the parties, nor can it be dissolved upon any new consideration, in so far as they are concerned. This can only be done by some action upon the part of the State, for reasons which may be considered sufficient to meet the demands of an enlightened public policy, or which may conserve the general welfare of the State.

The institution of marriage «has its foundation in nature,» and is said to be «the parent and not the child of civil society»;* and, being based upon natural law, involves, in the highest degree, principles of dependence and protection.

It was a principle of the common law that, upon marriage, the husband and wife became one person, inasmuch as the legal existence of the wife was absorbed or merged into that of the husband; and, while the legal identity of the husband was, in no wise, affected by the marriage, that of the wife was wholly suspended during coverture; and, under this principle, the husband's dominion over the person and property of the wife became paramount during the continuance of the marital relation between them. For this reason, the wife was wholly incapable of entering into any contract, or of acquiring, conveying or encumbering real estate, in her own right, or of disposing of personal property, by gift or otherwise, without the husband's consent; nor could she sue or be sued alone. Indeed, she was rendered wholly incapable of doing any act *sui juris*, though she might act in any capacity which did not involve a question of her own status, and which was not inconsistent with her legal disabilities as a married woman. She was, therefore, enabled to act as the agent or trustee of another; but, being wholly incapable of entering into contracts in her own behalf, she had no power to appoint an agent to act for herself — not even her husband — and, when acting as trustee, the husband's consent and concurrence was necessary, because he was personally responsible for any breach which might have been committed in the execution of the trust of which she was the trustee.

To the legal disabilities of the wife, however, there were certain exceptions; and, even at the common law she had the right to act, as a feme sole, in case of necessity, or when she was absolved from the disabilities of coverture, by certain local customs. Thus, the wife had the right to act, as an unmarried woman, where the husband was an alien, or where he had been banished or transported for life, or, where he had abjured the realm, or, where he had been imprisoned as a felon; and, by the well-known custom of London, she was enabled to transact business, in her own name, in which her «husband meddleth nothing,» and she was chargeable, under this custom, «as a feme sole, concerning anything that toucheth her craft.»

Growing out of, and incidental to the marital relation, the common law imposed certain duties and conferred certain rights upon the husband and wife, the performance and enjoyment of which could not be avoided, unless under exceptional circumstances. Among these duties, the husband was bound to support and protect the wife, though there was no reciprocal duty upon the part of the wife to support the husband, except to the extent of her services; she was bound to «honor, love and obey» him, and allow him matrimonial intercourse and cohabitation, and both were entitled to the society and protection of the other; the husband, being the head of the wife, was entitled to the custody of her person, and the control of her property and services; he had the right to fix the marital domicil, and it was her duty to dwell with him there.

Collateral to the doctrine of the merger of the legal existence of the wife into that of the husband, all ante-nuptial contracts, between the husband and wife, were rendered void by the marriage, and, during coverture, they were incapable of entering into any contract with each other; and, upon the same ground, neither the husband nor the wife were liable for torts committed, by the one, against the other. However, the wife's ante-nuptial contracts and torts, with, and against third persons, were in no wise affected by the marriage, the husband being liable for their payment and satisfaction, even though he obtained no property from her, by the marriage; and, if he died, or, for any other reason, the coverture ceased, the obligation and liability of the wife for her ante-nuptial contracts and torts, in favor of third persons, were not extinguished, but were still enforceable against her, upon the termination of the marriage. Upon the other hand, for torts committed against the wife, by third persons, other than the husband, a right of action arose in her favor, although an action could not be maintained by her for their enforcement, without joining the husband in the suit; and damages, if any, recovered, collected and reduced to possession, by the husband during coverture, became the property of the husband, by virtue of his marital rights, and were subject to the payment of his debts, and went to his personal representative, upon his death.

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* This natural origin of marriage is generally recognized by the jurists of England and America; but the doctrine is by no means of universal application. For, when the revision of the laws of France was under discussion, by the Council of State, under the first Napoleon, that reformer is credited with having expressed the opinion, that, “*Le mariage ne dérive point de la nature. La famille orientale diffère entirement de la famille occidentale. L'homme est le ministre de la nature, et la société vient s'entrer sur elle. Les lois sont faites pour les mœurs et les mœurs varient.*” Upon another occasion, the same authority is said to have maintained, that, “*Si l'homme ne vieillissait pas, je ne lui voudrais pas de femme.*”

Upon the common law doctrine that the husband was entitled to the *consortium* of the wife, he was entitled to maintain an action, against third persons, for the recovery of damages, for any act which interfered with this right, and, therefore, an action arose in his favor for the alienation of his wife's affections, even though the wrongdoers were the parents of the wife, although an action for the same cause was denied to the wife; the reason assigned for this denial being that the wife was incapable of maintaining an action for the enforcement of the right, without joining the husband, as a party plaintiff, and since any judgment, in an action for tort in her favor would have enured to his individual benefit, it was considered to be against public policy to allow the recovery of damages, in his own favor, for an injury which he himself had caused; but, since this objection applied only to the remedy, and not to the right, the principle upon which the action was based was held to apply to the wife as well as to the husband; and this being recognized, the right of action continued in the wife but was held in abeyance until the disabilities of marriage were removed by death, or otherwise, when it was enforceable by her, as a feme sole. Ordinarily, neither the husband nor the wife could be held liable for crime committed by the one against the other; but, to this rule there were certain exceptions, such as assault, manslaughter, and other crimes of an aggravated character, where the interest of the public, requiring the punishment of criminals overbalanced the mere private interests of the individuals, incident to the marital relation.

The liability of the husband or the wife for crimes, committed by either of them, against third persons, was in no wise affected by the marital relation, though, if the crime, complained of, were committed by the wife, in the presence of the husband, the *prima facie* presumption was that she acted under his coercion, and, in such case, the husband was liable, and not the wife. This presumption, however, was subject to rebuttal, and where it was overcome, by the circumstances attending the commission of the crime, she was liable, and not the husband.

The husband's natural duty to support the wife, as recognized at the common law, required him to supply her with all the necessaries requisite and suitable for her maintenance, commensurate with his social position and condition in life; and this duty necessarily extended to supplies furnished to her, for her children's support, as well as for her own. If the husband failed to perform his duty in this respect, the wife was entitled to use his credit to obtain such necessaries and supplies; and for this purpose, her authority to bind the husband was complete, and, being based upon a duty incident to the marital relation, and not upon contract, this authority existed, in favor of the wife, independent of the doctrine of agency, to which it has been generally ascribed.

The full performance of the husband's duty to support the wife was only excused by an abandonment upon her part, without cause; or, as the result of a divorce *a vinculo,* or, where there was a separation by mutual consent, upon a stipulation that he would make a suitable allowance for her support, which is regularly paid by him; and the husband was not relieved from the performance of this duty in case he turned the wife out of doors, or deserted her without cause, and failed to supply her with the means of support.

In consideration of the liability of the husband for the wife's ante-nuptial debts and torts, and of his duty to support her, according to his social position and condition in life, the common law vested in him, *jure mariti,* the ownership, enjoyment and control of her entire estate, real and personal, subject only to certain limitations growing out of the nature of the property which she owned, and its condition, at the date of the marriage. Under the operation of this doctrine, the husband became the absolute owner of all the personal property of the wife, in possession, whether acquired before or after marriage; and no act, upon her part, was necessary to vest the title to such personal property in him. He was also entitled to her choses in action, subject only to the condition, that in order to vest the title in him, they were required to be reduced to the husband's possession, during coverture, and this he was entitled to, without her consent; but the mere custody of a chose in action was not, in itself, such a reduction to possession, as to entitle him to its ownership; hence, in order to reduce the wife's choses in action to possession, some affirmative act, upon his part, was necessary to show an intention to acquire title in himself. If the husband failed to reduce the wife's choses in action to possession, however, during coverture, her title to such property continued unimpaired; he was entitled to the income therefrom, but her ownership and right of possession continued, and survived the coverture, and, upon the dissolution of the marital relation, she was entitled to its enjoyment, as though she had never been married. The husband's right to the real estate of the wife extended only to its use, and the enjoyment of its rents, issues and profits, during the marriage. Hence, he had no right, without her consent, to encumber her real estate, nor to change her realty into personalty, or to do any other act, the effect of which was to change the course of descent, or the right of succession to her heirs.

Besides these rights and interests of the husband in the wife's property, he was also entitled to curtesy in her real estate, which became vested in him, upon her death, provided always, that issue was born of the marriage, and, as an offset to the husband's right of curtesy, the wife was entitled to dower in his real estate, regardless of whether issue was born of the marriage or not. This right of dower, it may be observed, was the only interest which the wife acquired in the husband's property, real or personal, by virtue of the marital relation; her right to any part of his personal property, whether before or after his demise, being entirely a matter of statutory enactment.*

The wife's property thus acquired, by the husband, in virtue of the marital relation, became the absolute property of the husband; he could alienate and dispose of it, and it became subject to the payment of his debts, as any other property, belonging to him.

While the natural rights and duties of the husband and wife, growing out of the marital relation, have always been respected and upheld in equity, courts of chancery, in England and America, have never recognized nor adopted the principles of the common law, respecting her property; and, in recent years, these principles have been materially changed, by statute, in both countries; and the tendency of modern legislation is to wholly emancipate the wife's property from the husband's ownership and control, and in this respect, at least, to treat her as a feme sole.

Thus, the common law rule, that ante-nuptial contracts between husband and wife were avoided by marriage, was so far modified in equity as to uphold and enforce settlements made, by the husband, for the benefit of the wife, where such settlements were made in consideration of the marriage; and, the same is true of provisions made by him, either before or after marriage, for the personal comfort and adornment of the wife, in the nature of *pin-money* and *paraphernalia,* or, where gifts of property were made, by third persons, for the separate use of the wife; and, courts of equity, in recognition of the wife's right to the acquisition and enjoyment of property in her own right, have even gone so far as to uphold gifts of real estate made, by the husband to the wife, through the intervention of a third person. Courts of chancery have also recognized and enforced the wife's equity to a settlement in property which she owned, at the date of the marriage, where it was necessary for the husband, or his creditors or assignees, to invoke the aid of these courts, to reduce it to possession; or, where the husband married a ward of the court, without its consent; the maxim in the one case being that he who seeks equity must do equity, while in the other the settlement was compelled, as a punishment to the husband, for his contempt of court, in marrying a ward without the chancellor's consent.

The wife's equitable right to a settlement was the same, whether the property in question were legal or equitable in its nature. This equity to a settlement was, however, a personal right, which the wife alone could enforce, and being an allowance, made out of her own property, for her benefit and for the benefit of her children, might be waived by her, or entirely defeated, if she had a suitable provision otherwise made for her and their support; and the wife's right to a settlement was likewise barred by her fraud or misconduct.

This equitable right of the wife was enforceable, by actions brought and maintained directly in her own behalf, or, in actions brought by creditors or assignees of the husband in order to subject her property to the payment of his debts, or the acquirement of its possession, under an assignment from him. Although these rights of a married woman were fully recognized and enforced in equity, still she had no right to maintain or defend an action, in her own name, for their enforcement, the rule requiring that the husband should be joined, with her, in the suit, or, if his interests were adverse to hers, she came or was brought into court, as complainant or defendant, by or in the name of a next friend.

Aside from these equitable principles recognizing, and to this extent, enforcing the property rights of married women, the common law doctrine of the merger of the legal existence of the wife into that of the husband, and her right to hold and enjoy property, in her own right, has been materially modified, and in some jurisdictions entirely abrogated, by statute, and a married woman now stands, in respect of her separate property, generally, as though she were a feme sole; and, where, by statute, she is enabled to hold property in her own right, she may make any contract concerning its management and disposition, as though she had never been married. In some jurisdictions also the husband is wholly released from his common law liability to answer for the ante-nuptial contracts and debts of the wife, while in others, this liability is restricted to the value of the property which he acquires through the marriage, and generally he is released from all responsibility for her post-nuptial torts, unless committed, by his authority, direction or encouragement. So, the common law disability of the wife to acquire property has been generally removed by statute, and she may now acquire property, real or personal, by gift, bequest or devise, directly from the husband, or, from third persons; and, having the authority to acquire and hold such property, she has the right to convey it, without the husband's

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(*) Under the civil law, the natural duties and obligations of the husband and wife are much the same, as they were at the common law; the husband is bound to protect and support the wife, according to his means and condition in life, while the wife owes the husband obedience; and, without his consent, she is incapable of acting in law. If, however, she engaged in business, as a sole trader she could bind herself, in any thing relating to her trade, without his consent. As regards property, however, the principles of the two systems, are, in many respects, different. Under the civil law, the wife's property is divided into dotal, or that which the wife brings to the husband, upon marriage, to assist in maintaining the common ménage, and extra-dotal, or that which forms no part of her dowry; and, extra-dotal property includes partnership or community property, *e. i.* such property as is acquired during the coverture, by the joint efforts and labors of both. In the wife's dotal property the husband has no interest except the enjoyment of its usufruct, while in the extra-dotal, or community property, both have a joint interest during life, the undivided moiety of which goes to the survivor, upon the death of either. Both the husband and the wife are enabled, under the civil law, to enter into contract respecting their separate property, in any way, not incompatible with good morals, or which is not in derogation of the husband's authority over the wife and his children, or which does not change the legal order of succession. *Vide* Kent's Comm., Vol. II., pp. 183-187, and notes.

consent, and, his joinder in conveyances of real estate, is only necessary to bar his right of curtesy, for the same reason that the wife was always required to join in the husband's deed in order to avoid her claim to dower in his lands.

When the wife is empowered, by statute, to acquire, hold and dispose of property, in her own right, she may enter into contracts for its management, protection and improvement, and for the enforcement of such contracts, she may sue and be sued as a feme sole; and the right of the wife to maintain actions, in her own name, is not necessarily restricted to actions respecting her separate property, but this right is now extended by statute, in many States, so as to include the maintenance of actions for personal wrongs and other injuries; and for these she may maintain actions, in her own name against the husband, as well as against others, without joining the husband, or suing in the name of a next friend.

The statutory emancipation of the wife, and her property, from the management and control of the husband, however, is not necessarily in all cases complete, and, being in derogation of the common law, the statute under which the right, whatever it be, is claimed, is to be construed strictly, and the right will not be upheld, unless expressly granted, or unless it arises, by necessary implication, from the terms of the statute under which it is sought to be enforced.

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Law of Nations. See INTERNATIONAL LAW.

Law, Patent. See PATENTS, THE LAWS OF.

Law, Physical. See PHYSICS.

Law Schools. The first American law school was founded at Litchfield, Conn., in 1784 and discontinued in 1833. Though not connected with any university it seems to have made an excellent record. Of 1,023 graduates, 50 became members of congress, 15 United States senators, 40 judges of the higher State courts, 10 governors of States, 5 cabinet officers, 2 justices of the Federal Supreme Court, 1 vice-president of the United States and several foreign ministers. A course of lectures in law was delivered in the College of Philadelphia in 1791 by James Wilson, who had been appointed professor of law in that institution, but his work was discontinued before the close of the second course. In 1797 James Kent made a similar attempt at Columbia, but he gave only one course of lectures. The Harvard Law School, established in 1817, was the earliest school in the country connected with a university and authorized to confer degrees in law. The course was lengthened to three years in 1877. There were no examinations for the degree till 1871, and none for admission till 1877. At the beginning of the year 1897 the rule came into force by which only graduates of approved colleges and persons qualified to enter the senior class of Harvard College are admitted as regular students. The Yale Law School was established in 1824, that of the University of Virginia in 1825, and the Cincinnati Law School in 1833. Law schools had exercised little influence on the legal profession in this country up to the time of the opening of the Columbia Law School in 1858. In 1878 there were 50 schools with 3,012 students; in 1901 there were 86 schools with 11,883 students. The increase in students in 23 years has been 294 per cent. See also EDUCATION, PROFESSIONAL, IN AMERICA.

Lawes, lâz, **Henry,** English composer: b. Dinton, Warwickshire, 1596; d. London 21 Oct. 1662. He was a brother of William Lawes (q.v.) and was educated as a classical musician. He became famous as a composer for masques and songs and he is eulogized by Milton in several poems. He set to music the poet's ‹Masque of Comus› and supervised its production at Ludlow Castle in 1634. He published: ‹Ayres and Dialogues, for One, Two and Three Voices› (1653).

Lawes, SIR **John Bennett,** English chemist: b. Rothamsted, Hertfordshire, 28 Dec. 1814; d. there 31 Aug. 1900. He was educated at Eton and at Oxford, whence he went to London, and there remained for a while engaged in the practical study of chemistry. Reaching his majority, he came into possession of his estate, where he undertook experiments in agricultural chemistry in the interest of a more scientific method of agriculture. In 1843 he employed Dr. (afterward Sir) J. H. Gilbert as superintendent of laboratory work at the Rothamsted farm, and uniting his own labors with those of his colleague, by a course of investigations, indoors and out, developed scientific processes whereby superphosphate of lime came to be used as a fertilizer. For over 50 years they carried on these labors together, and important practical results for improved agriculture are recorded to their credit. In 1899 Lawes transferred his laboratories and experimental fields, with an endowment amounting to about £100,000, to a board of trustees, in order to secure their permanent usefulness. Accounts of the Rothamsted experiments may be found in the ‹Journal› of the Royal Agricultural Society of England; ‹Reports› of the British Association for the Advancement of Science, ‹Proceedings› and ‹Transactions› of the Royal Society of London, ‹Journal› of the Horticultural Society of London,› and ‹Memoranda› of the Rothamsted station.

Lawes, William, English composer: d. Chester, England, 1645. He was an elder brother of Henry Lawes (q.v.), with whom he was associated in various musical matters, and not only wrote music for many of the songs of the time, but the music for Sandys' version of the Psalms, published in 1648.

Law'less, Emily, Irish novelist, daughter of the 3d Baron Cloncurry: 1845. She has published several popular romances of Irish life, full of pathos and picturesqueness, among which are: ‹A Millionaire's Cousin,› ‹Hurrish: a Study› (1886); ‹Grania,› her most powerful work (1892); and ‹Maelcho,› a story of the rebellion of Sir James Fitzmaurice in the 16th century (1894). She is also the author of ‹Ireland,› in the ‹Story of the Nations› series (1890); ‹A Garden Diary› (1901); ‹With the Wild Geese,› poems (1902).

Law'ley, Alethea Jane Wiel, English historical writer, 2d daughter of the 2d Baron Wenlock. She was married to Cavaliere Tatteo Wiel in 1890 and lives in Italy. She has published ‹Vittoria Colonna,› a study (1888); ‹Venice,› ‹Story of the Nations› series (1894); ‹The Romance of the House of Savoy› (1898); ‹Verona,› in ‹Mediæval Towns› series (1902); etc.

Lawn, finely woven white goods, cotton or linen, of an open texture; plain or printed. The white sleeves, which form a part of the dress of a bishop in the English Church, are made of lawn.

Lawn-tennis, a modern game, played on grass, gravel, cinder, or asphalt courts, with balls and rackets. The face of the racket is now invariably plane, and consists of a net formed of tightly-strung gut. The balls are of rubber covered with white flannel, about 2½ inches in diameter, and 2 ounces in weight. For a game between two players (a single-handed game) the court is 78 feet long by 27 wide. It is divided across the middle by a net, the ends of which are attached to two posts, which stand three feet outside the court on each side. The height of the net is 3½ feet at the posts and 3 feet at the centre. At each end of the court, parallel to the net and 39 feet from it, are drawn the base-lines, the extremities of which are connected by the side-lines. Half-way between the side-lines, and parallel to them, is drawn the half-court line, dividing the space on either side of the net into two equal parts called the right and left courts. On either side of the net, at a distance of 21 feet from it, and parallel to it, are drawn the service-lines. The players take up their positions on opposite sides of the net, and one of them, decided by tossing, called the server, standing with one foot behind and one foot on the base-line, serves the ball from his right court into the diagonally opposite court. The ball is served by being struck with the face of the racket while it is in the air, and the stroke is counted a fault if the service be from the wrong court, or if the server do not stand as directed, or if the ball do not strike the ground in the diagonally opposite court within the service-line. After a fault, the server must serve again from the same court, unless the stroke was a fault because served from the wrong court. The next service comes from the left court, and thereafter the courts are taken alternately. The non-server is called the striker-out, and it is his business to return the ball by striking it with the face of his racket. The server wins a stroke if the striker-out «volley the service,» that is, strike the ball before it touches the ground, or fail to return the service or the ball in-play, or return the service or the ball in-play so that it drop outside any of the lines which bound his opponent's court, or otherwise lose a stroke in accordance with the recognized laws of the game. The striker-out wins a stroke if the server serve two consecutive faults, or fail to return the ball in-play, or return the ball in-play so that it drop outside any of the lines which bound his opponent's court, or otherwise lose a stroke. On either player winning his first stroke the score is called 15 for that player; on either player winning his second stroke the score is called 30 for him; on either winning his third stroke his score is called 40; and the fourth stroke won by either player is scored game for that player. However, if both players have won three strokes, the score is called deuce; and the next stroke won by either player is scored advantage for that player. If the same player win the following stroke, he wins the game; but if he lose the next stroke, the score is again called deuce; and so on until one player win two strokes immediately following the score at deuce. The player who first wins six games wins a set, but with both at five a method of scoring similar to advantage is often introduced. Sides are changed at the end of every set. Three-handed and four-handed lawn-tennis differ in no essentials from the game as above described. The game of lawn-tennis as now known was introduced about 1875.

Lawns: Their Preparation and Care, a closely-mown turf maintained for ornament in parks and private grounds. It may or may not be dotted with trees, shrubs, or other specimen plants, or even with flower beds. These are, however, mere incidents, and since they usually detract from the natural beauties of an open sward, should usually be confined to the borders in irregular, rather than formal, order. The lawn thus becomes the canvas and the side-planting the frame for a natural picture in which the dwelling or other prominent feature is placed.

Whether the contour of the surface be level, convex, or concave, it should always be graded so as to avoid even slight irregularities, and where the land is rolling all three contours should be harmoniously blended so as to avoid breaks such as terraces, and so as to ensure the repose that comes from such blending. Except on sand and clay, lawns do well on practically all soils if properly prepared and maintained. After the grading, the land should be plowed, dug, or forked, as deeply as the soil will permit, even to the depth of two feet, then harrowed thoroughly, removing all stones and burning all rubbish, weeds, etc. A liberal dressing of complete fertilizer containing potash, phosphoric acid and nitrogen in readily available forms should be given, and where possible a covering of an inch or more of rich soil is often of decided advantage. Except for their containing seeds of weeds, animal manures are especially valuable, that of sheep and cattle being usually better than ordinary stable-manure; when the latter is applied it should always be after thorough composting and rotting to destroy weed-seeds. The surface being very smooth, the fertilizer well harrowed in and the wind asleep, seeding may be performed, preferably just before rain. The seed should be the purest that can be obtained, and may or may not be raked in, but the land should always be heavily rolled. In the Northern States the popular grasses for lawns are Kentucky bluegrass, which is especially valuable for soils rich in lime, red-top and Rhode Island bent-grass. (See GRASSES.) Mixtures of several grasses are valuable because the grasses that start first choke out weeds and are later themselves choked out by the slower-growing blue-grass.

When the grass is three inches tall it should be cut with a scythe, and afterward with a lawnmower as occasion may require. In the autumn a dressing of well-composted manure should be given, and in the spring the strawy useless parts should be raked off before growth starts. After the frost is out of the ground the lawn should be rolled to compact the turf, which usually heaves more or less during the winter. It is further essential that weeding be performed every year, but especially during the first, second and third. If desired, a sprinkling of white clover (*Trifolium repens*) may be given by sowing the seed after or before the grass seed; being of different weights, they cannot be sown together. White clover may also be sown upon heavy and poor soils, where it will often make a good stand and a good precursor for grass. In the South, the grasses mentioned usually fail, and should be replaced by species that can withstand the climatic conditions. The most satisfactory and popular are Bermuda grass, joint grass, and St. Augustine grass. The first is usually propagated by passing the roots, freed from soil, through a feed cutter, sowing and harrowing the pieces.

Small lawns are frequently made by transplanting sod from old pastures, in which cases the turf is cut in long strips about 15 inches wide, rolled up and laid down like carpet, and then pounded or heavily rolled to press the roots firmly against the soil. The subsequent management should be that given seed-sown lawns. Owing to the dryness of the summers in many parts of the United States, lawns are often considered failures. Too frequently, however, these results follow imperfect preparation and improper management. As a rule lawns should not be watered while they are young or in the early part of the season, because this tends to keep the roots near the surface and to make the grasses less able to withstand dry weather. Water should therefore be withheld until the plants seem to be in dire need, and then it should be applied in what may seem excessive quantities.

M. G. KAINS,
Crop Expert.

Lawrence, lâr'ĕns, **Abbott,** American manufacturer and diplomatist: b. Groton, Mass., 16 Dec. 1792; d. Boston 18 Aug. 1855. In 1814 he became one of the firm of A. and A. Lawrence, which for many years conducted a prosperous business in the sale of foreign cotton and woolen goods on commission, and later established a cotton industry in Lowell, Mass., with his brother Amos (q.v.). He was a member of the 24th Congress, and again 1839–40. He was a commissioner in 1842 to settle the Northeastern Boundary question and arranged a basis for settlement with Lord Ashburton which was satisfactory to both the United States and England, and was minister to Great Britain in 1849–52; founded the Lawrence Scientific School of Harvard University, to which he gave $100,000.

Lawrence, Amos, American merchant: b. Groton, Mass., 1786; d. Boston 31 Dec. 1852. He was educated in his birthplace at an academy founded by his father. He worked for many years as a clerk and in 1807 started at Boston a dry-goods business of his own, formed a partnership with his brother (1814), and began a large wholesale business. Lawrence and Lowell became the centres of this firm's manufacturing activity which soon placed them at the head of the cotton-spinning and weaving trade. Amos Lawrence retired from active business in 1831 through ill health, and spent much of his later years in promoting works of philanthropy and patriotism. The academy at Groton, of which he was a liberal benefactor, was named Lawrence Academy in his honor (1843); he contributed liberally to the raising of the Bunker Hill monument, and made large contributions to Williams College. Consult 'Extracts from the Diary and Correspondence of Amos Lawrence with a Brief Account of Some Incidents in His Life' (1855).

Lawrence, George Alfred, English novelist: b. Braxted, Essex, 25 March 1827; d. Edinburgh, Scotland, 23 Sept. 1876. He was educated at Oxford, studied law, but soon turned his attention to fiction and became suddenly famous by his novel 'Guy Livingstone, or Thorough' (1857). He was much read in America as well as in his own country, and 'Sword and Gown' (1859); 'Breaking a Butterfly' (1869); and his other fiction increased his popularity for the time, though he is now little read.

Lawrence, George Newbold, American ornithologist: b. New York 20 Oct. 1806. He was privately educated, was for some years in the drug business, but in 1867 retired, and thereafter devoted himself to ornithology. From 1846 he contributed to the literature of ornithology; and he also made an extensive and valuable collection of birds, including 8,000 specimens representing almost every variety found in the United States, and an excellent series of the birds of Mexico, Central America, the West Indies, and South America. This collection he sold to the American Museum of Natural History. He assisted Baird and Cassin in the preparation of 'The Birds of North America' (1860).

Lawrence, James, American naval officer: b. Burlington, N. J., 1 Oct. 1781; d. 5 June 1813. He entered the navy as a midshipman 4 Sept. 1798; in 1800 was made acting lieutenant, and in April, 1802, lieutenant, and served during the war with Tripoli; he was first lieutenant of the schooner Enterprise, and one of the party which boarded and destroyed the frigate Philadelphia in the harbor of Tripoli on the night of 15 Feb. 1804. Shortly before peace was concluded he was given command of a gunboat, and on his return to the United States, served as first lieutenant of the Chesapeake, and subsequently commanded the Vixen, the Wasp, and the Argus. In November 1810 he was promoted to the rank of master commandant, and given command of the Hornet. In 1812 he cruised in the Hornet with Commodore Bainbridge's squadron along the South American coast and at the mouth of the Demara River he met the British brig Peacock, which after a severe action of about 15 minutes he forced to surrender. When she surrendered, the Peacock was badly damaged and sinking, and Lawrence transferred the crew to his own ship. (See Hornet.) On 14 March 1813 he was promoted to the rank of captain and appointed to the frigate Chesapeake, then lying in Boston; the Hornet was also placed under his orders, and it was intended that the two ships should sail against the Greenland whale fishery. On 1 June 1813, when the Chesapeake was ready for sea, Lawrence sailed out of the harbor to meet the British ship Shannon; after a severe battle he was forced to surrender, and his ship was taken as a prize into Halifax. (See Chesapeake and Shannon, Battle of.) Lawrence was fatally wounded and died four days after the battle; throughout the action he showed the greatest coolness and courage, and his last words as he was carried from the deck were, «Don't give up the ship.»

Lawrence, John, American statesman and judge: b. Cornwall, England, 1750; d. New York 1810. He emigrated to America in 1767, settled in New York, was admitted to the bar in 1772, and soon established himself in successful practice. An active patriot at the outbreak of the Revolution, he served in the army throughout the war, and on the termination of hostilities returned to New York, where for many years he was engaged in a large and lucrative professional practice. He was a member of the State senate, when in 1789 he was elected the first representative from New York city in the first Unted States Congress. He was a zealous and able defender of the measures of Washington, and on measures relating to the public credit and the national currency, to the neutrality of the United States as regards European belligerents, to indiscriminative foreign commerce, and to the promotion and security of all our commercial interests, spoke with eminent comprehensiveness and foresight. He represented the city of New York in the second Congress, and in 1794 was appointed by President Washington judge of the United States court for the New York district. He accepted this office at the particular solicitation of the bar, in consequence of his knowledge of admiralty law and the increasing number of admiralty cases. He resigned it in 1796 upon being elected to the United States Senate, of which body he was for a time president. He supported the measures of President Adams, upon whose retirement he resigned his seat and withdrew to private life.

Lawrence, Sir **Thomas,** English portrait-painter: b. Bristol 4 May 1769; d. 7 Jan. 1830. His father was an innkeeper, and the artist very early exhibited proofs of his talent for the art; he is said to have sketched portraits very successfully in his fifth year. At the age of six he was sent to school, where he remained two years; and this, with the exception of a few lessons subsequently in Latin and French, constituted his whole education. Young Lawrence, however, had access to the galleries of some of the neighboring gentry, in which he employed himself in copying historical and other pieces, and at the age of ten he had full employment as a painter of portraits in crayons. In 1787 the family removed to London, and Lawrence was admitted a student at the Royal Academy. His subsequent career was successful and brilliant. He was elected in 1791 a Supplemental Associate by the desire of the king, being under the age (24) fixed by the laws of the institution. No other case of the kind has occurred. On the death of Sir J. Reynolds the next year he was made painter to the king. His reputation grew steadily, and he was soon considered the first portrait-painter of the age in England. His scene from the ‹Tempest› was a successful attempt at historical painting. In 1794 he was made a Royal Academician. In 1815 he was knighted by the Prince Regent, who also employed him to take the likenesses of the allied sovereigns and the most distinguished persons of their suite. During their visit to England he finished the portrait of the King of Prussia, and went to Aix-la-Chapelle several years afterward to paint the Emperor Alexander; thence he went to Vienna, where he completed the portraits of the emperor, the archdukes, Metternich, etc., and in Rome painted Pius VII. and Cardinal Gonsalvi. These portraits are now in the Waterloo Gallery at Windsor, and are of great historical value. On his return to England he was elected president of the Royal Academy, as successor to West. This office he held till his death. His portraits are striking likenesses, and display a bold and free pencil; but they are, particularly his later ones, chargeable with mannerism, and are not considered to be successful in expressing the nicer shades of character. His income for the last 20 years of his life was very large, but he died poor, owing to the lavishness with which he spent money in acquiring the first-rate productions of his art, in assisting less fortunate artists, and in other ways. His valuable and unrivaled collection of drawings by the old masters was unfortunately dispersed after his death.

Lawrence, Sir **William,** an eminent surgeon and anatomist: b. Cirencester 16 July 1783; d. 5 July 1867. He received his early education at a private school, and in 1799 was apprenticed to the celebrated Abernethy, and was an inmate of his house for five years. In the third year of his apprenticeship he had given such proofs of his zeal and capacity that Abernethy appointed him demonstrator in anatomy at Saint Bartholomew's, and for 12 years he discharged the duties of his office with signal ability. In 1824 he became principal surgeon to Saint Bartholomew's Hospital, the office of surgeon to which he had filled from 1813. Within two years from this date he had discharged successively the duties of surgeon to the Eye Infirmary in Moorfields, and surgeon to the Royal Hospitals of Bridewell and Bethlehem. In 1816 he published an ‹Introduction to Comparative Anatomy and Physiology,› and in 1819, ‹Lectures on the Physiology, Zoology, and Natural History of Man,› which provoked the hostile criticism of theologians. In 1829 he succeeded Abernethy as lecturer on surgery to Saint Bartholomew's, and altogether he was connected with this hospital 65 years. Shortly before his death he was made a baronet. Few men of his time did more than he for the advancement of surgery. His treatise on ‹Hernia› was a standard work, and that on ‹Diseases of the Eye› (1833) marks an epoch in ophthalmic surgery. His lectures on surgery were published in 1863. He was twice president of the Royal College of Surgeons, and on two occasions he delivered the Hunterian oration.

Lawrence, William, American politician: b. Mount Pleasant, Ohio, 29 June 1819; d. 8 May 1899. He was graduated at Franklin College (1838) and at the Cincinnati Law School (1840). He early became prominent in politics, and from 1845 to 1847 owned and conducted the 'Logan County Gazette,' and was afterward editor of the 'Western Law Journal.' He served in the lower house of the State legislature, and for five years as State senator, and from 1857 to 1864 was judge of the court of common pleas, and of the district court. After seeing some military service (1862), he was elected to Congress in 1865, and in 1880 appointed first Comptroller of the United States Treasury, from which office he retired in 1885. He has published several books on law, notably, 'The Law of Claims against the Government' (1875); and 'The Treaty Question' (1871).

Lawrence, William, American Protestant Episcopal bishop: b. Boston 30 May 1850. He was graduated at Harvard in 1871, and at the Episcopal Theological School, Cambridge, Mass., in 1875; was rector of Grace Church, Lawrence, Mass., 1876–84; professor of homiletics and pastoral theology at the Theological School above named, 1884–93; dean of the school, 1888–93. He was university preacher at Harvard, 1888–91. In October 1893 he was elected bishop of Massachusetts, to succeed Bishop Brooks, and was consecrated to that office, which he continues to hold, in the following year. He has published a 'Life of Amos A. Lawrence,' his father (1889); 'Visions and Service' (1896); 'Life of Roger Wolcott,' and other works.

Laurence, William Beach, American jurist: b. New York 23 Oct. 1800; d. there 26 March 1881. He was graduated at Columbia College in 1818, and after his admission to the bar in 1823 he practised in New York, where he attained eminence. He removed to Newport, R. I., in 1850; was elected lieutenant-governor of Rhode Island in 1851, and soon after became acting governor. He became widely known by reason of his connection with the «Circassian case» in 1873, before the American and British International Court in Washington, D. C., his arguments securing the case for his clients and leading to the only reversal of a decision by the United States Supreme Court that had ever occurred. He published 'History of the Negotiations in Reference to the Eastern and Northeastern Boundaries of the United States' (1841); 'Belligerent and Sovereign Rights as Regards Neutrals During the War of Secession' (1873); 'Disabilities of American Women Married Abroad' (1871); 'Administration of Equity Jurisprudence' (1874); etc.

Lawrence, Kan., city and county-seat of Douglas County, on both sides of the Kansas River, and on the Atchison, T. & S. Fe and the Union Pacific R.R.'s; 40 miles west of Kansas City. It is the farming trade centre for Douglas and parts of two other counties; and is principally engaged in manufacturing, which is greatly promoted by the excellent water power furnished by the river. It is the seat of the Kansas State University, Haskell Institute, and Government Indian Industrial School; contains a hospital, public library, and several public parks; and has flour and paper mills, barbed-wire, ice, shirt, sash and door factories, and foundry and machine shops. There are electric light plants, waterworks, several National and State banks, daily, weekly and monthly periodicals, and an assessed property valuation of over $1,000,000. The city was settled by an anti-slavery colony from the East in 1854 and was named in honor of Amos A. Lawrence. It was the first of the Kansas Free-State towns founded by the Emigrant Aid Society, soon after the passage of the Kansas-Nebraska Bill (q.v.). In 1856 a band of Missouri border ruffians sacked the town, which was defended by old John Brown (q.v.) and his sons. In 1863, the Confederate raider Quantrell attacked the town and killed 125 citizens. Pop. (1890) 9,900; (1900) 10,862.

Lawrence, Mass., city, and one of the county-seats of Essex County, on both sides of the Merrimac River, and on the Boston & Maine railroad, 26 miles northwest of Boston. It is one of the notable and leading manufacturing cities in the valley of Merrimac River, a stream fed mainly by the network of small rivers, brooks and storage lakes, rising in or lying at high levels, among the mountains and highlands of New Hampshire. Built at the lowermost available rapid upon the river, the city has the concentrated power of all the tributaries of that stream and receives benefit from the entire watershed feeding the main current — an area of 4,450 square miles. The water power developed at this point, amounting to about 15,000 horse-power, is remarkably uniform and reliable.

Water Power Plant.— In 1845–8 the «Great Stone Dam,» located at Bodwell's Falls, near the old historic «Andover Bridge,» was built of hammered granite. When finished this structure was considered the most complete and durable work of the kind then existing in America. It was bedded upon the underlying strata of blue stone or Merrimac schist, and was so thoroughly constructed that it has stood to this day without alteration or addition, seemingly a part of the ledges between and upon which it was built. This dam concentrated at one point, the power of three successive natural river rapids, the accomplished result being a fall of 26 feet, increased in height, when needful, by flashboards, to 30 feet. The overfall of water is in one unbroken sheet over a crest, nearly straight in line, 900 feet in length between the granite abutments. In addition to this unbroken span of solid stonework the protecting wings of the dam are 729 feet in combined length. There are two main canals, one along the northern bank of the river, one mile in length, and another upon the southern side, one half mile long; these distribute water power to the large mills and workshops. Steam power is also used in addition, by nearly all manufacturers, and, in some instances, it is exclusively relied upon.

Manufacturing and Business.—Lawrence may well be known to Americans as «The Worsted City,» for the United States census of 1900 shows that, in the production of worsted and woolen dress goods, Lawrence leads in New England; the sum invested in that distinct business being $29,854,901, and the value of goods produced annually $25,584,744. Compared with the producing centres of the entire country, Lawrence leads in the amount of capital invested in any one locality in the worsted and woolen dress goods industry, and in the value of that class of goods produced it is exceeded only by Philadelphia. It has been estimated by experts that the wool clip from about 12,000,000 sheep is used annually in the worsted and woolen mills of the city. Among wool growers and dealers of the world, the city is known as a leading consumer of that staple.

The three great manufacturing companies that lead in importance are Pacific Mills, having 5,600 people engaged in producing calicoes, lawns, delaines, serges, and other worsted dress goods, the American Woolen Company's Washington Mills, employing over 6,500 operatives in the making of worsted and woolen goods for men's wear, and Arlington Mills with nearly 5,000 people employed in the manufacture of ladies' worsted dress goods, worsted yarns, mercerized cotton yarns and «Worsted Tops» as specialties. The many other concerns producing textile fabrics are thriving and important. The making of book, news, cartridge and calendered papers is an established industry of much importance, and paper mill machinery is constructed on quite an extensive scale by enterprising companies and firms. The making of shoes is carried on to a limited extent.

Site and Environment.— The site was peculiarly adapted in its character and surrounding to the building up of an important industrial centre. The small Spicket River here enters the Merrimac from the north and the winding, shaded Shawsheen stream enters from the south. The location is healthful — a rolling plain flanked by low protecting hills. The topography of the site favored economical development. The rapid Merrimac River divides the city into nearly equal sections; the northern half has come to most importance and has the largest population and most important industrial establishments. The city was laid out in 1845–6 by the founders and promoters, and has been built largely in accordance with original plans. The principal streets make a slight angle at a turn in the river and are arranged to intersect with great regularity.

Public Works and Buildings.— The public works were liberally planned and thoroughly built. The waterworks, established in 1874–5, were so ample, in all the main features of the system adopted, that extensions have not made it necessary to reconstruct the pumping plant or the storage reservoirs. The source of water supply is the Merrimac River. The filtration beds that cleanse the current before it is distributed for use, were designed by an eminent sanitary engineer and constructed, in 1892, under the care and approval of the Massachusetts State Board of Health. The system was successful and has attracted the attention of the scientific in our own and foreign countries. Similar or modified plans have since been extensively adopted elsewhere. The experimental station of the Massachusetts State Board of Health, where important experiments in sanitation are constantly tried and tested by experts, is established here. Illuminating and heating gas and electric lighting and power are supplied by a single chartered company that well serves the public needs. The new court-house, erected in 1903, costing about $250,000, is architecturally beautiful in design and commodious and complete in furnishing and outfit. A new post-office or United States government building, costing $150,000, is in process of erection. No more commodious school buildings can be found in any city of the same population and class. The old city hall — the original «Town House,» served, for a quarter century, almost every conceivable public use and is still a noticeable structure, answering the purpose for which it was erected.

Parks and Pleasure Grounds.— The founders of the city wisely reserved a common, of 17 acres, at the very centre of the business and residence section, as a public pleasure ground. No buildings are allowed upon this central park and no public reserve in the commonwealth is more nobly wooded or more truly the people's ground. About this central park the largest public buildings, the leading Protestant churches and many of the best residences are grouped. Four large outlying parks, in a nearly wild condition, but of much natural beauty, and several smaller squares are well cared for by an established park commission of five members. A playstead of several acres, exclusively for games and athletic exhibitions, is conveniently located.

Banks and Savings Institutions.— Five national banks have become established and are of undoubted stability. The three savings banks have deposits amounting to $15,000,000, largely the savings of working people.

Churches and Charities.— There are 40 organized churches in the community, the Roman Catholics having much greater numbers and larger value in property than any one denomination and nearly equaling the other sects combined. There is an organized city mission. A General Emergency Hospital and Children's Home are maintained by the Ladies' Union Charitable Society, a Protectory or Asylum for orphans or destitute children, an endowed Home for Aged People, and every nationality in the community has its own relief, benefit, or social societies.

Government, Schools, Free Libraries and Lectures.— Municipal control is in the hands of a mayor, six aldermen, and 18 councilmen, all elected annually. The number of wards (six) and the number of government members has not changed since the first acceptance of the original charter. There are 30 organized public schools, the high school having 700 pupils housed in a new, elegant and commodious building recently erected at a cost of $250,000. The lower grades are accommodated in houses of modern construction and furnishing. Evening schools are maintained as a part of the public school system and give to workers of every age and nationality a chance to advance in classical or English studies and also give special instruction in penmanship, mechanical and freehand drawing, bookkeeping and the natural sciences. A free course of lectures especially for industrial classes, upon scientific and miscellaneous subjects, has for many years been sustained by endowment. The free public library of over 50,000 volumes is patronized by all classes. The main library building was the gift of a generous citizen.

History.— Previous to 1845 the territory now included within city limits (about seven square miles lying in form nearly a square) was an unimportant section of two old, historic towns — Andover and Methuen. The inhabitants of the site numbered only about 350 souls and were nearly all the families of quiet farmers or river-men; there was not a church building, warehouse for trade, or manufacturing establishment of any importance then standing in the entire district. In 1845–6 an associated company of manufacturers, financiers and merchants, the leading pioneer manufacturers and progressive business men of prominence in Massachusetts, after critical examination becoming satisfied regarding the rare value of the water power and, recognizing the peculiar fitness of the site for a manufacturing city, associated themselves together and procured an act of incorporation under the name of the Essex Company, chartered for the purpose of developing and controlling the water power and establishing factories and workshops at or near the site they selected. This company purchased lands covering nearly half the area of the contemplated town and secured land or flowage rights for several miles above the site chosen for the projected city. These associated founders and promoters decided to locate at the lowermost of three successive Merrimac River rapids below Lowell, at the confluence of the Merrimac, Spicket and Shawsheen rivers. Promoted, as the Lawrence building and manufacturing enterprise was, at the outset, by responsible and powerful sponsors, the «New City,» as it was at first called, rapidly developed and became almost at the beginning important as an industrial centre. In less than two years from the commencement of operations in 1845, the settlement was organized as a separate town, taking the name of Lawrence in honor of the eminent merchant manufacturers of that name who were so deeply interested in establishing the town and city.

The city has had its calamities. Its industrial enterprises survived the financial reverses of 1857–8–9, only because of powerful support given by loyal defenders and business leaders. This time of trial was succeeded by the gloom attendant upon the «Fall of Pemberton Mill,» 10 Jan. 1860, an occurrence that enlisted the interest and sympathy of the entire country. In the War of the Rebellion the city's volunteers were among the first to respond to the call for troops and were among the first to engage in conflict. A citizen, Sumner H. Needham, was the first martyr to fall in the ranks of the patriot soldiery in April 1861.

Local Characteristics.— The cosmopolitan character of the population is particularly noticeable. Forty-five per cent of the people were born in foreign lands and only about 25 per cent of the number are of full native parentage. The greatest immigration has been from Ireland, the British Isles, Germany, Canada, and considerable numbers from every nation of continental Europe and from some Oriental countries. Pop. (1900) 62,559; (1904 est.) 68,000.

ROBERT H. TEWKSBURY,
President of the Lawrence Savings Bank.

Lawrence, The, Commodore Oliver Hazard Perry's flagship at the Battle of Lake Erie in the War of 1812.

Lawrence, Saint, Gulf of. See SAINT LAWRENCE GULF.

Lawrence Scientific School, The, a part of Harvard University, Cambridge, Mass.; founded by Abbott Lawrence in 1847. The primary object of the institution was to afford an opportunity for special study and training in science which the then existing foundations and departments of the university did not offer. Not the least of the important benefits it conferred during the earlier years of its existence was the bringing of Prof. Louis Agassiz into close relations with the university, a special chair of zoology and geology in the scientific school having been created for him by Mr. Lawrence in 1848. It was originally intended that the Lawrence Scientific School should be independent of Harvard College, and for many years it was so maintained, but in recent years it has gradually become merged with it until it now forms a part of the university, its government together with that of the college and the graduate school being under the faculty of arts and sciences. The courses offered include civil engineering, electrical engineering, mechanical engineering, mining and metallurgy, architecture, chemistry, geology, biology, general science, science for teachers, and anatomy and physiology. So far as possible the instruction relates rather to the principles of science than to technical work, the intention being to make the graduates ready for the apprenticeship of their professions. See HARVARD UNIVERSITY.

Lawrence University, Appleton, Wis., a Methodist Episcopal institution founded in 1847, and named in honor of its principal donor, Amos A. Lawrence, of Boston. In 1902 it had 34 professors and instructors, 600 students, 16,964 volumes in the library, and productive funds, $205,020; grounds and buildings valued at $210,000; benefactions, $7,000; income, $28,000.

Lawrenceburg, lâ'rĕns-bėrg, **Ind., city** and county-seat of Dearborn County, on the Ohio River, and on the B. & O. and the C. C. C. & St. L. R.R.'s, 22 miles west of Cincinnati, Ohio. It was settled in 1817 and was first incorporated in 1847. The government is administered by a mayor, elected every four years, and by a city council, elected every two years. It has manufactures of flour, edge-tools, burial caskets, tubewell supplies, whiskey, wagons, barrels, etc. Pop. (1890) 4,284; (1900) 4,326.

Lawrenceville (lâ'rĕns vĭl) **School, The,** an American college preparatory school at Lawrenceville, N. J., originally founded in 1810 but refounded in 1882 as an endowed school known as the «Lawrenceville School on the John C. Green Foundation,» at which time the English «home system» was adopted. In scope it corresponds to such English schools as Harrow or Rugby, and now contains about 400 pupils, with some 32 masters. There are 11 master's houses, with an Upper House and the Hamill House for the boys of the upper form, managed by boards of directors appointed by the boys themselves. There are five forms, each corresponding to one year's work. In addition to the buildings already named there are a large stone chapel, a spacious building for class-room exercises called Memorial Hall, and an immense gymnasium with swimming-pool, erected in 1902. Lawrenceville itself is a small village five miles northeast from Trenton and about the same distance from Princeton, southwest.

Law'son, Cecil Gordon, English painter: b. Wellington, Shropshire, 3 Dec. 1851; d. London 10 June 1882. He exhibited at the Academy, in 1870, but many of his pictures were rejected by the hanging committee till 1878, when his ‘Minister's Garden’ and a ‘Pastoral’ at the Grosvenor made him famous. He was highly esteemed by the poet-painter Rossetti, and his works are now much valued. Consult: Gosse, ‘Cecil Lawson, A Memoir.’

Lawson, John, American colonial surveyor-general: d. 1712. He was of Scotch birth; began his surveys in 1700, and was an intelligent observer, enterprising and circumspect, but fell a victim to the jealousy of the natives, who confounded the surveyor of their territory with those who despoiled them of it. He was captured by them during one of his explorations when in company with De Graffenried, a Swiss baron who contemplated colonization. The latter was permitted to buy himself free, but Lawson failed to propitiate their hostility and perished by the fire torture. He left one of the most valuable of the early histories of the Carolinas, of their feeble condition, their resources and aspects, and their principal aboriginal tribes. It is entitled ‘A New Voyage to Carolina, containing the Exact Description and Natural History of that Country, together with the Present State thereof; and a Journal of a Thousand Miles Traveled through Several Nations of Indians, giving a Particular Account of their Customs, Manners, etc.’ (1709). The volume is a quarto of 258 pages, well illustrated with one of the best maps of the time, and with various other engravings, chiefly in natural history. It is now rare.

Lawson, Victor Fremont, American newspaper publisher: b. Chicago 9 Sept. 1850. He was educated at Phillips Academy, Andover, Mass. He inherited from his father an interest in a printing establishment, and in 1876 bought the Chicago *Daily News,* which, with his partner, he developed successfully, starting a morning edition in 1881 under the name of the *Record.* In 1888 he bought out his partner and became sole proprietor; in 1901 the *Record* was merged with the *Times-Herald.* He has been president of the Associated Press; has also been active in philanthropic work, and started the *Daily News* Fresh Air Fund, which supports a sanitarium for sick children of the poor.

Lawson, Sir **Wilfrid,** English statesman: b. Cumberland, England, 4 Sept. 1839; d. London, 1 July 1906. He early came into notice as a temperance advocate. In 1859 he was elected to Parliament for Carlisle, and in 1864 introduced a “Bill for the legislative suppression of the liquor traffic.” From 1868–1885 he again represented Carlisle, from 1886–1900 the Cockermouth Division of Cumberland, and from 1903 till his death the Camborne Division of Cornwall. His local option bill passed in 1880, 1881, and 1883.

Lawson's Cypress. See Cypress.

Law'ton, Henry Ware, American soldier: b. Manhattan, Ohio, 17 March 1843; d. San Mateo, Luzon, 19 Dec. 1899. He entered the military service as a private 16 April 1861; became captain 17 May 1862. He was mustered out 25 Nov. 1865, but entered the regular army as second lieutenant the next year; was transferred to the Fourth cavalry in 1871; and promoted to captain 20 March 1879. In 1876 he was conspicuous in the expedition against the hostile Sioux, took part against the Ute Indians in Colorado, in October 1879, and in the spring of 1886 was selected by Gen. Miles to lead a picked body of troops into Mexico in pursuit of Geronimo. At the end of three months Geronimo and his band were captured. At the beginning of the Spanish-American War Lawton was a lieutenant-colonel, and was made a major-general of volunteers 8 July 1898. He was in command of the Second Division of the Fifth army corps before Santiago, and at the close of the war was transferred to the Philippines where he began active operations against the insurgents and after capturing Santa Cruz, a Filipino stronghold, 10 April 1899, and San Isidro, 15 May, was placed in command of Manila, 1 June. In the autumn he began an offensive campaign looking toward the capture of Aguinaldo, and was killed in the battle of San Mateo.

Lawton, Okla., city and county-seat of one of three counties formed from the Comanche reservation and added to Oklahoma Territory, 6 Aug. 1901. By the day set for opening the town site to settlers, 25,000 people were encamped close to the town limits, forming a tent frontage of 8 miles. The city is named for Gen. Henry W. Lawton (q.v.), American soldier killed in the Philippines. The entire tract added to Oklahoma is larger than the State of Connecticut and contained within three months from the opening about 50,000 inhabitants. The other county-seats are Anadarko and Hobart.

Lay, Benjamin, British-American philanthropist: b. Colchester, England, 1677; d. Abington, Pa., 1759. His parents were Quakers, and he illustrated in his life the humane principles which the Society of Friends has so long conspicuously represented. At 18 he adopted a sailor's life, and for some years followed the sea. In 1710 he was married and lived again for a while at Colchester; afterward went to Barbados, where he became a merchant; but having aroused hostility by his denunciations of slavery, removed from the island to Philadelphia, where his anti-slavery agitation was continued. Of numerous tracts which he wrote on slavery one was published by Franklin, entitled ‘All Slave-Keepers, that Keep the Innocent in Bondage, Apostates.’ He was influential in bringing the Friends in this country to take a more decided stand against slave-holding. He did not, however, confine his reforming endeavors to one direction, but labored for a more humane treatment of criminals, and discouraged the eating of animal food, and the using of tea and tobacco. He is described as a singular figure, dwarfish and hunchbacked, and presenting an appearance of poverty. He was buried in the Friends' burying-ground at Abington.

Lay, Henry Champlin, American Protestant Episcopal bishop: b. Richmond, Va., 6 Dec. 1823; d. Easton, Md., 17 Sept. 1885. He was graduated at the University of Virginia, ordained deacon (1846) and priest (1848). He was consecrated missionary bishop of the Southwest (1859) and translated to the diocese of Easton (1869). During the Civil War the Episcopal charge of Kansas was assigned to him, that State being then erected into a diocese. The revision of the lectionary was largely due to Bishop Lay; while he was engaged on the Standard Prayer Book up to his death.

Lay, John Louis, American inventor: b. Buffalo, N. Y., 14 Jan. 1832; d. New York April 1899. In July 1862 he was appointed second assistant engineer in the United States navy, and in 1864 invented a new torpedo. By means of this apparatus Cushing destroyed the Albemarle, a Confederate ram. When Admiral Porter advanced up the James River after the evacuation of Richmond, Lay was employed to clear away the submarine obstructions. He was engaged by the Peruvian government to mine the harbor of Callao, in view of a Spanish attack, but his main work as an engineer and inventor was the construction of the dirigible torpedo, which bears his name and was purchased by the United States Government.

Layamon, lä'yạ-mŏn, or **Laweman,** lâ'mạn, British chronicler. He lived early in the 13th century, and was a priest ministering at Radstone, now known as Areley Regis, on the Severn, in Worcestershire. He is the author of a metrical romance, ‹The Brut,› which is mainly an amplified version of the French ‹Brut d'Angleterre,› the latter being itself a compilation with additions from Geoffrey of Monmouth's ‹Historia Britonum.› As history or literature its value is slight, but it is of high philological importance, and exhibits the English language in its period of transition and before it had become Gallicized, as in the ‹Canterbury Tales› of Chaucer. In fact, there are not more than 90 words derived from the French in the whole poem of 56,000 lines. Consult the London Society of Antiquaries' edition of ‹Brut,› edited by Sir Frederick Madden (1847).

Layard, lā'ạrd, **Austen Henry,** English traveler and archæologist: b. Paris 5 March 1817; d. London 5 July 1894. He was of a family originally French; was partly educated in Italy; began to study law, but gave up this work and entered upon a course of travels in the East. Before he was 23 he had traveled in most of the larger European countries; in 1840 he was on the banks of the Tigris; and before the end of his career had «won distinction as a traveler, archæologist, politician, diplomatist, and student of the fine arts.» In 1845 he began the excavations in Assyria (q.v.) for which he first became celebrated. The results of his discoveries on the site of Nineveh (q.v.) were published in 1849–53. In 1849 he was appointed attaché to the British embassy at Constantinople. At first he paid his own expenses in his researches, but afterward received generous assistance from Lord Stratford de Redcliffe, then English ambassador in Constantinople; and still later £3,000 voted by the House of Commons was used by the trustees of the British Museum for continuing Layard's excavations. He received from Oxford the degree of D. C. L. In 1852 he entered Parliament as a Liberal, and became under-secretary of state for foreign affairs in 1860. He was lord rector of the University of Aberdeen, 1855–6; in 1860 was again elected to Parliament, and 1861–6 again under-secretary of state for foreign affairs; in 1868 was appointed chief commissioner of works and privy councillor; went to Spain in 1869 as British ambassador; and 1877–80 was ambassador to the Ottoman Porte. In 1878 he received the Order of the Bath, and was made a foreign member of the Institute of France in 1890. He wrote much on the history of painting, was a leading spirit in the Arundel Society, and a trustee of the National Gallery. His writings include ‹Nineveh and Its Remains› (1849); ‹Nineveh and Babylon› (1853); ‹Monuments of Nineveh› (1849–53); ‹Inscriptions in the Cuneiform Character from the Assyrian Monuments› (1851); ‹Early Adventures in Persia, Susiana, and Babylonia› (1887, 1894). Consult his ‹Autobiography› (1902).

Laycock, lā'kŏk, **Thomas,** English physiologist: b. Wetherby, Yorkshire, England, 10 Aug. 1812; d. Edinburgh, Scotland, 21 Sept. 1876. He was the earliest to put forth the theory of the reflex action of the brain. This was in 1844, and in 1855 he became professor of the practice of physic and of clinical medicine at Edinburgh University. He published ‹Mind and Brain› (1860); ‹Methods of Medical Observation›; etc., and wrote many professional papers on sanitary science, insanity, etc.

Lay'ering, in horticulture, is a mode of propagating plants by bending down a young branch and covering part of it with earth, thus causing it to shoot forth roots before it is separated from the parent stalk. The portion covered with soil has often a notch cut in it below, or a tight ligature is applied. The free return of the sap is thus prevented, and the formation of roots from buds is promoted. The time which must elapse between the cutting or binding of the shoot and its separation from the parent plant varies greatly, a few months sufficing in some cases, while two years are requisite in others. This mode of propagation is employed for pinks, hortensias, heaths, gooseberries, etc.

Laynez, lī'nāth, or **Lainez, Diego,** dē-ā'gō, second general of the Jesuits: b. Almancario, near Siguenza, Castile; d. Rome 19 Jan. 1565. He studied in Alcala and Paris, in which latter town he joined with Ignatius Loyola in founding the order of Jesuits. His especial work was to travel over Europe to gather new members, and spread the influence of the order, when the constitution of the order had been confirmed and approved by Pope Paul III. 1540. He was very successful in extending the Society of Jesus. He was a man of marked ability and as a consulting theologian took a conspicuous part in the Council of Trent. He had succeeded Loyola as general of the Jesuits in 1556. On the death of Paul IV. he avoided the chance of election to the tiara, and refused a cardinal's hat. Consult Boero, ‹Vie du P. Jacques Lainez› (1894).

Lazaret'to, a name given in Italy, and other parts of southern Europe, and also in Hawaii and in California, to isolated hospitals for such as are afflicted with contagious disorders. The name is derived from Saint Lazarus, who is the patron saint of lepers; and during the Middle Ages, when leprosy was common in Italy and other parts, the hospitals in which the lepers were confined received that name, and the lepers themselves were called lazzari. Howard wrote ‹An Account of the Principal Lazarettos in Europe› (1789). Those buildings and enclosures attaching to seaport towns chiefly on the Mediterranean, where the crews and passengers of ships from places where contagious disease is known to prevail, are also called lazarettos. These lazarettos consist generally of various detached buildings, with courts between, the whole being surrounded by a wall, and placed in an airy situation outside the town, or sometimes on a small island near the coast. See also QUARANTINE.

Laz'arists, or **Fathers of St. Lazarus,** a congregation of the Roman Catholic Church, originally known as «Priests of the Mission,» founded at Paris by St. Vincent de Paul in 1625 for the purpose of supporting missions and ministering to the spiritual wants of the poor at home, and in foreign parts, especially Barbary. The foundation was confirmed by letters-patent of Louis XIII., May 1627, and the missionaries were erected into a congregation by Pope Urban VIII. in 1631. At the time of the Revolution they included 1,195 members and 63 houses. In 1817 they established themselves in the United States.

Lazarus, lăz'a-rŭs, **Emma,** American poet: b. New York 22 July 1849; d. there 19 Nov. 1887. Trained at home under the personal direction of her father, Moses Lazarus, a New York merchant of prominence in the social and business world, she early displayed intellectual promise. From her childhood books were her most precious possession and her mind was turned to poetry for its utterance — the Civil War inspiring her first lyric outbursts. Her earliest productions, ‹Poems and Translations› (1867), were marked by a seriousness if not sombreness, incomprehensible in one so young, whose life, too, was full of happy anticipations. In her second volume, four years later, there was more artistic completeness, and a certain consciousness of power gave more strength to her verse. Her ‹Admetus and Other Poems› (1871) was favorably received, and its classic atmosphere showed distinct talent, while, side by side with its imaginings in ‹Admetus› and ‹Tannhäuser› were its flashes of personal experience in ‹Epochs› and the musical rhapsodies in ‹Phantasies.› In 1874 her love for German literature was evidenced in her ‹Alide,› a story of Goethe's Sesenheim period, so far as its background is concerned, wherein she has admirably incorporated whole passages from the ‹Autobiography› to give naturalness to the episode. It is a charming romance, which won high praise from Tourgeneffs as the work of one who «is not a pupil in art any more» and «is not far from being a master.» Her next book printed for private circulation, ‹The Spagnoletto› (1876), a five-act tragedy of the 17th century, was remarkable at least for the new note in treatment, its stormy sweep of passion, so unlike the calm, reflective emotion of her precious poems. It was in 1878, when she was giving the finishing touches to translations from Heine, that a new theme was suggested to her — the translation into English of representative Jewish poets of the Spanish school. With enthusiasm she responded to the appeal, and, desiring to reproduce the spirit of the original, studied Hebrew with rare diligence and soon grew independent of German paraphrase. The ease with which she mastered the mediæval Jewish poets and the interest she displayed in Jewish history were preparations for a more important work. A little volume was shown her — ‹Der Tanz zum Tode› by Reinhard, based on historical data furnished by Franz Delitzsch, as a more elaborate treatment. Her ‹The Dance to Death› was the result, for which she was unable to find a publisher until it was issued as a serial in a Jewish weekly, and appeared about the time of the Russian Jewish persecution of 1882, although it was written without any reference to those outbreaks. In the American movement to aid the refugees, she took a helpful part. She wrote in ‹The Century› (May 1882) an impassioned article, ‹Russian Christianity *versus* Modern Judaism,› wherein she championed her brethren and reputed their critics and assailants. In prose and verse she further strove to vindicate her ancestral creed and inspire its followers to brotherhood and useful activity. In ‹The Century› for February 1883 she pleaded for «a restored and independent nationality and repatriation in Palestine.» After her father's death in March 1885 her own health failed slowly and the end came in November 1887, just at the time when her powers were ripest and her opportunities seemed at their greatest. In addition to the volumes already named she published ‹Poems of Heinrich Heine› (1881); ‹Songs of a Semite›; ‹The Dance to Death, and Other Poems› (1882). Her collected poems were issued in two volumes in 1889.

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Lazarus, Jacob H., American painter: b. New York 4 Oct. 1822; d. there 11 Jan. 1891. Displaying early in life marked artistic taste, before his manhood he became a pupil of Henry Inman (q.v.), but soon established a studio of his own, and for nearly 50 years was a successful artist. In addition to his ability as portrait painter, he was an admirable critic of art in general. He painted the portraits of many eminent men of his time, among them those of Governors Sewell, Hubbard, English, and Walcott, of Connecticut; Governor Hoffman, of New York; John Van Buren, for the Manhattan Club; Gen. Schuyler, for the city of Philadelphia; Maj.-Gen. Halleck; Dr. Fordyce Barker, for the Academy of Medicine; John Amory Lowell and members of his family, for Harvard University; and the Rev. James Freeman Clarke. A scholarship bearing his name was given to the Metropolitan Museum of Art by his widow and daughter, supported by an endowment fund of $24,000, the interest of which is awarded annually to the most proficient male pupil in the class of painting organized by the art school of the museum.

Laz'enby, William Paul, American scientific agriculturist: b. Bellona, N. Y., 5 Dec. 1852. He was graduated in agriculture at Cornell (1874) and elected teacher of botany, horticulture and forestry in that institution. He later was appointed on the staff of Ohio State University and for six years held the position of director of the Ohio Agricultural Experiment Station. He belongs to many scientific and agricultural societies, and has done much good service in lecturing before farmers' institutes and other associations. He is at present professor of horticulture and forestry in the Ohio State University, and secretary of the Ohio Medical University.

Laz'uli Finch, a small brilliantly blue finch (*Cyanospiza amœna*) of the Western States, frequently kept as a cage-bird. It is much like its relative, the eastern indigo-bird (q.v.).

Laz'ulite, a mineral, which is not to be confused with lapis lazuli (q.v.), is found in Austria, Switzerland, Sweden, Brazil, and in North Carolina and Georgia. It occurs massive, and also well crystallized in monoclinic crystals of steep-pyramidal habit. It has a fine blue color and vitreous lustre, and is semi-translucent. It is moderately hard, but brittle; specific gravity, 3.1. It is a hydrated phosphate of aluminium, iron, and magnesium, but it also contains lime, and sometimes silica.

Lea, lē, **Henry Charles,** American author: b. Philadelphia 19 Sept. 1825. He entered his father's publishing house in 1843; became its head in 1865; and retired from business in 1880. He has actively engaged in public undertakings for civil and social advancement, and during the Civil War rendered conspicuous services in support of the Federal government. Between 1840 and 1860 he wrote many papers on chemistry and conchology, and after 1857 devoted his attention to European mediæval history. His chief works are: 'Superstition and Force' (1866); 'An Historical Sketch of Sacerdotal Celibacy in the Christian Church' (1867); 'A History of the Inquisition of the Middle Ages' (1888); 'Chapters from the Religious History of Spain' (1890); 'Formulary of the Papal Penitentiary in the Thirteenth Century' (1892); 'A History of Auricular Confession and Indulgences in the Latin Church' (1896); 'The Moriscos of Spain: Their Conversion and Expulsion' (1901). He was a son of Isaac Lea (q.v.).

Lea, Isaac, American naturalist: b. Wilmington, Del., 4 March 1792; d. Philadelphia 7 Dec. 1886. In early life he engaged in commercial pursuits, and from 1821 to 1851 was partner in a large publishing business; but from boyhood he was devoted to the study of natural history, and his various collections of minerals and fossils, and especially of shells, were valuable contributions to science. He was a member of the Academy of Natural Sciences of Philadelphia, and of the Philosophical Society of the same city, in whose 'Transactions' many of his observations were published; he was also elected to membership in learned societies abroad. His work in the study of fresh-water and land mollusks brought him special distinction. His principal publications are: 'Observations on the Genus Unio' (1827–33); 'Synopsis of the Family of Naiads' (1852–70). In the National Museum at Washington his vast collection of *Unionidæ* and his gem collections are deposited. Consult: Scudder, 'Bulletin U. S. National Museum,' No. 23 (Washington). An account of Lea's work in conchology was published at Philadelphia in 1861 by G. W. Tryon, Jr.

Lea, Matthew Carey, American chemist: b. Philadelphia 1823; d. there 15 March 1897. His work in developing the chemistry of photography has served important purposes. Besides many articles treating of the chemical action of light, his publications include an authoritative 'Manual of Photography.' He was the eldest son of Isaac Lea (q.v.).

Lea'cock, Hamble James, American missionary: b. Cluff's Bay, Barbados, 14 Feb. 1795; d. Sierra Leone, Africa, 20 Aug. 1856. He was educated at Codrington College, Barbados, took deacon's orders in 1826, and became assistant priest of St. John's parish, where he aroused great opposition by freeing his own slaves and offering to all slaves within the parish the privileges of the Church. Subsequently he was stationed at St. Vincent, and was pastor of St. George's, Charlestown, Nevis, whence he removed in 1835 to Lexington, Ky. From 1836 he held various pastorates, in 1848–55 was again in Barbados, and in 1855 went to Africa as the first volunteer of the West Indian Church Association for the furtherance of the Gospel in West Africa. He developed a large mission field at Rio Pongas, Sierra Leone. Consult the biography by Caswall (1857).

Lead, lēd, S. Dak., city in Lawrence County; on the Chicago & Northwestern and the Burlington & Missouri River R.R.'s; about 18 miles from the western boundary of the State. It was settled in 1876 and incorporated in 1877. It is situated in the Black Hills in a gold mining region. The chief industries are connected with mining, the manufacturing of mining tools and the outfits for mining camps. Some of the largest mines in the vicinity are the Homestake Gold Mining Company, which employs about 5,000 men; the Hidden Fortune Gold Mining Company, employing about 500; and in several other mines about 5,000 more miners are employed. The modern methods of mining have made the Black Hills (1903) the third largest gold producing region in the world, and Lead receives its share of the industrial plants connected with preparing the ore for market. The educational institutions are the public and parish schools, Black Hills Business College, the Hearst Free Kindergarten, and the Hearst Free Library. The Lead Coliseum and several churches are among the prominent buildings. The combined capital of the banks (1903) is $50,000; and the value of the business transacted annually is about $17,000,000. The government is vested in a mayor and a council of 10 members, two from each ward. Pop. (1890) 2,581; (1900) 6,210; (1903) 11,000.

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Lead, one of the useful metallic elements, well known in chemistry and in the arts. From early times references to it are found in literature. It is mentioned in Exodus xv. 10, Numbers xxxi. 22, Job xix. 24, and Ezekiel xxvii. 12, and is supposed to have been imported into Palestine from Tyre, although it should be remembered that there are lead mines in Sinai and the Lebanon, as well as in Egypt. Articles made of lead by the ancient Romans, such as water-pipes, water-tanks, weights, rings, and small ornamental cylinders, are still preserved. Examples in the grounds of old churches show that the Roman method of making pipes from sheet-lead continued in use till late in the Middle Ages. Small lead-weights of curious forms have been found among Viking remains dating as early as the 10th century. Many of the European countries are known to have produced lead as early as from the 10th to the 14th century. The important lead mines of the world are in Europe and the United States.

Chemical Properties.— Lead (chemical symbol Pb, from the Latin name of the element, *plumbum,* atomic weight about 207), is a soft metal of a bluish-white color, tending to gray, with a bright metallic lustre when newly cut or melted. It soon tarnishes when exposed to the air, taking on a thin film supposed to be suboxide. But lead suffers less than most metals either from atmospheric agencies or damp soils. It can be scratched with the nail, and easily cut, and makes a mark upon paper. Its specific gravity varies from 11.352 in the ingot to 11.365 when rolled into sheets, and it melts at about 619° F. (326° C.). It is highly malleable and in a less degree ductile, but its tenacity is small — a wire 1-12th of an inch being unable to carry a load of 20 pounds. Lead is not a good conductor of heat or electricity. When gently heated it can be forced by pressure through perforations, and pipes. Water containing carbonic acid has a slight action on lead, carbonate being formed and dissolved, but this action is apparently hindered by the presence of some salts and accelerated by others. When lead is heated to redness in air it is oxidized, litharge (PbO) being formed. Lead is attacked by nitric acid and by hot strong sulphuric acid, but dilute sulphuric or hydrochloric acids have but little action. It is therefore largely used for the construction of sulphuric acid chambers and for chemical works plants. It alloys readily with many metals.

Lead Oxides.— Five oxides of lead are known, namely, the suboxide (Pb_2O), the monoxide (PbO), the sesquioxide (Pb_2O_3), the red oxide (Pb_3O_4), and the dioxide (PbO_2). Of these, however, only three — the monoxide, the red oxide, and the dioxide — are of any importance. Lead monoxide (PbO), litharge, massicot, is largely used in the arts, and is made by heating molten lead in a shallow reverberatory furnace with free access of air, the litharge as it forms being pushed on one side so as to expose a fresh surface of the metal. The mass thus obtained is ground and separated from intermixed lead. It is then the buff-colored powder known as ground litharge or massicot. When the oxidation takes place above the melting point of the oxide, as in cupellation, the litharge on solidification breaks up into orange-colored scales and is then known as «flake litharge.» Litharge melts at about 600° C. to a clear liquid, and at higher temperatures volatilizes. Lead oxide is a powerful base and dissolves in acids forming salts. At high temperatures it combines readily with silica, forming fusible silicates, and therefore has a very corrosive action on crucibles or firebricks which contain silica. An electrolytic process of making red lead and litharge from galena is used at Niagara Falls. When litharge is heated to dull, redness with free access of air, oxygen is taken up and the red oxide (Pb_3O_4) red lead is formed. It is manufactured by roasting ground litharge with free access of air for about 24 hours; the operation being carried on till the required tint is obtained on cooling. It is used as a pigment.

Lead Ores.— Until recently only a small quantity of lead was obtained from any other ore than galena (PbS). Galena (q.v.) is found extensively, more or less pure or associated with other ores, in various parts of the United States, in Great Britain, Germany, Spain, and other European countries. The production of lead in the United States has become a very important feature of the world's industries. The richest ores are found chiefly in the Western States, the carboniferous limestone, bearing both hard and soft ores, which contain silver chloride and cerussite. The output of smelting-works in Colorado, Idaho, Missouri, Montana, Utah, etc., figures largely in the industrial statistics of the country. (See LEAD INDUSTRY, AMERICAN.) At the present time the main supply of lead is obtained from the Rocky Mountain regions, where the ores are argentiferous — as to some extent all galena is — and the lead-silver mines in some of the States mentioned have produced much wealth for their owners. Conde lead is imported into the United States from British Columbia and Mexico. Other minerals associated with galena are anglesite or sulphate of lead, lanarkite, which is a basic sulphate, pyromorphite, or phosphato-chloride of lead, and bournonite, consisting of the sulphides of lead, copper, and antimony. Galena is very heavy and usually can be easily separated from most of the lighter minerals with which it is associated. The heavier minerals, such as barytes, pyrites, and blende, are not so easily or completely separated. In Great Britain the ore is crushed to pass through about a half-inch sieve, and is dressed to contain over 76 per cent of lead. In other countries the concentration is not so high and sometimes no dressing is resorted to. This is specially the case in districts where the blast-furnace is used for smelting, since finely divided material is unsuited for the blast-furnace.

Metallurgy.— Galena is the principal lead ore employed for the purposes which metallurgy (q.v.) now so widely subserves. The next important ores, the sulphate and the carbonate, are seldom treated except in combination with others. The three main processes are the air-reduction, the roasting and carbon reduction, and the iron or precipitation reduction processes. Galena when taken from the mine is broken up into small pieces or reduced to powder, and the impurities, in so far as these can be removed mechanically, separated by machines. If the dressed galena is nearly pure, as it often is, the smelting operation is simple. The processes of lead-smelting — galena being the ore — which have grown up in various parts of the world, are strikingly similar in principle, though differing much in detail. In the United States lead is smelted in reverberatory furnaces made of brick, or in water-jacketed blast-furnaces. The blast-furnace is always preferable to the reverberatory where it can be used, and has now become almost universal for lead-smelting.

Compounds of Lead.— One of the most important lead compounds is plumbic carbonate (carbonate of lead, white lead), $PbCO_3$ — the cerussite of mineralogists, and now largely mined in the United States as an ore of lead. White lead is manufactured on a large scale, and is extensively used in the arts as a white pigment and as a body for other colors in paints. (See PAINT.) Another leading compound is plumbic chloride (chloride of lead), $PbCl_2$. The minerals matlockite and mendipite are both oxychlorides of lead. A basic chloride of lead is made for use as a white pigment, which is, however, not so serviceable as ordinary white lead. Lead acetate (sugar of lead), $Pb(C_2H_3O_2)_2, 3H_2O$, is prepared by dissolving massicot in dilute acetic acid. It can be obtained in transparent crystals or in scales by evaporating the solution. It is soluble in 1½ parts of cold water, and in eight parts of alcohol. Like litharge, it is used in the manufacture of oil-varnishes. Minium or red lead is much used in the manufacture of flint-glass, as a cement, and as a pigment. For glass-making it requires to be made of very pure lead, as a slight trace of copper would impart a color to the glass. Minium is prepared by heating massicot or monoxide of lead to a temperature of 600° F. in iron trays, in an oven, carefully avoiding fusion. More oxygen is thus gradually absorbed; and a bright-red compound is formed which is the red lead of commerce. Orange lead, made from white lead instead of from massicot, is a very pure kind of red lead. Yellow lead, so called sometimes by manufacturers, is a mixture of the oxides of lead and antimony, which is to some extent used to give a yellow color to earthenware, and as a pigment. The so-called black lead (see GRAPHITE), of which pencils, etc., are made, contains no lead.

Lead in Medicine.— Most of the lead compounds used in medical practice are made into external applications for disorders of the system which manifest themselves upon the skin, although some are employed as sedatives, astringents, etc. Lead acetate is an approved internal remedy in typhoid fever, diarrhœa, and other diseases. Of plasters, ointments, and the like, lead carbonate, lead iodide, and lead oleate are familiar constituents.

Lead Poisoning.— The use of lead in the arts is a frequent cause of painful and sometimes fatal effects, from the metal finding its way into the system. The glazing of culinary vessels with lead; the coloring of confectionery with the chromate, chloride, or carbonate of lead; the sweetening of sour wine by litharge or oxide of lead; the drinking of water which has passed through new lead-pipes; and living much in rooms newly painted with lead-colors, all these things may cause exposure to this peril, and often produce lead or saturnine poisoning. But the most frequent and virulent cases occur among painters and persons engaged in white-lead factories. In lead-poisoning the countenance assumes a sallow, earthy hue, the skin becomes dry and harsh, the digestion is deranged and the bowels constipated, and a sweetish metallic taste is felt in the mouth. A specially important sign is the appearance of a blue or violet line along the margin of the gums and teeth, due to the formation of a sulphite of lead. There is sometimes kidney disease, muscular palsy, severe disturbance of the brain, and even epilepsy and some form of insanity. The most noteworthy result of lead-poisoning is lead-colic, or painter's colic.

S. SANFORD,
‹*Engineering and Mining Journal.*›

Lead Industry in the United States. Although the earliest discovery of lead on the American continent is recorded 14 years after the landing of the first English settlers in Virginia, it was well known in old times. «They sank as lead in the mighty waters» is a part of the triumphant song of Miriam, 1491 B.C. Job refers to its use for writing tablets — «an iron pen and lead.» «A work of Hesiod's was preserved for many centuries stretched on leaden tablets.» Iron, tin and lead were enumerated by Ezekiel as among the commercial objects of the Syrian trips to Tarshish. Ewbank relates that the terraces of Nebuchadnezzar's hanging-gardens were covered with sheets of lead soldered together to retain moisture in the soil. Archimedes used lead pipe to distribute water by engines in the large ship built for Hiero. The plumbers of Pompeii used lead pipes, for we read that the Neapolitan government sold large quantities of «leaden» pipes as old metal.

Lead deposits in the United States were first found in 1621 in the vicinity of Falling Creek near Jamestown; but the steady tide of European immigration in the 17th and 18th centuries, causing a growing demand for bullets, stimulated further discoveries wherever the settlements of the colonists extended. The French acquainted the northwestern Indians with firearms, inducing them to hunt fur-bearing animals on a large scale and thus lead assumed a value, both in use for making bullets and as an article of traffic. In the second half of the 18th century, lead had become of such importance in the trade of the upper Mississippi country that it served as currency, the rate of exchange being a peck of corn for a peck of ore. In 1810, the United States Indian Agent at Prairie du Chien reported that the Indians at the mouth of the Wisconsin had «mostly abandoned the chase, except to furnish themselves with meat, and turned their attention to the manufacture of lead.» Previous to the Louisiana purchase nearly all the valuable lead mining lands were within the domains of France and Spain. Soon after these lands had passed under the jurisdiction of the United States, Congress, by the Act of 3 March 1807, reserved all government lands bearing lead ores and authorized leases of them, the first leases, issued in 1822, providing for a 10 per cent. royalty on the lead produced. In 1847, after more or less trouble and expense with the leasing system, it was finally concluded to sell these mineral lands. The chief lead mining districts, which to-day furnish the bulk of the lead production of the United States, were not developed until much later. The lead deposits of the Joplin-Galena district, embracing southwestern Missouri and part of Kansas, were discovered in 1848, but attracted little attention before the Civil War. The great western deposits of argentiferous galena were discovered in 1864, but could not be worked profitably until the extension of the western railroads.

Treatment of Foreign Ores.— It was first in 1886 that the treatment of foreign material in American works attained some importance. At first it was foreign ores that were smelted. Subsequently growing quantities of foreign base bullion were imported to be desilverized in bond, the greater part of the refined lead thus made being exported. Later on the supply to the home markets included, besides the product of our own mines, varying quantities of «exempt» lead, being a certain tonnage of lead obtained from foreign material which did not pay a duty. Since 1891 special returns from desilverizers have been made on the quantity of antimonial or hard lead produced, the quantity averaging 10,000 tons per year. The principal increase in the production of lead has taken place in southeastern Missouri, although in the Rocky Mountain region the rapid development of the Cœur D'Alene mines in Idaho has more than compensated for the steady decline in the lead product of Colorado. The Cœur D'Alene district has become by far the most important producer of lead in the United States, the Idaho ores treated by smelters amounting to about 100,000 short tons annually. In Utah, the Park City district continues to lead. A large tonnage has also recently come from The Bingham and Tintic districts.

Lead Production in the United States.— The present (1905) annual production of lead in the United States is about 300,000 short tons allotted as follows:

	Short tons.
Colorado	45,000
Idaho	100,000
Utah	50,000
Montana	5,000
New Mexico	1,000
Nevada	3,000
Arizona	2,000
California	1,000
Washington	1,000
Oregon, Alaska, South Dakota and Texas.	2,000
Missouri, Kansas, Wisconsin, Illinois, Iowa Virginia and Kentucky	90,000
Total	300,000

The United States with this production of 300,000 tons of lead from its own mines, does not yield enough lead for its own consumption. The bulk of this is supplied from the lead obtained from refining foreign, and chiefly Mexican, base bullion. Prices have been under the almost complete control of The American Smelting and Refining Company, averaging from 4.10 cents to 4.65 cents a pound.

Lead pigments, including white lead, sublimed lead, zinc lead, red lead, litharge, and orange mineral, aggregates annually about 150,000 short tons, in the United States. *White lead* resists the action of certain acids better than its substitutes, but on the other hand, it is quite inferior under the action of heat or sudden changes of temperature. *Sublimed lead,* a lead pigment which is sometimes classed as a white lead, is obtained as a by-product in the smelting of galena ores. It consists essentially of lead sulphates and lead oxides. *Zinc lead* is manufactured at Canyon, California, by the United States Production and Refining Company, and is a pigment consisting of a mixture of an oxide compound of zinc and lead obtained by an oxidizing smelting treatment of lead in zinc ores in a furnace of special design. The annual production of *red lead, litharge,* and *orange mineral* is about 20,000 short tons. In recent years, there has been a tendency to substitute zinc white and barytes for white lead pigments, on account of the poisonous effects on employees, of the fumes given off in the manufacture of white lead.

The production of zinc white has increased steadily for the last twelve years and now amounts to about 70,000 short tons annually, valued at about $5,300,000. The following table gives its production from 1880 to 1905, inclusive, and illustrates the continual growth in the manufacture of this pigment:

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	Short tons.			Short tons.	
1880....	10,107	$763,738	1885....	15,000	$1,050,000
1881....	10,200	750,000	1886....	18,000	1,440,000
1882....	10,400	760,000	1887....	18,500	1,490,000
1883....	12,000	840,000	1888....	20,000	1,600,000
1884....	13,000	910,000	1889....	16,080	1,457,000
1890....	21,000	$1,680,000	1898....	33,000	$2,310,000
1891....	23,700	1,980,000	1899....	40,146	3,211,680
1892....	23,900	1,998,000	1900....	48,840	3,667,000
1893....	24,980	1,901,000	1901....	46,500	3,720,000
1894....	19,987	1,562,000	1902....	52,730	4,023,000
1895....	20,710	1,600,000	1903....	62,962	4,801,000
1896....	21,000	1,750,000	1904....	63,500	4,862,000
1897....	25,000	1,960,000	1905. .	70,000	4,988,000

Physical Properties of Lead.—Although lead in many instances has been found in the United States in a native state, it has generally been discovered as sulphuret of lead. Its physical properties are well known and characteristic. It is opaque, a better conductor of electricity than of sound, and is of bluish gray color, having a glimmering metallic lustre while in the condition of pig, pipe, sheet, or hot; but when free from oxidation, as when cut or shaved by a knife or plane, it has a glittering metallic lustre, near akin to that of nickel; and when examined under sun, electric or gas light, it possesses the property of refracting the rays of light, producing the seven primary colors upon such bright surface. It is the least elastic and sonorous of all the metals. These properties are exemplified in target practice and the manipulating of the metal in the art of plumbing. Being malleable and laminable, it can be hammered or rolled into thin plates. It is fusible and melts at a temperature of 612 degrees Fah., and can be alloyed with many metals. If three parts are combined with five of bismuth and two of tin, the alloy can be melted at a temperature of 212 degrees, the heat of boiling water, and is therefore naturally the best adapted metal that plumbers could have adopted for the various uses it serves in their trade. Though it is not very ductile, in fact being the least ductile but one (nickel) of all the metals, it can be pressed while in a partially melted condition into any shape. It is crystallized by hammering and bending. To this property can be charged the cracks or breaks that are often met with in waste-pipes that have been indented or buckled, or in that portion of hand-made traps where the greatest number of blows have been struck in forming the trap.

Early Methods of Mining.— The early methods of lead mining in the United States were extremely crude. The Indians, the first chief producers, only skimmed the surface, although occasionally they would drift for some distance into the sidehills, and when they reached rock would build a fire under it and crack it by dashing cold water on the heated surface. The tools used in these early times were buckhorns, but in the 18th century iron implements were obtained from the traders to whom the lead was sold. Improvement in working methods at the mines was very slow for a long time after the advent of the white miner. The first shaft in a lead mine in Missouri was sunk about the beginning of the 19th century. Schoolcraft, who visited the lead mining district in 1819, found about 40 mines, four or five of which had shafts. There was not an engine of any kind for removing water from the mines, several of which, with the richest prospects in view, had been abandoned on this account.

The reduction of lead ore to the metallic state was in the earliest times not differentiated from mining. Any one finding a vein could mine and smelt the ore. The methods of smelting were crude in the extreme. A hole was dug in the ground and lined with rocks. This was usually located on a hillside for the purpose of getting a strong air draft. Hollow log heaps were reared; the centres were filled with mineral, then as much wood as possible was piled on top of and around the heaps, and the mass was fired, with the result that a portion of the ore was smelted and ran into trenches in the ground. Sometimes this operation had to be repeated several times. Rough pigs run into a scooped-out hollow in the earth, weighing about 75 pounds, were usually made by the Indian squaws. This method of smelting was wasteful, but inasmuch as the supply of ore seemed inexhaustible, the same practice was followed as late as the 19th century. About that time smelting began to be specialized by ore buyers as a separate occupation, and in 1836 the log furnace was superseded by the blast furnace.

Modern Methods.—During the past 60 years' progress has kept pace with invention, and various smelting plants have been erected, all exhibiting novelty in details. In one of the most recent plants, the projector agglomerates the ores with fused slag in variable proportion according to the nature of the ore treated. The dry or slightly moistened ore is incorporated with the necessary amount of liquid slag and the mixture is stirred so as to insure a complete incorporation. A spongy material is obtained by this procedure which is largely composed of small pieces. A simultaneous evolution of dense fumes of sulphur, sulphur dioxide, and sulphur trioxide takes place. When this material is submitted to an air blast, the sulphur of the ore is burnt, while copious fumes of sulphur dioxide and trioxide are given off, and at times a yellowish vapor of sulphur. According to the quantity of sulphur in the ore and the amount of the air pressure, the desulphurization of the ore is completed in about one to three hours and the agglomerated mass is in the form of a spongy but compact block. This is broken up and mixed with the requisite amount of flux and coke, after which it is introduced into the blast furnace. A considerable economy is effected by this process especially in roasting, inasmuch as the heat of the slag together with the heat given off in the combustion of the sulphur is almost always sufficient for the agglomeration and desulphurization of the ore. The primary desulphurization reaches about 50 per cent., but it continues in the blast furnace, as the ore, agglomerated with the slag, assumes a spongy form and thus presents a larger surface to the action of the air. The process proves especially useful in the treatment of argentiferous lead ore, as the loss of silver is diminished by avoiding the calcination in a reverbatory furnace. There is, however, quite a distinction between this process and that of Huntington Heberlin, inasmuch as a calcarous or basic gange is not favorable to it, if the proportions are too great. Ignorance of scientific methods caused the early miners to throw away the lead carbonate, or cerussite (*dry bone*) then considered worthless. It accumulated in heaps until the arrival of Hagen, in 1838, who erected furnaces for its reduction. The result of the utilization of the cerussite was a largely increased production. The ignorance of the practical miner likewise retarded the utilization of zinc ores, which are associated with lead ores and now constitute the chief value of the output of the zinc-lead mines. For over 50 years zinc ore was taken out of the mines of Missouri, in connection with lead ore, and thrown upon the dump pile as worthless. Mines were deserted because of the prevalence of this refuse or *tiff*, as it was called by the miners. In the early seventies this peculiar looking substance, which was causing the lead miners so much trouble, was first treated at the smelter and returned $15 per car load. This led to further shipments and abandoned mines were gradually opened because of the zinc ore they contained, and in 1902 the zinc product of Missouri was more than eleven times the value of all the zinc ore mined in the Eastern States, where zinc mining dates back to 1848, and where the mines were the main source of the domestic zinc supply previous to the development of the Joplin-Galena district.

Recent Progress.— The last 25 years in the history of the lead-zinc mining industry have recorded many changes. With a few exceptions, 25 years ago, all lead and zinc mining was done by small companies, mostly unchartered associations of persons living in the immediate neighborhood. The ore was generally raised to the surface by a windlass, and cleaned by hand with a *pickawee hammer*, or crushed with a *bucking iron* on a flat stone, or by an itinerant horse-power crusher, and was concentrated by a sluicing and hand jibbing.

It is of great practical and theoretical interest to note the special conditions which have permitted of the survival of zinc-lead mining on a small scale, and often with primitive methods, amid concentration of ownership in mineral lands. The higher cost of running small plants, as compared with mines operated on an extensive scale, comes from the expensive methods of generating and distributing power; but, with modern methods of power transmission, this difficulty can be overcome by the development of central power plants.

Though the actual operation of the mines is to some extent still conducted on a small scale, the lead-zinc mining industry has not escaped the general trend of modern business toward centralization. In this respect a marked difference in degree exists between those mines which may be classed as zinc mines, lead being mined only as a by-product, and those which may properly be classed as lead mines, zinc occurring, if at all, as a by-product. In soft lead mining the progress of centralization is far in advance of that manifested by the zinc mining industry, and at this time 80 per cent. of the demand for American lead or spelter comes from seven corporations, while the connection between the growth of concentration and the progress of deep mining is well defined. See MINES AND MINING.

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Lead-pencils. Lead-pencil manufacture in the United States did not begin until 1860, but in 1903 there is estimated to be $4,000,000 capital invested in the industry, and American lead-pencils are sold all over the world. Germany is the pioneer country in lead-pencil manufacture, and from that nation came many of the founders of the industry in the United States. Among the first in this country were Eberhard Faber, Joseph Reckendorfer, and Henry Baulzheimer. New York city and vicinity have always been the seat of lead-pencil manufacture in this country, and among the prominent manufacturing firms now located there are the American Lead-Pencil Company, the Eagle Pencil Company, and the works and office of Eberhard Faber; while in Jersey City is the plant of the Joseph Dixon Crucible Company, founded by Joseph Dixon at Salem, Mass., as early as 1826, and moved to Jersey City in 1840. The company did not begin to make lead-pencils until 1872. It is the pioneer graphite company in the United States, if not in the world. The plumbago crucibles (which are identical with graphite) were invented by Joseph Dixon. Graphite now enters largely into every department of the mechanical arts. The American output of pencils is calculated to be 5,000 gross daily. American lead-pencils now supply nearly all the home demand and are sold everywhere. Many novelties in pencils have originated in the United States.

Lead-poisoning. See Lead.

Leading Star. See Lodestar.

Leadville, lĕd'vĭl, Colo., a city and the county-seat of Lake County, 80 miles by rail southwest of Denver, the State capital, on the Colorado M., Colorado & S., and the Denver & R. G. R.R.'s. It is situated 10,200 feet above the sea amid picturesque scenery, near the headwaters of the Arkansas River in central Colorado, between the Mosquito and Sawatch ranges of the Rocky Mountains. Leadville was first settled in 1860 by miners and prospectors, but after a period of comparative prosperity as a gold-mining centre declined with the exhaustion of the first discovered deposits. It revived with the discovery of 1877 of rich lead and silver deposits, followed by the discovery of other gold, zinc, copper, bismuth, and manganese deposits, and is now one of the most important localities in the world for the mining and reduction of the ores of the precious metals, some of the mines being 700 feet deep. Leadville's annual production of metals amounts to $10,000,000. It is the mining, farming, and grazing trade centre of an extensive region, has fine buildings, including a Carnegie library, opera house, theatre, court-house, jail, hospital, and almshouse, has a parochial school, a high school and four grade schools, two Roman Catholic churches, two Methodist, two Presbyterian, a Baptist, a Congregational, and a Lutheran, is lighted by gas and electricity, has an excellent water supply, and well organized fire and police departments. Besides its large sampling, refining and reduction works, smelting furnaces, etc., its mines employing 4,000 workmen, its smelting 1,200, and incidental to mining and smelting 1,200; it has also iron foundries, manufactures of machinery, ice, jewelry and novelties, and a government fish-hatchery. There are two National banks, the volume of business of the Carbonate National bank in 1902–3 being, receipts $24,071,492 and disbursements $24,095,624. The city is administered by a mayor and common council of six members elected biennially. The population, consisting of Americans, Irish, Swedes, Finns, Austrians, Italians, Germans, Cornish, and English, was (1890) 10,384; (1900) 12,455.

Henry C. Buller,
Editor of 'Herald Democrat.'

Leaf-beetle, a popular name for many members of the family *Chrysomelidæ* (q.v.), which embraces about 18,000 widely distributed species, about 600 of which are found in North America. The larvæ, which feed upon the succulent parts, either fully exposed, in protective cases, beneath the epidermis as leaf-miners or stalk-borers, are all soft-bodied six-footed creatures with great appetites. Some larvæ feed on roots, some are aquatic, and many cover themselves with excrement as a protection against their enemies. The adults of several tropical species are of such brilliant colors as to be used for jewelry when mounted in gold settings. The family includes many species considered serious pests of cultivated plants. Some of the most noted of these are the flea-beetles, tortoise-beetles, potato and asparagus beetles, elm-leaf beetle and the diabroticas, represented by the striped, and the spotted cucumber-beetle. These are treated under their food-plant titles.

Leaf-bug, or Plant-bug, bugs of the family *Capsidæ,* which suck the juices of plants. Two hundred and fifty of the thousand or more species described occur in the United States, and all except the predaceous species are vegetable feeders, a few being considered pests. They are generally oval or elongated, yellowish or greenish, sometimes with lines or dots of red or black. All have a decidedly «buggy» odor. Among the best known species are the red-bug or cotton-stainer (*Dysdercus suturellus*), so called because its excrement stains the cotton in the opening boll, thus reducing the grade. It is less troublesome than formerly because the piles of cottonseed in which it used to breed are now used for oil instead of being thrown in heaps to decay. The insect also attacks oranges in Florida. Cottonseed will attract them away from the trees. Another species troublesome on currants, gooseberries, dahlias, etc., is the four-lined leaf-bug (*Pœcilocapsus lineatus*). Its eggs are laid in the young twigs which may be cut in autumn or winter and burned. The insects may also be jarred off the plants into receptacles while sluggish in the early morning.

Leaf-cutter Bee, one of the large bees of the genus *Megachile,* of which a common species in the United States is *M. cetuncularis.* It is a «thick-bodied bee with a large square head, stout scissors-like jaws, and with a thick mass of dense hairs on the under side of the tail for the purpose of carrying pollen.» These bees make their nests in the hollow stems of elder-bushes, or, nowadays, often in crevices about buildings, and form their cells of round pieces which they cut out of tender leaves of many sorts of trees and bushes, especially the rose. Many cells are made, each containing an egg and store of pollen, and the whole economy of the group is very interesting. There are many species in various parts of the world. Consult: Packard, 'Guide to the Study of Insects' (1889).

Leaf-cutting Ants. See Ants.

Leaf-hopper, any member of the family *Jassidæ,* which includes a very large number of small bugs greatly varying in form and often grotesque. They are especially numerous in grass and grain, which they are believed to injure to a greater extent than is usually supposed. Among the best-known species is the grape-vine leaf-hopper (*Erythroneura vitis*), which is often so abundant in vineyards that the leaves may turn brown from the insects' punctures. They have been effectively caught by tapping the vines to make the insects jump against a screen smeared with tar or a fan similarly covered and kept in constant motion close to the vines. This species is sometimes erroneously called «thrips» (q.v.). Among the best known of the grass-feeding host of species is the destructive leaf-hopper (*Cicadula* or *Limotettix exitosa*). This is sometimes caught in wide pans covered with tar and dragged across the field.

Leaf-insect, or **Walking Leaf,** tropical species of the family *Phasmidæ,* which is represented in temperate climates by the walking-stick (q.v.). They are so called because of the remarkable resemblance of their wings to leaves, not only in color but also in the arrangement of the veins, etc., so that the natives believe that the insects are really leaves which have acquired organs of locomotion, digestion, etc. Their legs also look more or less like twigs, and their eggs, which are dropped upon the ground from the foliage where the insects feed, look very much like seeds. This likeness is of use as a protection from enemies. See MIMICRY.

Leaf-miner, any insect of the superfamily *Tineoidea,* which comprises several families of very small moths, most of whose larvæ feed upon the soft tissues (parenchyma) of leaves and green stems beneath the epidermis, sometimes eating away rounded passages and sometimes long serpentine paths. More than 4,000 species have been described, of which fully 1,000 are American. The adults are often remarkably beautiful, exhibiting under the microscope a covering of lustrous scales. Among the plants that these insects attack injuriously are oaks, pines, maples, and palmettos. Some of the leaf-feeding species have developed the habit of feeding during their later larval days upon the outside of the leaf, either fully exposed or in a protective case. Others have assumed root- and seed-feeding habits; still others have become twig-borers, and gall-formers. Some of the related species live upon animal skins, fur, wool, etc. (See CLOTHES-MOTH.) A few flies of the families *Anthomyiidæ* and *Oscinidæ* are leaf-miners, as are also some leaf-beetles of the family *Hispini* and some sawflies of the family *Tenthredinidæ.* Consult: Comstock, ‹Manual for the Study of Insects› (1895); Sharp, ‹Cambridge Natural History,› Vol. VI. (1899).

Leaf-monkey, an Anglo-Indian name for a langur (q.v.).

Leaf-nosed Bats, a general term for such bats as have on the snout upright leaf-like growths of highly sensitive membrane which is presumably of great assistance to them in making their way about in darkness, and in finding and taking their insect-prey. (See BAT.) These folds of skin are, naturally enough, called the nose-leaf, and may be comparatively small and simple, or so large as to form a grotesque mask, such as gives so extraordinary appearance to the horse-shoe and other leaf-nosed bats of the family *Rhinolophidæ,* and to the «false vampires» of the family *Nycteridæ.* North American bats show very little of this peculiarity. These complicated membranes are always fringed with long fine hairs, which serve the purpose of the tactile whiskers of cats; and the bats possessing this feature are more thoroughly nocturnal than those in which it is lacking or little developed.

Leaf-roller, Leaf-tyer, or **Leaf-sewer,** a small moth, in most cases one of the family *Tortricidæ,* whose caterpillar rolls a leaf or a part of a leaf into a case, tying it into a cylindrical case with silken bands and lining this case with silk, so as to form a sort of cocoon in which it may transform safely into the pupa stage. In some cases the nest is formed by fastening together several leaves. «In most cases,» says Comstock, «the building of the nest is the work of a single larva, but in very many instances several larvæ work to build a common nest.» Each species makes its nest of a particular form, and infests some special kind of plant or tree; and many do considerable injury, especially among greenhouse plants and orchard trees.

Leaf-tyer. See LEAF-ROLLER.

League, lēg, a measure of length varying in different countries. The word is supposed to be of Celtic origin, but it has been introduced into the modern languages of Latin origin through the Latin *leuca.* The Roman league was equal to 1,500 paces, each of 5 feet. The English land league is 3 statute miles, and the nautical league 3 equatorial miles, or 3.457875 statute miles. The Italian league is reckoned as equal to 4 miles, each of 5,000 feet. The Spanish league varies very much according to the locality. On the modern Spanish roads the league is estimated at 8,000 *varas,* or 7,416 English yards. The Portuguese league is equal to 3.84 English miles. In the old French measures the length of the league was different in every district, but the three principal leagues were the legal or posting league, equal to rather less than 2½ English miles, the marine league somewhat more than 3½ English miles, and the astronomical league equal to about 2¾ English miles. The metric league is reckoned as equal to 4 kilomètres.

League, political connections which have been called *alliances* since the French language has become the diplomatic language of Europe. Among these are the League of Cambrai, formed in 1508 between Louis XII., king of France, the German emperor Maximilian, and Ferdinand of Spain, for the purpose of humbling the Republic of Venice, and which was joined in 1509 by Pope Julius II. This league was dissolved in 1510, as many similar ones have been, in consequence of mutual distrust, and was succeeded by the *liga santa,* or holy league, between the pope, Maximilian, Ferdinand, and Venice. The object of this was to compel Louis XII., whose allies had now become his enemies, to renounce his conquests in Italy; which object was gained. Thirty years afterward a holy league was formed in Germany. When the principal Protestant princes in Germany united in 1530, and again in greater numbers in 1536, to form the union of Schmalkalden, in order to protect their common faith and withstand the Emperor Charles V., the Roman Catholic princes assembled at Nuremberg, in 1538, to take measures for the support of their own faith, and to oppose the designs of the Protestant princes; and as their league had the protection of the Roman Catholic Church for its object, they termed it the *holy league*. A fourth league was headed by Henry, duke of Guise, in 1576, against Henry III. of France. Its ostensible object was the support of the Roman Catholic religion. There was a fifth league in Germany in the 17th century.

Leahy, lē'hĭ, **William Augustine,** American author: b. Boston 18 July 1867. He was graduated from Harvard in 1888, was literary editor of the Boston *Traveller* in 1893–4, then entered general literary work, and contributed verse and short stories to magazines. In 1902 he was appointed secretary to the music department of Boston. His works are: ‹The Siege of Syracuse› (1889); ‹The Incendiary› (1896), which obtained a prize offered by the Chicago *Record;* and a ‹History of the Catholic Church in New England› (1899).

Leake, lēk, **William Martin,** English archæologist and topographer: b. London 14 Jan. 1777; d. Brighton 6 Jan. 1860. An officer in the West-Indian service (1794–8), and artillery instructor at Constantinople in early life, he later traveled in the East, and was engaged in surveys and diplomatic business for the British government in Greece (1805–9). Among his publications are: ‹Researches in Greece› (1814); ‹Topography of Athens› (1821: 2d ed. 1841), a learned and still valuable work; ‹Historical Outline of the Greek Revolution› (1826); ‹Travels in Northern Greece› (1835); ‹Peloponnesia› (1846). Consult: Marsden, ‹Brief Memoir of the Life and Writings of W. M. Leake› (1864).

Lean'der and Hero. See Hero.

Leaning Tower. See Pisa.

Leap Year, the name given in Great Britain to every year of 366 days. The length of the year is a little less than 365¼ days. Julius Cæsar, in reforming the calendar, arranged that in every fourth year February should have 29 days instead of 28, and that two days should be called by the same name. The day whose name was repeated was, according to the Roman method of reckoning, the sixth before the calends of March, that is, the 24th February, and the year in which this name was given to two successive days was named *bissextile* (*bis,* twice; *sextus,* sixth). The name leap year is perhaps due to the notion that the calendar takes a leap of one day every fourth year to make up for its ordinary year being one fourth day too short. Every year is a leap year which is divisible by four without remainder, except the concluding years of centuries, every fourth only of which is a leap year; thus the years 1800 and 1900 are not leap years, but 2000 and 2400 are.

Lear, lēr, **Edward,** English author and artist: b. London 12 May 1812; d. San Remo 29 Jan. 1888. In 1831 he became draftsman to the London Zoological Society. His illustrations of the ‹Family of the Psittacidæ› (1832) was followed by many other illustrations for zoological works by Gould, Bell, Swainson, Jardine, and Gray. In 1837 he visited Italy and the East, and in those parts spent most of his remaining days, chiefly occupied with landscape painting. He exhibited ‹Dead Birds› in 1836, and in 1850 was represented at the Royal Academy exhibition by ‹Claude Lorraine's House on the Tiber.› As an author he is best known by his ‹Book of Nonsense› (1846); ‹Nonsense Songs and Stories› (1871); ‹More Nonsense Songs,› etc. (1872); and ‹Laughable Lyrics› (1877). He also wrote ‹Views in Rome and its Environs› (1841); ‹Illustrated Excursions in Italy› (1846); ‹Journal of a Landscape Painter in Greece and Albania› (1851); ‹Journal of a Landscape Painter in Southern Calabria› (1852); ‹Views in the Seven Ionian Islands› (1863); and ‹Journal of a Landscape Painter in Corsica› (1870). Tennyson's verses ‹To E. L. on his Travels in Greece› were addressed to Lear.

Lear, Tobias, American diplomatist: b. Portsmouth, N. H., about 1760; d. Washington, D. C., 11 Oct. 1826. He was graduated at Harvard in 1783, and in 1785 became private secretary to General Washington, to whose domestic affairs he attended for several years, and by whom, in his will, Lear was most liberally remembered. In 1802 he was consul-general at San Domingo, and afterward consul-general at Algiers and commissioner to conclude a peace with Tripoli. He discharged this last duty in 1805 in a manner which gave offense in certain quarters, but his conduct was approved by the Federal government. He returned shortly after to the United States, and at the time of his death (by suicide), was employed in Washington as accountant of the War Department.

Lear. Shakespeare's great drama of ‹King Lear› was written between 1603 and 1606. The bare historical outline of the story of the King he obtained probably from Holinshed or from an old play, the ‹Chronicle History of Leir›; the sad story of Gloster was found in Sir Philip Sidney's ‹Arcadia.› The motifs of the drama are the wronging of children by parents and of parents by children.

Leary, Richard Phillips, American naval officer: b. Baltimore 3 Nov. 1842; d. Boston 27 Dec. 1901. He was graduated at the United States Naval Academy in 1860; served during the blockade of Charleston 1863–5; promoted commander in 1882. During the Samoan revolution in 1888 he was the senior naval officer present at the critical moment. He was promoted captain in April 1897; commanded the cruiser San Francisco in 1897–8; and when the New Orleans was purchased from Brazil convoyed that vessel to the United States. At the close of the Spanish-American war he was appointed the first American governor of Guam, and served there till relieved, on his own request, in April 1900.

Lease, Mary Elizabeth Clyens, American writer and speaker: b. Ridgway, Pa., 11 Sept. 1853. She was educated at Saint Elizabeth's Academy, Allegany, N. Y., and after graduating there removed to Kansas, where in 1885 she was admitted to the bar. In 1888, at a union labor convention, she made her first political speech, and in the campaign of 1890 delivered over 160 addresses in the interest of the Farmers' Alliance (q.v.) to the triumph of which that year in Kansas her effective efforts were believed to have largely contributed. She was afterward appointed president of the State Board of Charities, being the first woman chosen to such an office in this country. At the Columbian Exposition she was orator on Kansas day; represented Kansas at the National Conference of Charities and Corrections; and was national vice-president of the World's Peace Congress in Chicago, in 1893. She has written much for periodicals; is author of 'The Problem of Civilization Solved'; and has lectured frequently on literary, political, and economic subjects.

Lease, a species of contract granting the possession of lands, tenements, or incorporeal hereditaments, for life or a limited term of years, or during the pleasure of the contracting parties. The grantor is called the lessor and the grantee the lessee. A lease may be in writing or by parol, but the former is more satisfactory, as it usually set out in regular form and binding terms the respective rights of the contracting parties. A lease contract establishes the relation of landlord and tenant between the lessor and lessee, unless its terms limit the relation of the parties. A lessor who holds an estate for years only may under-lease in such a manner as to establish a technical relation of landlord and tenant between the owner of the fee and the lessee. One of the essential requisites of a lease is, that its duration must be for a shorter period than the duration of the interest of the lessor in the property leased; for if the holder of an interest less than that of a fee leases his interest for the full term of its continuance it would be in effect an assignment or sale of his interest and in no sense a lease. In a lease proper, the lessor reserves to himself a reversionary interest in the property included in the lease. The beginning and termination of which are to be determined by the agreement of the parties. This agreement must also include a designation of the premises, estate or interest, intended to pass to the lessee. A term, however, is perfected only by the entry of the lessee. Even after the making of a lease the estate remains in the lessor up to such time as the lessee actually enters into possession, and the only right the lessee has in the estate is that of making an entry, which must be exercised to give him the additional rights provided for in the lease. All persons possessed of lands or tenements, or interest therein, competent to do business and under no legal disability, as of unsound mind, immature age, or the like, may enter into a lease contract.

Lease'hold. A leasehold is an estate held under or by virtue of a lease. An estate for years usually commences by means of a written lease. It is important to distinguish between a lease and an agreement to lease, the former being a completed contract and the latter only a stipulation for the formation of a contract at some future time. It is often difficult to determine to which of the two classes an instrument belongs, without resorting to an interpretation based upon the intentions of the contracting parties. If a lessee fails or refuses to enter into possession under and in accordance with the terms of a lease, the possession remains undisturbed in the lessor, and the remedy of the latter would be by an action for not entering into possession and for consequent damages, rather than for a breach of the conditions of the terms of the lease, the relation of landlord and tenant not having been established before an entry under the lease. A person can convey by lease no greater interest than he possesses in an estate. If the lessor has only a life estate it terminates with his death, although he may have executed a lease for a term of years not completed at the time of his death. The ordinary powers, duties and obligations of the contracting parties may be increased, diminished, or modified by special provisions in a lease. Many lease contracts provide for all of the contingencies which can ordinarily happen. It is not infrequent that a clause in the instrument provides that the lessee may build upon land leased to him, and that he shall have the right to remove his buildings at the expiration of his term, or purchase the fee. Any provision not illegal or inconsistent with public policy may be an incident of a leasehold.

Least Squares, Method of. A mathematical process for treating the results of scientific observation so as to free them as far as possible from the effect of error.

The familiar idea of measurements either regards them all as perfectly exact when made, or at least sufficiently near perfect exactness. For instance, a carpenter wishing to know the width of a room simply measures with his two-foot rule, and notes the size just as it came from the measurement. But in scientific work, where the highest degree of accuracy is necessary, we must do much more than this. The carpenter's measurement will doubtless be correct within an inch; and if he is a particularly careful workman, it will be correct within a fraction of an inch. But if it were necessary to know the width of that room within a hundredth of an inch, very different processes of measurement and very much more accurate tools would be essential. If it were required to attain a degree of exactness within one thousandth of an inch, it might perhaps happen that no tools or method of measurement could be devised which would accomplish the desired result.

It is obvious on reflection that since human measurements must always depend ultimately upon fallible human senses, so there must always exist a limit of precision beyond which it is not possible to go. It happens almost always that the degree of precision required in scientific measurements is somewhere near this unattainable limit; so that it is especially in scientific work that we have to resort to some method adapted to diminish as far as possible the harmful effects of those small errors which thus always result from the fallibility of human senses. The Method of Least Squares was perfected for this purpose.

It is clear from the above that this method is preëminently a practical process; it can perhaps be understood best by approaching it from the point of view of a concrete practical example. For instance, it is well known that a bar of iron changes its length with every change of temperature. If the bar is heated it becomes longer; when cooled it becomes shorter. Now suppose an experimenter in a physical laboratory desires to determine the effect of temperature changes upon the length of such an iron bar. What he does is extremely simple. Apparatus is provided for varying the temperature of the bar by alternate heating and cooling, and additional apparatus for measuring its length very accurately at various temperatures. At the same time some form of thermometer is used to make certain that we know the exact temperature of the bar at the various stages of the experiment.

Let us introduce the following notation:

l_0 = length of the bar at some assumed temperature t_0,

l = length of the bar at some other temperature t.

Now if we are willing to assume that the length varies uniformly with changes of temperature we may write,

x = increase in length of bar per degree of heating.

We shall then have the equation,

$$l = l_0 + (t - t_0)\,x. \tag{1}$$

The quantities appearing in this equation are of three kinds with respect to our knowledge of their numerical values:

1. Unknown quantities; viz.: x and l_0.
2. A quantity known from observation, and therefore subject to errors brought about by the fallible human senses; viz.: l.
3. A coefficient which we may safely assume to be known with practically complete accuracy from the thermometer readings; viz.: $t - t_0$.

Let us now rewrite equation (1) in a slightly different form, and repeat it several times with subscript numbers, so as to distinguish equations depending on the successive observations at various temperatures. We have:

$$\begin{aligned} &l_0 + (t_1 - t_0)\,x - l_1 = 0, \\ (2) \qquad &l_0 + (t_2 - t_0)\,x - l_2 = 0, \\ &l_0 + (t_3 - t_0)\,x - l_3 = 0, \\ &\text{etc.} \qquad \text{etc.} \end{aligned}$$

It is at once evident that as we have only two unknown quantities (l_0 and x) we can compute their numerical values from any two equations of the group (2) by the ordinary processes of elimination given in elementary algebras. But which two equations shall we select for this purpose? We might use the first two, for instance, or the last two, or the first equation and the last. If we try the actual process numerically upon a real example we generally find that the values of the unknowns come out different from the various combinations of equations. It was not until the Method of Least Squares was introduced that scientific men had a better way of computing their observations than the crude one of solving a great many different combinations, and taking the average of the results so obtained.

The reason for the differences thus arising from different combinations of equations is easy to find. We have seen that the quantities l in equations (1) and (2) are known from observation, and therefore subject to the usual small unavoidable observational errors. If the l's were absolutely correct, all combinations of equations would give precisely the same results for the three unknowns. But the l's are not thus absolutely correct; and, in a very strict sense, the several equations numbered (2) are therefore inconsistent amongst themselves. Admitting fallible numerical values of the l's as actually observed, all equations of the form (2) cannot be exactly true simultaneously: indeed, it follows from the very nature of observational errors such as affect the l's that in all probability no one of the equations (2) is really absolutely correct and true.

The right-hand members of equations (2), then, should not really be zeros. It will be more correct to represent them by a series of small quantities v, and to write equations (2) thus:

$$\begin{aligned} &l_0 + (t_1 - t_0)\,x + l_1 = v_1, \\ (3) \qquad &l_0 + (t_2 - t_0)\,x + l_2 = v_2, \\ &l_0 + (t_3 - t_0)\,x + l_3 = v_3, \\ &\text{etc.} \qquad \text{etc.} \end{aligned}$$

Formation of Normal Equations.— It will be convenient at this point to introduce a change of notation, so as to secure greater generality, and at the same time avoid our somewhat cumbersome form, which has been employed simply to visualize our conceptions by fixing attention upon an example derived from actual practice. We shall now increase the number of unknown quantities from two to three, and designate them by the letters x, y, z; and the known coefficients of x, y, z, we shall designate by the letters a, b, c. The quantities l, observationally known, will now be designated by n's. This will bring our notation into conformity with the usual practice of writers on Least Squares. Our general equation intended for solution thus become, from (3):

$$\begin{aligned} &a_1x + b_1y + c_1z + n_1 = v_1, \\ &a_2x + b_2y + c_2z + n_2 = v_2, \\ (4) \qquad &a_3x + b_3y + c_3z + n_3 = v_3, \\ &a_4x + b_4y + c_4z + n_4 = v_4, \\ &\text{etc.,} \qquad \text{etc.} \end{aligned}$$

The v's are here simply the errors of the equations, if we may be permitted the use of such an expression. More accurately, they are the amounts by which the equations fail of satisfaction when we substitute in them any assumed system of numerical values for the unknowns x, y, z. If, by any process whatever, we obtain a system of numerical values for x, y, z, and substitute those values in the left-hand members of equations (4), we shall obtain a series of residual errors represented by the v's. The name "residual" has therefore been given to the v's, for brevity.

It is evident that if we consider two different systems of numerical values for the unknowns x, y, z, and substitute both systems in equations (4), we shall get two different sets of values for the residuals v. In fact, and in general, for every different system of values belonging to x, y, z, there will be a different set of v's: it is the province of the Method of Least Squares to determine which system of x, y, z, and corresponding v's is preferable. To do this, we make use of the following principle, due to Legendre:

Of all possible systems of values for the unknowns x, y, z, that one possesses the highest probability of being correct which makes the sum of the squares of the residuals v a minimum.

This principle probably does not admit of rigorous demonstration, but it is so highly plausible that we are justified in adopting it without hesitation. This plausibility becomes evident when we consider that the best system of values for x, y, z must certainly make all the individual residuals small. Yet it would not do to adopt as our principle that the sum or mean of the residuals should be a minimum. For some being positive, and some negative, it might happen that the sum or mean would be made very small, while the individual v's remained in part very large. But the squares are not subject to this criticism, since they are all positive, and are at the same time the simplest functions that are thus positive.

Adopting, then, Legendre's principle of Least Squares, it remains to show how we can use it to solve equations (4). Again following the notation usual with writers on this subject, we shall employ square brackets as a symbol of summation, so that, for instance, the quantity

$$[vv]$$

will designate the sum of the squares of all the v's. Then, according to Legendre's principle, we must have:

$$[vv] = \text{a minimum.} \tag{5}$$

But, according to equations (4), $[vv]$ is a function of x, y, z; and as these latter quantities are independent, the principles of maxima and minima in the calculus tell us that we can satisfy the condition (5) by equating separately to zero the first partial differential coefficients of $[vv]$ with respect to x, y, z. In other words, we have:

$$\frac{\delta\,[vv]}{\delta x} = o, \quad \frac{\delta[vv]}{\delta y} = o, \quad \frac{\delta\,[vv]}{\delta z} = o. \tag{6}$$

Now since:

$$[vv] = v_1v_1 + v_2v_2 + v_3v_3 + v_4v_4 + etc.$$

equations (6) become:

$$\begin{aligned} v_1\frac{\delta v_1}{\delta x} + v_2\frac{\delta v_2}{\delta x} + v_3\frac{\delta v_3}{\delta x} + etc. &= o, \\ v_1\frac{\delta v_1}{\delta y} + v_2\frac{\delta v_2}{\delta y} + v_3\frac{\delta v_3}{\delta y} + etc. &= o, \\ v_1\frac{\delta v_1}{\delta z} + v_2\frac{\delta v_2}{\delta z} + v_3\frac{\delta v_3}{\delta z} + etc. &= o. \end{aligned} \tag{7}$$

Now, differentiating equations (4), we have:

$$\begin{aligned} &\frac{\delta v_1}{\delta x} = a_1, && \frac{\delta v_1}{\delta y} = b_1, && \frac{\delta v_1}{\delta z} = c_1, \\ &\frac{\delta v_2}{\delta x} = a_2, && \frac{\delta v_2}{\delta y} = b_2, && \frac{\delta v_2}{\delta z} = c_2, \\ &\frac{\delta v_3}{\delta x} = a_3, && \frac{\delta v_3}{\delta y} = b_3, && \frac{\delta v_3}{\delta z} = c_3; \\ &\text{etc.,} && \text{etc.,} && \text{etc.} \end{aligned}$$

so that (7) become:

$$\begin{aligned} a_1v_1 + a_2v_2 + a_3v_3 + etc. &= o, \\ b_1v_1 + b_2v_2 + b_3v_3 + etc. &= o, \\ c_1v_1 + c_2v_2 + c_3v_3 + etc. &= o. \end{aligned} \tag{8}$$

It will be noticed that the number of equations of the form (8) is the same as the number of unknown quantities x, y, z, no matter how large may have been the number of original equations of the form (4). We shall therefore simply substitute in equations (8) values of the v's from equations (4), remembering that, according to our notation:

$$\begin{aligned} [aa] &= a_1a_1 + a_2a_2 + a_3a_3 + etc., \\ [ab] &= a_1b_1 + a_2b_2 + a_3b_3 + etc., \\ [ac] &= a_1c_1 + a_2c_2 + a_3c_3 + etc., \\ &\text{etc.,} \quad \text{etc.} \end{aligned}$$

and thus obtain the following equations:

$$\begin{aligned} [aa]x + [ab]y + [ac]z + [an] &= o, \\ [ab]x + [bb]y + [bc]z + [bn] &= o, \\ [ac]x + [bc]y + [cc]z + [cn] &= o. \end{aligned} \tag{9}$$

Equations (9) are called "Normal Equations." As we have just seen, their number is always equal to the number of unknown quantities, and their solution by elimination offers no ambiguity. Furthermore, owing to the method by which they have been deduced, it is clear that they will furnish for the unknowns x, y, z a system of numerical values, which, when substituted in the original equations (4), will make the sum of the squares of the residual errors less than would be the case with any other possible system of numerical values for the unknowns, no matter how such other system might have been obtained.

If we now compare the above normal equations (9) with the original equations (4), which are usually called "observation equations," we see at once the law of formation of (9) from (4). It is evident that to form the normal equations we may use the following simple rule, first writing zeros instead of v's for the right-hand members of equations (4).

Rule for Normal Equations.— To form the first normal equation, multiply each observation equation throughout by the coefficient of its x, and then add the resulting equations. To form the next normal, use in the same way the coefficients of y; and for the third normal, use the coefficients of z.

The normal equations once formed, they can be solved by any method of algebraic elimination; but it is generally most convenient to use the following special form of computation, due to Gauss.

From the first equation (9) we have:

$$x = -\frac{[ab]}{[aa]}y - \frac{[ac]}{[aa]}z - \frac{[an]}{[aa]}.$$

If we substitute this value of x in the other two normal equations (9) we shall eliminate x. This substitution can be systematized by the introduction of auxiliary quantities $[bb.\ 1]$, $[bc.\ 1]$, etc., defined by the following equations:

$$\begin{aligned} [bb.\ 1] &= [bb] - \frac{[ab]}{[aa]}[ab], \\ [bc.\ 1] &= [bc] - \frac{[ab]}{[aa]}[ac], \\ [bn.\ 1] &= [bn] - \frac{[ab]}{[aa]}[an], \\ [cc.\ 1] &= [cc] - \frac{[ac]}{[aa]}[ac], \\ [cn.\ 1] &= [cn] - \frac{[ac]}{[aa]}[an]. \end{aligned} \tag{10}$$

Using these auxiliaries, the substitution of the above value of x gives:

$$\begin{aligned} [bb.\ 1]y + [bc.\ 1]z + [bn.\ 1] &= o, \\ [bc.\ 1]y + [cc.\ 1]z + [cn.\ 1] &= o. \end{aligned} \tag{11}$$

These equations, while precisely similar in form to the original normal equations (9), now involve one less unknown quantity, and their number has been reduced from three to two. A second application of the same method of elimination gives the following «second» auxiliaries:

$$(12)\quad \begin{aligned}[cc.\,2] &= [cc.\,1] - \frac{[bc.\,1]}{[bb.\,1]}[bc.\,1],\\ [cn.\,2] &= [cn.\,1] - \frac{[bc.\,1]}{[bb.\,1]}[bn.\,1],\end{aligned}$$

and the equation:

$$(13)\qquad [cc.\,2]z + [cn.\,2] = o.$$

From this equation (13), we have for the value of z:

$$(14)\qquad z = -\frac{[cn.\,2]}{[cc.\,2]}.$$

We now find the value of y by substituting this value of z in either of the equations (11); and x by substituting the values of y and z in any one of the normal equations (9).

Case of a Single Unknown.— It is of special interest to consider the application of the Method of Least Squares when there is only a single unknown quantity, directly observed. An example of this, for instance, would be our measurement of a room, where the only unknown is the width of the room, and several independent direct observations have been made.

Denoting the single unknown quantity by x, the observation equations of the form (4) will be:

$$(15)\qquad \begin{aligned}x+n_1 &= v_1,\\ x+n_2 &= v_2,\\ x+n_3 &= v_3,\\ x+n_4 &= v_4,\\ &\text{etc.};\end{aligned}$$

and if we suppose there are in all m such observation equations, the «rule for normal equations» gives a single normal equation of the form:

$$(16)\qquad mx + [n] = o,$$

and this will be the only normal equation. The solution is:

$$(17)\qquad x = -\frac{[n]}{m},$$

or, in other words, the most probable value of x is the arithmetical mean of the several observed values represented by the n's. This is a further strong addition to the evidence of plausibility attaching to Legendre's theorem of Least Squares. Possibly no other simple admissible theorem as to the residuals would give this result for a single unknown, observed directly; yet this result is the only one consistent with common sense.

Actual, Mean, and «Probable» Errors.— The values obtained for the unknowns by the Method of Least Squares are not the true values, but only the *most probable* values obtainable under the circumstances. They are subject to error; and we shall here consider three different quantities technically known as «errors.»

1. The *actual error,* defined as the divergence from the truth, and designated by the symbol $\triangle$.

2. The *mean error,* defined as an error of such magnitude that its square is the mean of the squares of all the actual errors $\triangle$ belonging to the several observations. It is designated by the symbol ε. If there are m $\triangle$'s,

$$(18)\qquad \varepsilon\varepsilon = \frac{[\triangle\triangle]}{m}.$$

3. The *probable error,* whose magnitude is such that it is an even chance whether any random actual error $\triangle$ belonging to any observation is bigger or smaller than the probable error. It is designated by r.

To determine the value of ε for the case of a single unknown x, observed m times, we proceed as follows. Let:

x_0 = the arithmetical mean of the observed values of the unknown x, equation (17).

x_0+q the unknown and unknowable true value of x.

Then, as we have seen, x_0 is the most probable value of x, according to the Method of Least Squares, and $[vv]$ will be a minimum if we substitute that value of x in equations (15). This substitution gives:

$$\begin{aligned}x_0+n_1 &= v_1,\\ x_0+n_2 &= v_2,\\ x_0+n_3 &= v_3,\\ &\text{etc.}\end{aligned}$$

But if, instead of x_0, we substituted the true quantity x_0+q, we should get a series of true errors $\triangle$, instead of the residuals v. This would give:

$$\begin{aligned}x_0+q+n_1 &= \triangle_1,\\ x_0+q+n_2 &= \triangle_2,\\ x_0+q+n_3 &= \triangle_3,\\ &\text{etc.}\end{aligned}$$

A subtraction between these last two sets of equations gives:

$$(19)\qquad \begin{aligned}\triangle_1 &= v_1+q,\\ \triangle_2 &= v_2+q,\\ \triangle_3 &= v_3+q,\\ &\text{etc.}\end{aligned}$$

and there will be m such equations. Squaring and adding them gives:

$$[\triangle\triangle] = [vv] + mq^2 + 2[v]q.$$

But, from the principle of the arithmetical mean,

$$[v] = o,$$

so that:

$$(20)\qquad [\triangle\triangle] = [vv] + mq^2$$

From the equation of definition (18):

$$[\triangle\triangle] = m\varepsilon\varepsilon;$$

so that,

$$(21)\qquad \varepsilon\varepsilon = \frac{[vv]}{m} + q^2.$$

Now, the value of q^2 can never be known; but we can get an approximation to it easily enough. It can be shown by the theory of probabilities that if we continue observing any quantity, the mean error of the arithmetical mean of the observed values will decrease in proportion to the square root of the number of observations.

To demonstrate this principle, let us consider:

Two observed quantities,	n_1, n_2,
affected with actual errors,	$\triangle_1$, $\triangle_2$,
and mean errors,	ε_1, ε_2

Now let N be the sum of n_1 and n_2 or:

$$N = n_1 + n_2,$$

and designate by $\triangle'$ and ε' the actual and mean errors of N. We shall have:

$$\triangle' = \triangle_1 + \triangle_2;$$

and squaring this equation:

$$\triangle'\triangle' = \triangle_1\triangle_1 + \triangle_2\triangle_2 + 2\ \triangle_1\triangle_2.$$

If k observations have been made to determine n_1 and n_2 the above becomes by summation:

$$[\triangle'\triangle'] = [\triangle_1\triangle_1] + [\triangle_2\triangle_2] + 2\ [\triangle_1\triangle_2].$$

In this equation, the last term, $2\,[\triangle_1\triangle_2]$ may be considered zero, because it will disappear, or nearly disappear, in the general average, on account of positive and negative errors being equally probable, *a priori.* But the squared terms remain, being always positive, and we have:

$$[\triangle'\triangle'] = [\triangle_1\triangle_1] + [\triangle_2\triangle_2].$$

Consequently, by our equation of definition (18), this becomes:

$$\varepsilon'\varepsilon' = \varepsilon_1\varepsilon_1 + \varepsilon_2\varepsilon_2.$$

This equation brings out the important principle that the square of the mean error of the sum of two quantities is equal to the sum of the squares of their respective mean errors. The principle can of course be extended so as to include three, or any greater number, say m, of observed quantities.

Now let us suppose the n's to have been observed with equal accuracy, so that ε_1 and ε_2 will be equal, and we have:

$$\varepsilon'\varepsilon' = 2\ \varepsilon_1\varepsilon_1,$$

or for m n's:

$$\varepsilon'\varepsilon' = m\,\varepsilon_1\varepsilon_1,$$

or

$$\varepsilon' = \sqrt{m\ \varepsilon_1}$$

This last equation shows that the mean error ε' of the sum of m equally precise quantities is $\sqrt{m}$ times the mean error of one quantity. But the arithmetical mean of m observations is $^1/m$ times their sum, and its mean error therefore ε'/m, or, according to the above:

$$\text{Mean error of arithmetical mean} = \frac{\varepsilon_1}{\sqrt{m}}$$

which establishes the principle enunciated above, that the mean error of the arithmetical mean decreases in proportion as the square root of the number of observations increases.

In accordance with this principle, x_0 will be more accurate than any individual average x in the proportion of $\sqrt{m}$ to 1. Consequently, since q is the error of x_0 and ε a sort of average value for the error of any x, we may take as a good approximation for q^2:

$$q^2 = \frac{\varepsilon^2}{m}.$$

Substituting this value of q^2 in equation (21), we get:

$$(m-1)\ \varepsilon\varepsilon = [vv],$$

or:

$$(22)\qquad \varepsilon = \sqrt{\frac{[vv]}{m-1}}$$

and equation (22) will enable us to calculate approximately the mean error ε from the known residuals v.

It would carry us too far afield in the theory of probabilities to demonstrate the relations existing between the mean error ε and the probable error r. But we may remark in passing that it is shown in works on the theory of errors, that, approximately:

$$r = {}^2/_3\,\varepsilon,$$

or:

$$(23)\qquad r = \frac{2}{3}\sqrt{\frac{[vv]}{m-1}}.$$

Furthermore, remembering that ε and r have reference to the precision attainable from a single observation, we can get the corresponding errors belonging to the arithmetical mean from m observations by the aid of the principle already used, viz.: that the diminution of error is proportional to the square root of the number of observations. Denoting the mean and probable errors of the arithmetical mean from m observations by ε_0 and r_0 equations (22) and (23) give:

$$(24)\qquad \varepsilon_0 = \sqrt{\frac{[vv]}{m\ (m-1)}},$$

$$(25)\qquad r_0 = \frac{2}{3}\sqrt{\frac{[vv]}{m\ (m-1)}}.$$

Mean and Probable Error for Several Unknowns.—Equation (22), so far as we have yet considered it, applies only to the case of a single unknown x observed directly m times. But a similar expression can also be found for the case of observation equations of the form (4), when solved by means of normal equations of the form (9). Having found values of the unknowns x, y, z, from the solution of normal equations, we substitute these values in the original observation equations, and thus obtain numerical values of the residuals v, by which amounts the original observation equations fail of being exactly satisfied. With these values of the v's we compute $[vv]$. If we then let:

u = the number of unknown x, y, etc., appearing in the original observation equations, it may be shown that we shall have for the mean and probable errors:

$$(26)\qquad \varepsilon = \sqrt{\frac{[vv]}{m-u}},$$

$$(27)\qquad r = \frac{2}{3}\sqrt{\frac{[vv]}{m-u}}.$$

For the complete demonstration of these equations we must refer to works on the Method of Least Squares. The equations furnish average approximate values for the mean and probable errors of any average observed quantity n, as it appears in any observation equation of the form (4). The unknowns x, y, z, are of course determined from the whole group of equations with much greater precision, and therefore with smaller mean and probable errors. In the case of z, for instance, it is shown in works on Least Squares that its mean and probable errors are smaller than those given by (26) and (27) in the proportion of:

$$\sqrt{[cc.\,2]}\ \textit{to}\ 1,$$

where $[cc.\,2]$ is the final coefficient of z appearing in the last reduced equation (13) resulting from the Gaussian elimination of the normal equations (9). Consequently, denoting by ε_z and r_z the mean and probable errors of z, we have:

$$\varepsilon_z = \sqrt{\frac{[vv]}{[cc.\,2]\,(m-u)}}, \tag{28}$$

$$r_z = \frac{2}{3}\sqrt{\frac{[vv]}{[cc.\,2]\,(m-u)}}. \tag{29}$$

The corresponding mean and probable errors of x and y can be found by re-arranging the observation equations in such a way that each unknown in turn will come out last in the Gaussian elimination.

Weights.— It happens sometimes that the quantities n, appearing in the observation equations (4), have been determined by the observers with unequal precision. For instance, a certain n may have been observed twice, while all the others depend upon a single observation only. In such a case, that particular n is said to have "double weight," or the weight 2, while all others have the weight 1 only. Obviously, we can treat this case in our reductions by simply writing the doubly weighted equation twice, with all its coefficients and unknowns, among the observation equations, and then proceeding as usual. There is, however, a better way of dealing with this matter of varying weights; and we can derive it from a consideration of the rule for the formation of normal equations from observation equations. We may use the following:

Rule for Weighting Observation Equations.— Multiply each observation equation throughout by the square root of its weight, and then form normal equations by the usual rule.

It may be seen readily, in the simple case of one equation only having double weight, that this rule will produce precisely the same effect on the normal equations as would result from merely writing that particular observation equation twice among the other observation equations, in the manner just explained. But it is also shown in works on Least Squares that the above rule for weights holds good when all the observation equations have different weights, and even when these weights are fractional.

To illustrate the foregoing, we shall give the complete solution of a set of observation equations resulting from a precise determination of clock error made with the transit instrument of Columbia University Observatory in New York. The observation equations were as follows, the numerical terms n being expressed in seconds of time.

$$\begin{aligned}
x + 0.04y + 1.29z - 0^s.27 &= 0,\\
x + 0.08y + 1.26z - 0.02 &= 0,\\
x - 1.36y + 2.84z - 6.52 &= 0,\\
x - 0.23y + 1.54z - 1.32 &= 0,\\
x + 0.03y + 1.30z + 0.06 &= 0,\\
x - 0.07y - 1.30z - 0.02 &= 0,\\
x + 0.14y - 1.21z + 0.84 &= 0,\\
x + 0.03y - 1.30z + 0.48 &= 0,\\
x - 0.01y - 1.33z + 0.31 &= 0,\\
x - 1.28y - 2.75z - 4.68 &= 0.
\end{aligned} \tag{2'}$$

Each of these equations depends on the observation of a different star; the unknown x is the clock error, and the other two unknowns y and z relate to certain errors of adjustment in the transit instrument.

The solution now proceeds as follows:

Applying the "Rule for Normal Equations" gives:

$$\begin{aligned}
+ 0.34x - 0.63y + 29.43z - 9^s.78 &= 0.\\
- 2.63x + 3.59y - 0.63z + 15.30 &= 0,\\
+ 10.00x - 2.63y + 0.34z - 11.22 &= 0.
\end{aligned} \tag{9'}$$

The method of equations (10) and (11) transforms these into the following:

$$\begin{aligned}
+ 2.90y - 0.54z + 12^s.35 &= 0,\\
- 0.54y + 29.42z - 9.40 &= 0.
\end{aligned} \tag{11'}$$

A further application of (12) gives:

$$+ 29.32z - 7^s.10 = 0. \tag{13'}$$

From this we obtain:

$$z = + 0^s.24. \tag{14'}$$

If we now substitute this value of z in either of equations (11′) we obtain:

$$y = -4^s.25.$$

These values of y and z can now be substituted in either of equations (9′), and we get:

$$x = - 0^s.005.$$

We now substitute the numerical values thus obtained for x, y and z in equations (2′), and obtain the following residuals, v:

v.	vv.
0^s.125	0.015625
.055	.003025
.075	.005625
.025	.006250
.125	.015625
.005	.000025
.045	.002025
.045	.002025
.025	.000625
.125	.015625
	$[vv]$ .060850

Applying equation (27), remembering that m is the number of residuals, in this case 10, we have:

$$r = \frac{2}{3}\sqrt{\frac{0^s.060850}{10-3}} = \pm\, 0^s.061 \tag{27'}$$

This is the "probable error" of a single observation. To obtain the corresponding quantity for the value of z given by equation (14′) we must use equation (29). We have from (13′):

$$[cc.\,2] = 29.32.$$

Consequently, from (29):

$$r_z = \frac{2}{3}\sqrt{\frac{0.060850}{29.32\,(10-3)}} = \pm\, 0^s.011. \tag{29'}$$

This result signifies that it is an even chance whether the actual error of our numerical value of z is greater or less than $0^s.011$, so that the probable error becomes a sort of test of the precision of our result.

To obtain the probable error of another unknown, as x, we rearrange the equations (2′) so as to make x the last unknown, instead of z. Written in this way, the equations are:

$$+ 0.04y + 1.29z + x - 0^s.27 = 0, \tag{2''}$$

etc., etc.

The normal equations are:

$$\begin{aligned}
+ 3.59y - 0.63z - 2.63x + 15^s.30 &= 0,\\
- 0.63y + 29.43z + 0.34x - 9.78 &= 0,\\
- 2.63y + 0.34z + 10.00x - 11.22 &= 0.
\end{aligned} \tag{9''}$$

The method of equations (10) and (11) gives:

$$(11'') \qquad \begin{aligned} &+29.32z - 0.12x - 7^{s}.10 = 0, \\ &-0.12z + 8.07x - 0.01 = 0. \end{aligned}$$

The application of (12):

$$(13'') \qquad +8.07x - 0^{s}.01 = 0.$$

And, consequently:

$$(14'') \qquad x = +0^{s}.00.$$

This is practically the same as the value already obtained, and thus affords incidentally a very complete check on arithmetical accuracy. Values of y and z can of course be obtained as before by substitution.

Applying equations (29) again, we have the probable error of x:

$$(29'') \qquad r_x = \frac{2}{3}\sqrt{\frac{0.060850}{8.07(10-3)}} = \pm 0^{s}.022.$$

Equation (14″) shows that the clock was exactly right; and (29″) that the precision of this clock-error determination is very high.

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Leather, the name applied to the skin of an animal after it has been tanned, tawed, or otherwise dressed in order to render its texture permanent, porous and flexible. The only skin which is of use in the manufacture of leather is the inner layer or true skin (the corium), which is composed of gelatinous fibre. The outer skin (the epidermis) is hard and horny and contains no blood vessels and is consequently of no value. The various processes used in the curing, preservation, tanning, tawing and shamoying of the many kinds of leather are described under the titles Leather, Shoe Manufacture of; Leather, Artificial; Leather, Chamois, Boots and Shoes; Hides and Leather; etc.

In commercial usage the term leather is not applied to the skins of furred and other animals which are dressed with the hair or fur on, the name of the animal being prefixed to the word skin, such as sealskin, bearskin, sheepskin, pigskin, buffalo-skin, tiger-skin, leopard-skin, calfskin, deerskin, buckskin, dogskin, etc. The word skin is also prefixed to the names of alligators and other aquatic animals when designating leather. Untanned skins of furred animals, which are valuable for their furs, hair or wool, are termed pelts. In general the term «cowhide» is applied to leather manufactured from the skins of adult bovine domestic animals, and the leather made from the skin of a horse is called horsehide, while leather manufactured from the skins of animals such as the rhinoceros, buffalo, and hippopotamus, when tanned with the hair removed, is called rhinoceros-hide, buffalo-hide, etc. The skins of yearlings and animals larger than calves are called kips. The following terms are most commonly used to designate the various kinds of leather and its manufacturers: American, Avignon, Basan, chrome, Cordovan, Danish, enamel, grained, harness and saddlery, Hungarian, Japanned, lacquered, leather applique, Morocco, oiled, oil-goat, patent, pebble-grained goat-leather, russet, Russian, sole, Spanish, split, transparent, twisted, vegetable, whang, white, etc., and belting, hose, packing, etc. In 1900 there were 40,751 establishments engaged in the manufacture of leather goods; their capital aggregated $356,581,838; the wage earners averaged 251,920; their wages amounted to $105,571,004; the cost of materials used was $405,208,784; and the value of products was $615,720,395

Leather, Shoe, Manufacture of. The art of manufacturing raw hides into leather has been known for centuries, but only through many changes and improvements did the industry reach the perfect condition it has developed into at the present time. Until a half-century ago the leather turned out was at its best crude, and to-day would not be considered fit to be used. But since the introduction of machinery which simplified the process and reduced the time of tanning to from 90 to 120 days on sole-leather, and incidentally lessened the cost, better leather is being turned out; and each year brings forth some new invention that further perfects the process and reduces the time and expense. Until within about 20 years bark was relied upon as absolutely essential to manufacture good leather, but extracts were introduced which did away with bark in part, and to-day there are tanneries that manufacture leather by quebracho and other extracts entirely. There have been many adverse comments on the extract tanning, but it is the process of the future, and tanners who have no faith in it and predict failure should visit some of the tanneries where extract-tanned leather is made, and see what excellent results are produced in 45 days, or little more than half the time that tanners who do not use this process take to tan their hides into leather.

The chrome process is another great invention that simplified the art, and manufacturers are enabled to turn out better leather at less cost and in much less time than by the old process. The chrome process is now in general use in the manufacture of upper leathers, and with excellent results. It was only a short time since that the chrome tannage came into general use in the manufacture of patent leather for shoe purposes, and to-day it is used extensively, as it gives a better grain and a tougher and more pliable leather than was obtained under the old process. Tanners and chemists have for years been trying to tan leather, both upper and sole, quickly and cheaply, and all sorts of inventions have been tried, with the result that the time has been cut down considerably; and in recent experiments the tanning of leather was accomplished in about 30 days for heavy leather by the use of extract and the drum to tan the hides in — a saving of from 60 to 90 days. This is of great benefit to the tanner; it brings him much nearer the hide-market than when leather was only tanned in three to four months, and he is not compelled to take such long chances on the market.

Leather manufacturers are divided into two great classes; namely, the sole-leather tanners and those that manufacture upper leathers.

Each of these classes is variously subdivided, some making oak sole-leather, some union, and others hemlock. The upper-leather tanners are divided into patent-leather tanners, for shoe purposes, and for carriage and furniture use, glazed-kid tanners — glazed kid being commonly known as «vici kid,» from the fact that the first man to use the process whereby good glazed kid was manufactured called his stock «vici,» calfskins, etc. There is a difference in the process of tanning these different varieties, and various kinds of hides and skins are used; skins, for example, that are adaptable for the manufacture of glazed kid could not be used to manufacture calfskins; again, hides that are used for patent-leather purposes could not be used with any degree of success in tanning some kinds of sole-leather.

Sole-Leather.— This is made in three different kinds — hemlock, oak, and union. Hemlock sole-leather is divided into acid, non-acid, and slaughter acid. For the acid leather dry foreign and green hides are used, such as Bogotas, etc.; Central American, Orinoco, Buenos Ayres, Chinas, Buffaloes (hides that come from Calcutta), etc. For non-acid leather dry hides only are used. For acid slaughter leather green hides are used.

In the tanning of dry hides, they are first prepared by soaking, then they are milled, resoaked and sweated, unhaired, and unfleshed. When the hide has reached this stage it is ready to be put through the tanning process, and not before. The reason of this is that dry hides must be brought back to their original condition; that is, the same condition they were in when they were taken off the animal.

In acid leather, when the hide has reached the stage where it is ready for the tan-vats, that is, after it has been unhaired, it is first put into a vat for coloring with a weak tanning liquor, either sweet or sour, sweet giving a deeper grain than sour liquors; tanners use either as preferred. In order to plump it, the hide is then put into sulphuric acid for one day. This acid is about ¼ to ½ per cent in strength. The hide is then put through the different layers of liquor in the tannery, beginning with a low degree liquor, and gradually increasing through liquors of greater density, until the hide is tanned through and is now leather. After removal from the last liquor it is washed in a scrub-wheel, in order to remove any liquor that may remain in the hide, and is then bleached. The principal materials used in bleaching are sal-soda and sulphuric acid. From the bleach the leather is piled up for a day, in order to drain out the excess of water, and then given an application of cod or other oils on both the grain and flesh sides. The leather is then hung up in a loft to dry. After drying it is taken down and sprinkled with water upon the grain side, and laid away in boxes over night. The object is to assist in the better preparation of the leather for rolling, which is the next process it goes through. From the boxes the leather is rolled twice the same day, once in the morning and again in the afternoon. From the second rolling it is hung up in a warm loft to dry out perfectly before being shipped out of the tannery, ready for the market. From the time the hide leaves the liquor until finished the process is the same for all classes of sole-leather.

In non-acid hemlock leather the beam-house work is exactly the same as in acid leather until it goes into the coloring mill, they both being made out of dry hides, and the same process must be gone through to prepare them for tanning. When the hide has gone through the beam-house and been unhaired it is put directly into vats of weak liquors, and is plumped by being handled in a series of weak liquors for a period of 10 to 12 days. The rest of the process is the same as in the case of acid leather above. The liquors that the hides are put through in order to be tanned are made from bark and extracts. The principal extracts used are quebracho and hemlock, acid and non-acid leather being made from hemlock-bark and extracts, which give it the rich red color that distinguishes it from other tannages. Tanners use extracts in part (some use them altogether) for tanning, as they are cheaper than bark and produce better work. One ton of solid extract is equal to 10 tons of bark, and the advantages of using extracts are the shortening of the time of tanning, and the production of a better filled and firmer piece of leather, with a far brighter and lighter color.

Hemlock acid slaughter sole-leather is made from green hides. To prepare these for tanning, they are first soaked, then put into limes, and then fleshed. Some tanners reverse this method. Next, the hide is bated, that is, given a bath of lactic or acetic acid, to remove the lime; this is called «bating the hide.» The lime softens in this bath and dissolves the cells, so that the hair can be removed either by an unhairing-machine or on the beam by hand. From this part on most tanners plump in sulphuric acid, and carry on the process just as with acid leather. It takes from 90 to 120 days to tan hides into leather.

In making oak sole-leather only green hides are used, Colorado, Texas, and packer hides, etc. There is very little difference in tanning the various kinds of sole-leather, and the same formula that is used in tanning non-acid hemlock leather can be applied to oak sole-leather, with the exception that the hides must be limed, instead of being sweated, to remove the hair. Oak is a light-colored leather, and this color is got by using oak-bark, or oak-bark and extracts combined in the liquors, while the hides are going through the tanning process.

For making union sole-leather the same hides are used as for oak-leather — green hides — and as the name denotes, it is made by a union of hemlock and oak-bark; or in some cases oak-bark is done away with and extracts are substituted, the principal extracts used being chestnut wood and quebracho. The treatment gives a yellowish color by which it is readily distinguished from oak. The manufacturing process is exactly the same as in tanning oak-leather (see above).

Upper Leathers.— There are several different kinds of upper leathers made, but the principal ones are glazed kid, patent-leather, and calfskins. Glazed kid is made from dry goatskins, which are imported to this country, as but very few goats are raised here for their skins. In those foreign lands from which the greater number of skins come the industry of raising goats is made profitable, since not only is the skin used for tanning purposes, but the flesh is sold to the inhabitants for food. The skin is first soaked, and then milled, after which it is put into lime, in which it stays for a period of 12 to 14 days. It is then unhaired, principally to save the hair, which is sold, and the skin is put back into the lime. After the skin has been unhaired and properly limed, it is washed and fleshed, then it is pured, that is, the skin is cleaned in order to make it ready for the other process. The skin is now ready to be tanned, and is first given, for a few hours, a bath of bichromate of potash and muriatic acid, after which it is put into a drum overnight, in the same liquors. In the morning the skin is taken out of the drum and is «put-out» by a process of pressing out the liquor and flattening the grain. It is now given a second bath, this time in hyposulphite of soda and muriatic acid, which completes the tanning process.

After the skin has been thoroughly tanned it is washed to get the acid out, and is then «put-out» again before it goes into the drum to receive the stain or coloring matter. When the stain has been put on the skin it receives the fat liquor, which consists of soap and oil. This is done in order to give the skin life, as otherwise it would be too dry, and not strong enough to be useful for the purpose intended. After the skin has received the fat liquor it is pleated (doubled up with the grain out, and slicked to get the water out of the grain, and also to smooth out the grain). The skin is now ready for the coloring process, and is colored by dipping it in a color-box, the color being composed of logwood and copperas. Some tanners also use anilines to give the skin the black color. It is now washed by dipping it in water, and is then «struck-out» on the machine, a process which flattens out the grain and clears the skin of water. The skin is now taken and glycerined, and then oiled, after which it is hung up to dry. After the skin has been thoroughly dried it is kept a few days to season, and is then put into damp sawdust to moisten, as otherwise it could not be properly worked. The skin is then staked by the machine, for stretching and softening the skin, is then dried, and receives a perching, which consists of a light staking again. The skin is now ready to be seasoned, the principal ingredient of the seasoning matter being blood of cows, steers, bulls, etc. The skin is now again dried and ready to receive the first glazing, which is done by machine. After glazing, the skin is seasoned a second time, dried again, and receives a second glazing. It is seasoned for the third time, dried, and receives the finishing glaze. The skin is now ready for the market, and is measured and selected for quality and weight, when it is sold to the shoe manufacturer, who cuts it up into shoe-uppers, etc. The complete tanning process, from the time the skin is put into the first soak until it is ready for the market, takes from three to four weeks.

Another simple process of tanning goatskins of the cheaper variety is the one-bath chrome tannage, which combines low cost with good leather. The skin is first given a very thorough liming, in order to get the grain and fibre as soft as possible. After liming, the skin is bated thoroughly in manure-bait, in order to overcome as much as possible the roughness and coarseness of the grain. The grain is now thoroughly worked out, and the skin washed and put in pickle. The pickle is composed of salt, sulphuric acid, and water. So much water should be used that the skin can easily be stirred about in the pickle; during the first hour it is stirred continually, after which it may be allowed to rest for several hours with occasional stirrings. From the pickle the skin is then drained and is now ready for tanning.

For each 100 pounds of skins, a solution composed of eight gallons of water and one pound of Glauber's salt is put into the tanning-drum, the temperature of the solution being 90° F. The skin is then placed in the drum, which is run steadily for 15 minutes and then stopped, the skin thrown back on the pins, the plug pulled out, and the salt solution drained off. The plug is then replaced and about ten pounds of common salt and eight gallons of water to 100 pounds of skins is put into the drum. The skin is milled in this solution for about five minutes, and then there is added to the salt water and skin one gallon of one-bath chrome liquor for 100 pounds of skins, in which the skin is milled for half an hour, when another gallon of the liquor is added and the skin milled again, this time for an hour, when a third gallon of the liquor is added, and the drum is run steadily for two hours for skins of average thickness, and three hours for heavy and thick skins. At the end of this time the skin should be well tanned, but in order to complete the process and have the skin thoroughly tanned, it is necessary to add one half-pound of bicarbonate of soda dissolved in two quarts of warm water, and to have the skin milled for about three quarters of an hour. The skin is next removed from the liquor, allowed to drain for 24 hours, and then washed. For washing tanned leather, two pounds of borax is used for 100 pounds of skins. The skin is now washed for a few minutes in clear water and either struck out or pressed and shaved, after which it is ready for the coloring, fat-liquoring, drying-out, and finishing.

The introduction of patent and enameled leathers marked a notable step in this industry. The composition made by Seth Boyden more than 50 years ago induced leather manufacturers to prepare a leather for its acceptance. The first leather made was in oak and hemlock bark liquors. At that time the only known means of splitting hides was by the Union splitting-machine, operated by hand. The hide was partially tanned and then split on this machine, dividing it into three parts — the slab or leveler, used for shoe purposes such as insole stock; the next, known as a dash-split; and the upper part, called the hide or grain. The hide and the dash-split were then returned to the liquors and thoroughly tanned, after which the hide was taken by the currier and buffed on a beam in a wet state, as it was found to be impracticable to japan with the Boyden compositions on the natural grain. After the hide was buffed and the grain divided, the hide and the dash-split were taken to the «japannery» and coated in the following manner: The first coat, called «sweetmeats» by the mechanics, was made of raw linseed oil, to which, after boiling for 24 hours in heats varying from 400 to 550 degrees, umber and lampblack were added. After boiling, the mixture was cut with turpentine, so that the japanner could spread it on the surface of the hide with a steel slicker. When coated, the hide and split were placed in ovens operated with slides, and dried in heats running up to 160° F. After each coat was dried, the rough surface was ground off by using pumice-stone, and no less than two or three coats, according to the character of the leather, were applied. The leather was then in readiness for the finishing, or varnish coats. This varnish was made by boiling linseed oil in the same manner as the sweetmeats, and adding thereto chinese blue-lumps, in a proportion of about four ounces to the gallon of oil. The varnish, like the sweetmeats, was reduced with turpentine, and from 1 to 11 coats given the leather, according to the face and finish desired. After this was done the leather was taken from the ovens and exposed to the sunshine, which set the finish and the lustre. The leather was then taken off the frames, placed in a cooling-cellar, and left there from 24 to 48 hours, after which it was measured and ready for sale. In the manufacture of patent leather the use of turpentine for reducing compositions was not only dangerous, since combustion was probable, but also injurious, as it went to the brain of the operator, and often blood would run from the nose and ears as a result of congestion. A man japanning could not stand the fumes for over half an hour at a time. However, as time went on, turpentine was done away with and its place taken by naphtha, a product of petroleum, and to-day nine tenths of all shiny leathers are made with naphtha as a reducer of the compositions.

For years after the first patent leather was made, only what was known as hand-buffed could be produced, as the grain had to be cut off by the currier, on the beam, and the part taken off was useless. By this time, in the 70's, the Union machine had been improved to such an extent that the hide could be buffed on it, and instead of a part being thrown away, it was finished for pocketbook, bookbinding, and hat-sweat purposes, in all of which it took the place of roans and sheepskin skivers, and the hide from which it was taken was made into what was known as machine-buffed, patent, and enameled leather. Machine-buffed patent leather for carriage and other purposes has been sold for from eight to ten cents less per foot than the hand-buffed leather was and is now sold for. Later the manufacturers were enabled, with the advent of the endless-knife machine, to take off a lighter buffing than with the Union machine, and also to take off a heavier one if desired. This led to the use of the heavy buffing for shoe-tipping, and attracted the attention of the patent-leather men generally to the possibility of competing with France and Germany in the making of shiny leathers, not only for tipping, but for vamps as well. For many years this competition went on with indifferent success, until the chrome tannage was introduced, and the shoe-trade found that its application to all kinds of skins produced upper leather superior to the best bark and sumac tannage.

To the manufacturer of patent and enameled leather is largely due the cheap patent shoe-leathers that are in the market to-day, and which seem to have come to stay. Manufacturers experimented with the chrome process until they were enabled to split cow, steer, and horse hides successfully out of the limes, and then tan the grain in one-bath or two-bath chrome liquors. After they had accomplished this, they found that in order to enable them to make up their chrome-tanned grain into shiny leather for vamp purposes, that would last without cracking or opening, they would have to change from the old compositions and invent such as would enable them to finish the hide in the grain without buffing and with one varnish or finish coat, instead of from three to seven as before. Their success is known to the trade, and it is now in order to note the difference between the old and the new compositions, that of Seth Boyden and that in present use. To-day the most successful manufacturers are making their compositions as follows: The under-coats are made of a solution, the component parts of which are guncotton, amyl acetate, linseed-oil, Prussian blue, nigrosine, and other mineral colors. By the old process it took from 24 to 48 hours to soak the hide, and from eight to ten days to unhair and bate them. After that the hide was struck sufficiently through for sammying and splitting, which took 21 days. The splitting took in actual machine-work and preparation six days or so, and it required at least ten days more or retan the parts. The leather was then set out and dried on stretching-frames, after which it was softened, patched, and otherwise prepared for japanning, the whole of the latter process taking about ten days, according to the time it took to dry, which was never done by heat. In the japannery the hides were tacked on frames, and a day was allowed for each coat to dry, up to the time of the last varnish-coat, which was allowed a little more time. The sunning, stripping, and swelling ordinarily took about three days, making in all 72 days to finish hides into leather.

The manufacturing of leather by the chrome process, where manufacturers use the old method of unhairing and bating, would need as much time as in the old process, but the most successful manufacturers consume time in the production of their leather as here stated: Soaking and hairing require three days; killing the acid in this process, three days; all the fleshing and other beam-house work, done in the old process by hand, they now do by machinery; two days are allowed for preparing and splitting, and five days for tanning, coloring, fat-liquoring, and dripping; one day is then allowed for table-work, and four days for sammying, staking, and drying, after which the hide is put into sawdust for two days to moisten, then stretched and drystaked, for which two days are allowed; four days are given for japanning, after which the hide is put in the sun for part of one day, two days being allowed after this process for swelling; making in all 27 days — a saving of almost two thirds in time. Except the japanning, which is still done by hand, nearly all the work done under the old process by skilled labor is done under the new chrome tannage by machinery. It must be remembered, however, that when the manufacturer of the chrome upper-leather splits the hide, the split and slab do not generally go back to chrome, except where the manufacturer is able to produce from a chrome-tanned split an article of commercial value. He puts his split through the old bark-tannage process, in order to find a market for it, as he did before. A comparison of these two processes, and the material used, will show that the present cost of tanning, up to the japannery, is less than one half the cost of the old bark-tannage; but in the japanning, including the compositions used on chrome leather, the new process is nearly twice as costly as the old. See also HIDES AND LEATHER; TANNING.

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Leather, Artificial. Owing to the demand for leather being in excess of the supply, many fabrics have been introduced with the intention, more or less successful, of supplying its place. An article of this sort known under the name of leather cloth, was first produced in America about 1849, and was brought well under the notice of the British public at the Exhibition of 1851. A textile fabric (generally unbleached cotton, calendered to make it smooth) is coated with linseed-oil, turpentine, lampblack, and other ingredients. It is then scraped with a knife to produce a uniform surface. It is afterward dried in a heated oven, and is passed between rollers covered with pumice dust to rub the composition smooth. These processes are repeated several times. Three or four coats of a sort of enamel paint are then applied. The grain of morocco leather is imitated by passing the cloth between grooved rollers; or patterns in relief may be obtained by passing it between embossing rollers. Another kind of artificial leather is made of leather parings and shavings reduced to a pulp, and then molded into buckets, machinery bands, picture-frames, and other useful and ornamental objects. Vegetable leather consists of caoutchouc dissolved in naphtha, spread upon a backing of linen. All odor of the naphtha is removed by a chemical process, and the fabric may be made of any thickness by additional backings of linen cemented with the caoutchouc. Its strength is almost marvelous, and it can be produced at about a third of the price of leather. It may be used for table-covers, carriage-aprons, soldiers' belts, harness, bookbinding, etc. It has several advantages over leather proper, among which we may mention, that however thin the imitation is, it requires considerable force to tear it; it is impervious to damp; moisture may remain long upon it without injuring it, and its polish is increased rather than decreased by friction. Various other substitutes of leather have been recently introduced, consisting of the application of oily pigments to cloth, or thin layers of leather attached to cloth, felt, or other backing by caoutchouc cement.

Leather, Chamois. What is known in the market as chamois skin is really an oil-tanned sheep or lamb skin lining. The supply of skins from the chamois animal is very limited; enough could not be obtained in a year to supply the United States for more than a single day. In Switzerland about five thousand to six thousand skins would be a fair average yearly crop. This skin is heavier than the skin of the sheep or lamb, also much coarser. For strength and durability this skin is preferable, but for ordinary use and appearance the oil-tanned sheep skin lining would, in most instances, be preferred.

To manufacture sheep or lamb skins into chamois leather the first step necessary is to remove the wool, which is accomplished either by painting the skin on the inside with a solution of sodium sulphide or by immersion in milk of lime. By the former method the wool is loosened in a few hours; by the latter method it will require several days. When the wool is loose, it is pulled off either by hand or scraped off with a dull instrument. The skin is now again immersed in milk of lime, to swell it. It is then cleaned (beamed, as the trade calls it), to remove all fleshy particles that may adhere to it. It is now ready for splitting. The chamois skin is really only the half of a skin. The outside, that is, that part of the skin next to the wool, known as the grain side, is not suitable for chamois leather, and is used for other purposes, mostly for hat linings, book covers, etc. In former times, when skins were prepared for oil tannage, this part of the skin was cut away with a suitable knife and thus lost. In our days the skin is cut through the centre (split), thus producing two skins from one — the outside, called grain or skiver, and the inside, called lining or flesher. The splitting is accomplished on machines specially constructed for this purpose. It consists of an endless knife, the edge of which is constantly grinding to keep it sharp, the skin being passed through rollers against the sharp edge of the knife. These machines require very delicate adjustment to produce good results.

The lining or flesher is now ready for tanning. This is accomplished by sprinkling it with oil, codfish oil of good quality. It is important that this oil should be thoroughly incorporated into the skin. For this purpose a quantity of the skins are placed into what are known as fulling stocks, which twist and turn the skins in every direction, and distribute the oil evenly. After sufficient milling the skins are partly dried and the process of sprinkling and drying is repeated again and again until they are full of oil, and all the moisture is dried out. They are now allowed to hang sufficiently long to thoroughly tan them at a temperature of about 100 degrees. The process after this is very simple. The oil is removed by pressure, and the balance washed out by saponification; after this they are dried and they are then ready for finishing. The oil, by the way, is recovered, by decomposing the soap solution with an acid and separating. It is sold to manufacturers of other leathers, it being useful to make them pliable, etc. The finishing is done mostly by pressing the skin against revolving wheels, covered with emery or flint to remove all adhering substances and to present a finished surface. We now have the finished chamois leather ready for the trimming and sorting room, where it is cut into suitable sizes and packed for the market. Of late years, a trimmed skin, that is, skins of even sizes, are preferred by the trade. For this reason most manufacturers, at least most American manufacturers, cut their skins over patterns so as to produce uniform sizes. In former years, when England and France supplied the United States market, the skins in the same package would vary in size and shape, thus lacking uniformity. See also HIDES AND LEATHER.

Leather-back, or **Leather-jacket.** See LEATHER-TURTLE.

Leather-beetle, one of the dermestid beetles (see DERMESTES), which in the grub state damages leather in storehouses and after it is made up into articles, such as shoes, harness, etc. The species is *Dermestes vulpinus;* and it is also a pest in silk manufacture, eating the cocoons. Infested places should be thoroughly fumigated with bisulphid of carbon, or some other powerful gas.

Leather-fish. See FILE-FISHES.

Leather-head, an Australian bird, the friar-bird (q.v.).

Leather Turtle, or **Trunkback,** a rare marine turtle of the tropical seas (*Sphargis coriacea*), which has a leathery case instead of a shell. It is the largest of existing *Chelonia,* known specimens having a case four feet in length, and a live-weight of not less than 1,000 pounds. When young its case is thin, soft and flexible, but as age advances the jacket becomes stiffened by the formation within it of great numbers of little adjoining bony plates; and the exterior shows strong longitudinal ridges. These turtles are powerful swimmers and wander throughout the oceans, feeding upon jellyfishes, crustaceans, cuttlefishes and other animal food. Late in the summer it seeks some sandy shore or islet, where the female buries her eggs after the manner of other sea-turtles. These eggs are good to eat, but the flesh of the animal is not of good taste, and is said to be unwholesome. Much interesting discourse upon the curious structure, relationships and ancestry of this declining race may be found in Gadow's ‹Amphibia and Reptiles› (London 1901).

Leatherstocking Tales, a name given a series of Indian and pioneer romances by James Fenimore Cooper (q.v.). The name Leatherstocking was given to Natty Bumppo, one of Cooper's heroes.

Leatherwood. See CYRILLA.

Leavenworth, lĕv'ĕn-wėrth, **Elias Warner,** American lawyer: b. Canaan, N. Y., 1803; d. Syracuse, N. Y., 1887. He graduated at Yale College in 1824; studied law with William Cullen Bryant at Great Barrington, Conn., admitted to the bar in 1827, and began practice the same year at Syracuse, N. Y. He was secretary of state of New York, 1854–5; president Board of Quarantine Commissioners, 1860; 1875 to 1877 he was a member of Congress. He published ‹Genealogy of Leavenworth Family› (1873).

Leavenworth, Kan., the county-seat of Leavenworth County and one of the most important cities in the State, 26 miles northwest of Kansas City, on the west bank of the Missouri River, here spanned by two fine iron bridges, accommodating railway and ordinary traffic. The Missouri P., Union P., Atchison, T. & S. Fe, Kansas City N. W. and C. G. W. R.R.'s enter the city, which also is the eastern terminus of the Kansas Central Railway, and the Rock Island and Burlington systems. Leavenworth was founded by the «Sons of the South» in 1854, and the following year received a city charter. During the negro-emancipation agitation it was a strong pro-slavery centre. It derives its name from Fort Leavenworth north of the city, the oldest and most important military depot on the Missouri River, built in 1827. Leavenworth is the trade centre for a farming and coal-mining region, an inexhaustible coal deposit underlying the city at a depth of 700 feet, giving employment to over 1,000 miners, and yielding 60,000 bushels of coal daily. Besides its coal mines, the manufacturing industries are correspondingly extensive and include flour-mills, woolen-mills, iron foundries, manufactures of mill machinery, mine machinery, steam-engines, lumber, furniture, saddlery, brooms, baskets, buggies, wagons, shoes, patent medicines, bags, ice, crackers, candy, cycles, and dye-works.

The city, which is protected from inundation by a limestone stratum, is well laid out, electrically lighted, has an excellent water supply, and a complete system of electric street railroads, connecting with Fort Leavenworth on the north, and the National Soldiers' Home on the south. The principal buildings are the Catholic pro-cathedral of the Immaculate Conception, over 25 churches of all denominations, the Kansas State Orphan Asylum and protective home, Cushing and St. John's hospitals, two theatres, three national banks, two savings banks, etc. The educational institutions include Mount St. Mary's Academy, a high school, State normal school, and the Whittier library. The suburban Soldiers' Home accommodates 3,000 veterans of the Civil War, and is situated amid attractive grounds. A garrison of 12 companies of United States infantry and four troops of cavalry occupy Fort Leavenworth; the United States Infantry and Cavalry School for the instruction of army officers, and the United States military prison holding 800 prisoners are also situated here, and a mammoth bronze statue of Gen. U. S. Grant. The city is administered by a mayor and council elected biennially. Pop. (1890) 19,768; (1900) 20,735; (1904) 22,791.

Leaves, in the ordinary sense of the word, are the structures on which devolves the duty of nourishing the plant. They invariably arise as lateral protuberances from the growing-points or terminal vegetative cones of the shoots, that is, from a part of the plant which is still in an embryonic condition. In cases where a leaf seems to arise from an older part of a plant, as from the trunk of a tree, close inspection shows that it is really developed from a shoot perhaps not readily visible. Its growth is first at the apex, but this soon ceases, and is followed by continuous enlargement throughout the tissues, by which the upper part or blade of the leaf is soon distinguished from the basal part, and the stalk or petiole (where present) is subsequently formed between them. The development may result in a variety of structures, some of which are far different from typical foliage-leaves, yet are strictly homologous; such are scale-leaves, bracts, and the parts of a blossom (floral leaves). The higher the rank of the plant in the scale of development the more these diversities are manifested; and the observations here to be made apply mainly to the phanerogams from the ferns (q.v.) upward.

Leaves collect from the atmosphere the great essential of plant-food, carbon, and conduct the processes of its assimilation, or, in other words, apply it by chemical conversion to the vitality and growth of the plant. In order to understand how they perform this function it will be necessary to investigate their structure and properties. Each leaf is composed of three parts, an outside layer on each surface of compact, flattened, and usually colorless cells, forming a skin or epidermis; an inner part (mesophyll) consisting of irregular cellular tissue and intercellular spaces. These cells of the mesophyll contain minute bodies (chloroplasts) of green coloring matter called chlorophyll, which also abounds in the bark of the stems of herbs and all other green parts of plants, and is the working element in their composition. Through the spongy mesophyll extends the network of veins which form the skeleton of the leaf, and are at once its support and its channels of communication with the other parts of the plant; these form the third part of the leaf. One other important feature must be mentioned — the breathing-pores, or stomata. These are excessively minute openings in the epidermis, which occur wherever chlorophyll lies underneath, but are most numerous on the under or earthward side of the leaves, where, on the average, about 60,000 may be counted per square inch of surface, although in some leaves they are six or eight times as numerous. Each of these pores lies between the «guard-cells» which form an automatic valve, opening or closing the pore, by their swelling or shrinking, according to varying conditions and the requirements of plant-health, especially in respect to evaporation. the chlorophyll grains (chloroplasts) also change their positions in the cells so as to take all possible advantages of a weak illumination, or to guard against a bad effect from excessive light.

Of the ten essential elements of plant-food nine are drawn from the soil by means of the roots, but the tenth, which is the most important and the largest in amount of all, is obtained by all green plants solely from the carbonic acid of the atmosphere, and is taken up by the green leaves alone; also a little of the oxygen required. The air enters the stomata, is seized, as it were, by the chlorophyll, and within it is so decomposed (in a manner not yet explained) that the carbon is chemically extracted and is transformed into plant-food and plant-substance, that is, is assimilated; and botanists restrict their use of the term «assimilation» to this physiological absorption of carbon alone. In order to be able to do this work, however, the leaves require the aid of sunlight, without which the chlorophyll becomes inactive, and in total darkness a green plant will speedily die of starvation, however rich may be the soil in which it is rooted. The «rest» of plants at night is thus accounted for; and also the greater rapidity of growth in northern plants where in summer they enjoy more hours of sunlight each day than southern plants get.

But the service of leaves in the nutrition of the plant does not cease here. They perform a most important function in the transpiration of water. Plants must always draw from the soil a quantity of water far in excess of their needs, or of their capacity to hold, in order to get a sufficient supply of the mineral food dissolved in it, but in exceedingly small quantities; and after that sustenance has been extracted the extra useless surplus of water must be got rid of. This is accomplished through the stomata of the leaves, out of which water is always passing in gaseous evaporation, or sometimes even in globules. A secondary, but most important accompaniment of this is the suction thus formed, by which the constant up-flow from the root-ends is maintained.

A third essential office of leaves is as the lungs of the plant, which must breathe in essentially the same manner and for the same purposes as does an animal; that is, they must take up oxygen and give off carbonic acid. This independent process (the converse of the simultaneous assimilation) is carried on steadily by all plants, night and day; but in those having leaves it is mainly performed by these organs, because they spread the greatest surface.

In addition to these foremost and general services, leaves are adapted in particular cases, almost as numerous as the plant species, to such special purposes as a depository of food for the young plant in the cotyledons or seed-leaves; as bulb-scales in plants like the hyacinth and lily, where part of the nourishment in the foliage of one year is stored up in the scales or subterranean thickened leaves, for the early growth and flowering of the next year; as bud-scales, forming the protective coverings of buds, as tendrils, pitchers, fly-traps, etc.

These complicated requirements and duties, under varied conditions and circumstances, have produced the extraordinary modifications of form and texture which leaves present, and which must now be briefly considered.

Forms and Arrangement of Leaves.— The typical and ordinary foliage leaf is a thin flat structure composed of stalk (petiole) and blade (lamina) of symmetrical form, and growing in the plane of the horizon, so that one side (the dorsal) is presented upward to the sky and sunshine, and the other (ventral) is downward and in shadow; and these sides usually present appropriate differences in texture, the upper surface being usually more smooth and compact than the lower. A great variety of textures, from smooth, polished or waxy, to rough, downy or spiny, are distinguished by botanists, and used in the description of plants; these variations of surface are largely defensive in their character. Some leaves have no stalk, and are said to be sessile, in which case the base of the leaf may partly clasp, or completely surround the stem, or be otherwise modified; similarly the stalk takes many forms, sometimes with two lesser subsidiary leaves (stipules) at the base. The rigid woody centre of the stalk may continue straight on through the middle of the leaf to its apex, forming a midrib which throws out branches alternately on each side toward the margin of the blade, each again branching repeatedly and connecting with its neighbor, and so forming a network or skeleton of woody fibres which strengthen and support the leaf. These ribs are called veins or nerves, and the whole is the «venation» of the leaf. Such a simple leaf (for example of the beech) is called reticulate or net-veined. In a large class of cases, however, the branches of the midrib do not spring at approximately equal intervals along its length, but all diverge from a point near its base, making a palmately veined arrangement, as in the maple. This reticulate veining is characteristic of dicotyledons. In another very distinct type of venation, characteristic of monocotyledons, there is no midrib, but the stalk divides at the base of the blade into many equal veins which extend in a more or less curving line through the length of the leaf, converging at the apex; such a leaf is said to be parallel-veined, as in grasses. Upon the plan of the skeleton depends mainly the form of the leaf, of which a great number of variations are named in botanical manuals and used in descriptions of species, depending mainly on the character and extent of the indentation or incisions.

The arrangement of leaves upon the plant is an important matter. That it follows certain regular plans is apparent in buds, which when cut across exhibit their young leaves packed together in one or another of certain definite ways; and their relative position on the stem of an herb or the twig of a tree follows as a result of the law of growth in that group. The theoretical perfection of arrangement, however, is often greatly disturbed by the interference of older leaves with the development of the younger, and by other causes affecting the unsymmetrical growth of the whole plant. The arrangement of leaves upon the stem, called *phyllotaxis,* is in most cases one of alternation, thus securing the uninterrupted exposure of the upper surface of the leaf to the sun. It is to obtain this exposure that plants struggle to become tall, and bear their leaves most profusely at the summit; and that the branches of trees reach outward as far as possible; and the lower early leaves of many soon die off because shaded by the later, higher growth. The arrangement is carried out in two principal ways: the leaves are either alternate, one after another, only a single leaf arising from each node or joint of the stem; or opposite, when there is a pair of leaves on each joint of the stem; but sometimes the leaves are whorled or verticillate, there being three or more in a circle on one joint of the stem. The result of this arrangement in an alternate-leaved stem is to cause the leaves to follow one another up the stem in a spiral manner; while any two successive leaves on the same species will also be separated from each other by just an equal portion of the circumference of the stem. The same principle governs the parts of the flower (q.v.) in which the sepals of the calyx typically alternate with the petals of the corolla, the petals with the stamens, and the stamens with the pistils, but it is often disguised in a very puzzling way, especially by the absence of one or more series of organs. See FLOWER.

Modifications of Leaves.— Leaves exist in other forms than the typical ones of foliage. Scales, such as those which envelop and protect buds in winter, and the seeds in cones, are leaves of simple structure which have no assimilative powers or functions; they most frequently originate from an enlarged leaf-base upon which a proper leaf never develops. Bracteal leaves, or bracts, are of similar character, and grow beneath and about the flowers, of which, when they are colored, they often form the most conspicuous part; but frequently they are green and are connected with true leaves by intermediate forms. Both scales and bracts have been forced, under experimental conditions, to develop into true leaves.

The modified leaves which form the flowers of phanerogams are termed «floral leaves,» and, as has been said, typically succeed one another in whorls from below upward, as sepals, petals, stamens and carpels. The sepals are usually green and much like foliage-leaves; the sepals often retain a likeness, but the interior whorls usually bear no resemblance to leaves, yet occasionally, in ill-health, revert to a shape which betrays their origin and genetic history.

Periodicity of Leaf Growth.— Leaves are a temporary part of the plant, arising and disappearing at more or less regular intervals, usually once a year. This is especially noticeable in the higher plants, some of which (annuals) die in autumn completely, surviving as species only in their seeds; others die down to the roots in the fall and put forth entirely new stems as well as leaves the following spring; while others, as shrubs and tree, die only so far as their leaves are concerned, putting forth new foliage after the stated period of rest. This period is due to the arrival of annually recurring unfavorable conditions of temperature or moisture or both, when the activity of life in the plant is suspended and it ceases to feed or grow. In such a state leaves having no function are needless — in fact often harmful — and in many cases die and fall off in so sudden and conspicuous a manner that we say such trees are deciduous; while others, which we call evergreen, retain most of their leaves in a green condition until gradually replaced by new ones, so that the foliage seems to be perpetual. The brilliant colors of the dying leaves of many trees and herbs in autumn are due partly to chemical changes in the decaying chlorophyll, and partly to the exposure of pigment cells previously concealed by the abundance of chlorophyll and other features of vital activity. The leaf drops because it no longer receives nourishment from the stem or twig. The cells at its base close up, transmitting no more sap, and in so doing separate from those in the base of the leaf, which is thus cut off and thrown away.

Bibliography.— The morphology, genesis, and functions of leaves have been studied most deeply by German students, as Haeckel, Fritz Müller, Göbel, Schwender, Marchlewski, Fisher, and others. These and other authorities have been well summarized in the English translation by Porter of Strasburger's ‹Text-book of Botany› (1903). For the forms and nomenclature of leaves, see the botanical manuals and text-books of Gray, Wood, and other American authors.

ERNEST INGERSOLL.

Leaves of Grass, a collection of fleshly poems by Walt Whitman (q.v.) published in 1855.

Leavitt, lĕv'ĭt, **Joshua,** American editor: b. Heath, Mass., 8 Sept. 1794; d. Brooklyn, N. Y., 16 Jan. 1873. He was graduated at Yale College in 1814 and was admitted to the bar in 1819. In 1825 he graduated at Yale Divinity School and in 1831 became editor of the New York ‹Evangelist.› He was an active member of American Anti-Slavery Society in 1833, and from 1837 to 1840 was editor of the society's journal, ‹The Emancipator.› He was an active promoter of the «Liberty» and «Free Soil» parties. In 1848 he became one of the editors of the ‹Independent,› retaining a position here until his death. He compiled ‹The Christian Lyre› (1834).

Lebanon, lĕb'ạ-nŏn, Ind., city, county-seat of Boone County; on the Chicago & S. and the Cleveland, C., C. & St. L. R.R.'s; about 30 miles northwest of Indianapolis. The first permanent settlement was made in 1824, and the city was chartered in 1875. Its chief industrial establishments are flour and lumber mills, grain elevators, novelty works, and a natural-gas plant. The government is vested in a mayor, whose term of office is four years, and a council. The waterworks are owned and operated by the city. Pop. (1900) 4,465.

Lebanon, Ky., city, county-seat of Marion County; on the Louisville & N. railroad; about 52 miles southwest of Lexington, the capital of the State, and 70 miles south of Louisville. It is situated in an agricultural region, and is the trade centre for an extensive section. The chief manufactures are flour, meal, whiskey, furniture, wagons and carriages. A large amount of live-stock is shipped from Lebanon. It is the seat of Saint Augustine's Academy, under the auspices of the Roman Catholic Church, and of a public and parish high school and good graded schools. Several churches, and the city and county buildings are among the prominent buildings. The city owns and operates the waterworks. Pop. (1900) 3,043.

Lebanon, Mo., city, county-seat of Laclede County; on the Saint Louis & S. F. railroad; about 55 miles northeast of Springfield. It is situated in an agricultural region and is the trade centre for a large extent of country. Its chief manufactures are flour, machine-shop products, lumber, bricks, and dairy products. Its trade is principally in the manufactured products, live-stock, fruit, hay, and vegetables. The city, though small, is a well-known health resort because of its mineral springs. Pop. (1900) 2,125.

Lebanon, N. H., town, one of the county-seats of Grafton County; on the Mascoma River, a few miles from its junction with the Connecticut River; and on the Boston & M. railroad. It is about 68 miles northwest of Concord, the capital of the State. It was settled about 1762, by people from the vicinity of Lebanon, Conn., who named their new home after the Connecticut town. It is situated in an agricultural region, but the extensive water-power supplied by the Mascoma River has made it an important manufacturing town. The chief manufactures are woolen goods, machinery, agricultural implements, wooden ware, men's clothing, sash, doors, and blinds, snow-shovels, flour, dairy products, and lumber. It has large brick-yards and granite-works. Over 1,000 persons are employed in the manufactories. The annual town-meeting is still the governing power. Pop. (1900) 4,965.

Lebanon, Ohio, village, county-seat of Warren County; on the Dayton, L. & C. and the Cincinnati, L. & N. R.R's; about 73 miles southwest of Columbus and 25 miles northeast of Cincinnati. It was laid out as a village in 1802. It is situated in an agricultural region and its industries are connected with farm products. It is the seat of the National Normal University, a private institution, which in 1903 had in attendance nearly 3,000 pupils. The Mechanics' Institute Library has about 5,000 volumes. There is one orphan asylum. The city owns and operates the electric-light plant and the waterworks. Pop. (1900) 2,867.

Lebanon, Pa., city, county-seat of Lebanon County; on the Cornwall & L. and the Philadelphia & R. R.R.'s; about 66 miles northwest of Philadelphia and 23 miles northeast of Harrisburg. Lebanon was settled as early as 1700 by German emigrants. The borough of Lebanon was laid out by George Steitz, in 1750, and was first called Steitztown. It was incorporated in 1820 and chartered as a city in 1885. It is situated in the Lebanon Valley, noted for the fertility of its soil; but the largest part of the wealth of the city comes from the quarries and mines of the vicinity. The Cornwall iron mines, about five miles distant from the city, the limestone and brownstone at the base of the mountains, the brick-clay, the iron ore, all contribute to the industrial wealth of Lebanon. Its chief industrial establishments are furnaces and foundries, rolling-mills, steel-plants, machine-shops, a very large nut and bolt works, chain-works, a creamery, employing a total of about 10,000 persons.

The educational institutions are the public and parish schools, the Lebanon Business College, the School of Telegraphy, and four libraries. It has a large number of churches. Some of the prominent public buildings are the court-house, county-house, and post-office. There are six banks with a combined capital of $700,000. The annual business amounts to over $10,000,000. The predominating nationalities are, in order of numbers: American (a large majority), Irish, Germans, Hungarians, Italians, and a few Chinese. Pop. (1890) 14,664; (1900) 17,628.

John W. Harbeson,
Ex-Mayor.

Lebanon, Tenn., town, county-seat of Wilson County; on the Nashville, C. & St. L. railroad; about 35 miles east of Nashville. It is situated in an agricultural region, and its trade and industries are connected with farming products. It ships large quantities of hay, butter, and poultry. It is the seat of Lebanon College for Young Women, and of Cumberland University, founded in 1842 by the Cumberland Presbyterians. Pop. (1900) 1,956.

Lebanon, Cedars of. See Cedar.

Lebanon, Mountains of, Syria, two nearly parallel mountain ranges which, commencing at about lat. 34° 25′ N., stretch south-southwest toward Palestine, enclosing between them a valley about 70 miles long by 15 miles wide, now simply distinguished by the name of El-Bukaa, «the valley,» but known anciently by the name of Cœlē-Syria. To distinguish the two ranges that on the west is called Lebanon, and that on the east Anti-Lebanon; the Arabs, call the former Jebel-Libnan, and the latter Jebel-esh-Shurky. Lebanon, which runs almost parallel to the Mediterranean coast, and at no great distance from it, may be considered as terminating near the coast, a little north of the mouth of the Litani, between Tyre and Sidon. It is the loftier range of the two, and presents almost a continuous ridge without any marked break. Its loftiest summit — Dhor-el-Khodih, in the north, has a height as given by barometer of 10,060 feet. Anti-Lebanon has a much lower average height, and the culminating point of this chain Jebel-esh-Sheikh, situated west-southwest from Damascus, has a height stated to be about 9,000 feet. The prevailing rock of Lebanon is limestone, of a whitish color; and from this its name, which means «white,» is supposed to be derived, though others ascribe it to the snows which cover it. The loftiest summits of Lebanon, presenting lofty precipices and wild narrow gorges, are almost absolutely barren; but at some distance below, vegetation makes its appearance, the pastures become verdant, and, by means of artificial terraces, cultivation is successfully carried on upon rugged slopes where it would otherwise be impossible. The habitable districts are occupied toward the north by the Maronite Christians, a hardy and industrious race, and toward the south by the warlike Druses. Numerous villages and convents are to be seen on the sides and summits of the cliffs. The forests of cedar for which Lebanon was anciently celebrated are represented by a few groves on Lebanon, there being none now on Anti-Lebanon. (See CEDAR.) The other prevailing forest trees are firs and oaks. The vine is largely cultivated, and olive, fig, and mulberry trees abound. Considerable numbers of wild beasts, as the jackal, hyena, wolf, bear, and panther, inhabit the glens and higher peaks.

Lebanon Springs, N. Y., village, in the northeastern part of Columbia County; on the Lebanon Springs railroad; about 25 miles southeast of Albany. It is in a fertile agricultural region, and is a favorite health resort because of its mineral springs. A community of Shakers (q.v.) who live in the village and vicinity make brooms and baskets, and cultivate extensive gardens. They sell considerable garden seed. Pop. of the town 3,000; of the village 700.

Lebanon Valley College, a coeducational institution, founded, in 1867, at Annville, Pa. It is under the auspices of the United Brethren. The college has five courses which lead to the degree of Bachelor of Arts; and normal, art, music, and preparatory departments. It has 15 scholarships, and the productive fund, in 1903, was about $162,000; the income from the productive fund and the tuitions was in 1902, $15,442. In 1903 there were connected with the school 29 professors and instructors, and 460 students.

Le Bas, Philippe, fē-lēp lė-bä, **French historian** and archæologist: b. Paris 17 June 1794; d. there 1861. At 16 he entered the navy, which he left three years later for the army and he shared in the campaigns of 1813–14. In 1820 he was chosen by Queen Hortense to act as tutor to Prince Louis Napoleon, now Napoleon III., with whom he remained until October 1827. After holding professorships at Paris successively of history and of the Greek language and literature, he was commissioned in 1842 by the French government to undertake a tour of archæological investigation in Greece and Asia Minor, during which he made many valuable discoveries. He published books on very varied subjects, embracing essays on classical inscriptions, editions of ancient authors, travels, ancient and mediæval history, politics, instruction in German, and translations from German and English. His best known works are his ‹Explication des Inscriptions Grecques et Latines recueillées en Grèce› (1835–7), and ‹Voyage archéologique en Grèce et en Asie Mineure› (1847 et seq.).

Lebaudy Airship, The, a remarkable invention of M. Lebaudy, of Paris, France; an airship of the balloon type which is asymmetrical in form, its midship frame being situated slightly toward the front. The total length is 190.24 feet. The midship frame is situated at 81.67 feet from the prow and 108.57 from the stern. The extreme diameter of the balloon is 32.14 feet. With respect to the length of 190.24 feet we have thus an elongation of 5.6 diameters. In the entire median part of the section of the fusiform bag is not a complete circle, but a segment limited by a chord at its lower part. This means that the balloon presents a flat portion fixed to a linen-covered plane and held by a rigid frame which is attached to the side of the bag and, on the other hand, supports the suspension. The surface of the bag is about 13,000 square feet. Its weight, stitching included, is about 880 pounds. The car has the form of a flat-bottomed pontoon with pointed extremities. It is 15.75 feet in length, 5.25 in width, and 3.28 in depth. It is formed of a metallic frame. The motive power is furnished by a 40-horse-power motor cooled by a circulation of water and a radiator. The gasoline tank is placed beneath the car and the motor, as a measure of precaution against fire. A little compressed air is sent to it by means of a bicycle pump for feeding during the setting in operation. The exhaust pressure afterward suffices. The motor uses 30.8 pounds of gasoline per hour, say about 6 fluid ounces per horse-power. The motor actuates two double-bladed propellers arranged on each side of the car at the extremities of a hollow horizontal journal, in the interior of which revolves the driving shaft. The transmission to the propellers is effected through the intermedium of bevel wheels protected by casings. The most remarkable flight of the Lebaudy airship was made 12 Nov. 1903, and will no doubt mark a date in the annals of aërial navigation. The airship covered about 38 miles in 1 hour 41 minutes, and came back to the starting point. After passing over the Seine region to the west of Paris it crossed the Forest of Saint Germain, then entered the city by way of the Bois de Boulogne. The airship was then headed direct for the Eiffel Tower, which it reached, and landed just behind it, carrying out the original intention. At the start the operator had 640 pounds of ballast, and threw out 286 during the trip. The maximum altitude reached was 1,000 feet, and the mean 330 feet. As to the speed the airship made on this trip, it was reckoned at 22.4 miles an hour. See also BALLOON; FLYING MACHINE.

Lebel, Nicolas, French soldier and inventor: b. Angers 18 Aug. 1835; d. Vitré, Ile-et-Vilaine, 6 June 1891. He entered the Military School of Saint Cyr in 1855, served as captain in the Northern Army during the campaign of 1870, and became director of the Musketry School at Tours, and in 1883 at Chalons. The same year he was appointed member of the commission on securing an improved rifle for the infantry. The commission decided in favor of the small-bore rifle offered by Lebel, and known as the «fusil Lebel,» which was introduced into the French army in 1886. He was present as colonel at the battle of Sedan, but sickness cut short his military career, and in 1890 he was placed on the retired list. He was subsequently put in charge of the Inland Revenue Department at Vitré.

Leblanc, Nicolas, French chemist: b. Issoudun, department of Indre, 1766; d. 16 Jan. 1806. He studied medicine, was appointed surgeon to the Duke of Orleans and, after the Revolution, administrator of the department of the Seine. His name is associated with the process of converting common salt into carbonate of soda, a matter to which he turned his attention in 1786, when the Academy offered a prize of 2,400 livres for the discovery. His first endeavors did not yield a decisive result, but led to an accidental discovery by Dizé, an assistant of Jean Darcet (q.v.) at the College of France, through which success was attained. With the Duke of Orleans and another, Leblanc and Dizé formed a partnership and began to make soda. The Revolution wrecked their enterprise. Despite his patent, secured in 1791, Leblanc was compelled by the committee of public safety to disclose the secret of the process, and the manufacture became open to all. After years of poverty and fruitless efforts for redress, he committed suicide. The discovery of the essential features of the process was assigned to him in 1855 by a commission of the Academy, although the claim of Dizé was strongly advocated. As to the value of the process itself there is no doubt. It has made soda cheap, thereby facilitating the manufacture of soap, the cleansing and bleaching of cloth, etc.; has promoted the manufacture of sulphuric acid, and thereby the utilization of metallic sulphides; and has originated the manufacture of chlorine and of bleaching-powder. The Leblanc soda-process is still in extensive use, but is now dependent more on its by-products than on its output of soda. One half of the world's soda is now made by the ammonia-soda or Solvay process. See Soda.

Lebrun, Charles, French painter: b. Paris 24 Feb. 1619; d. there 12 Feb. 1690. He was the son of a sculptor, but early turned his attention to painting and became the pupil of P. Perrier and S. Vouet. He was especially attracted by the Italian masters, examples of which he copied in the gallery at Fontainebleau so that in his fifteenth year his works won the patronage of Cardinal Richelieu. Chancellor Seguier provided means for him to visit Rome and during his residence there (1642–6) he studied under Poussin, at the same time paying much attention to the antique, and the paintings of the early masters. In 1846 he returned to France, and assisted in founding the Royal Academy of Arts and Sciences, in which he became professor, chancellor, and in 1683 director. He was also director of the Gobelin tapestry manufactory. In 1662 Louis XIV. appointed him court painter, ennobled him and made him curator of his art collections. He was meanwhile engaged in decorating the Apollo gallery in the Louvre. In 1668 the king appointed him superintendent of works in the building of Saint Germain. He also decorated with paintings the royal chateau at Sceaux, and designed the statues and fountains for the park, etc. In 1679 he undertook his greatest work, the interior decoration of the palace at Versailles, and in the Great Gallery portrayed the achievements of Louis XIV. Very many paintings of his are still to be seen in the Louvre. His works are characterized by abundant invention and facility of execution; they reflect the spirit of the contemporary Italian school, but are marred by excessive straining after effect, flatness of design, and falsity of colortone. His vast canvas, ‘Portrait of the banker Jabech of Cologne and Family,’ is in the Berlin Museum. He exercised a despotic influence over French art of his time. He wrote ‘Traité sur la Physiognomie’ and ‘Methode pour apprendre à dessiner les Passions.’ Consult: Generay, ‘Le Style Louis XIV.’ (1885); and Jovin, ‘Charles Lebrun, et les Arts sous Louis XIV.’ (1890).

Lebrun, Charles François, shärl fräṅ-swä lė-brŭṅ, Duc de Piacenza, French administrator: b. St. Sauveur-Landelin 19 March 1739; d. near Dourdan 16 June 1824. He was appointed inspector of crown-lands, later entered the States-General and the Constituent Assembly, was appointed governor of Seine-et-Oise in 1791, sat in the council of Five Hundred, of which he was chosen president, and was made third consul by Bonaparte for services on the 18th Brumaire. In 1807 he reorganized the administration of the exchequer, and after a long retirement reentered public life as governor of Holland in 1810. He translated the ‘Iliad,’ the ‘Odyssey,’ and the ‘Jerusalem Delivered.’ Consult his ‘Memoirs’ (1829).

Lebrun, Marie Louise Elisabeth, French painter: b. Paris 16 April 1755; d. there 30 March 1842. She was trained under Doyen, Joseph Vernet and Greutze and chose portrait painting as her specialty. She left a great number of portraits in oil and pastel. About 600 are identified as her works of which the most important are, her portrait of herself with her little daughter (in the Louvre); her portrait of herself in the Uffizi Gallery at Florence); Marie Antoinette with her three children (in the museum at Versailles). In 1783 she was elected a member of the Academy. During the French Revolution she took refuge in the various European capitals, where she painted portraits of the reigning princes, and members of their families; as well as of the most famous people of the time. Few works of hers are to be met with except in private collections. She published ‘Souvenirs de ma Vie’ (Paris 1837).

Le Brun, Napoleon Eugene Charles Henry, American architect: b. of French parents, Philadelphia 2 Jan. 1821; d. New York 9 July 1901. He was a pupil of Thomas U. Walter, the architect, and from 1842 to 1861 practised his profession in Philadelphia where his most notable work is the Roman Catholic cathedral in Logan Square. He removed to New York in 1861 and among structures there which were designed by him with his son, are the Foundling Asylum and the Metropolitan Life Insurance building in Madison Square.

Lebrun, Ponce Denis Ecouchard, pôns dĕ-nē ā-koo-shär, called **Lebrun-Pindare,** French poet: b. Paris 11 Aug. 1729; d. there 2 Sept. 1807. His title ‘Pindar’ is due to the form and the mythological allusions of his odes, not to any large poetical merit, either in them or the lyrics; and as a satirist, he alternately groveled before and libeled the same men. His best odes are addressed to Buffon. He excelled in the composition of madrigals and epigrams; the latter relate for the most part to his quarrels with other authors.

Le Caron, Joseph, zhō-zĕf lė kä-rôṅ, French missionary: d. 1632. He was a Franciscan, belonging to the congregation of Recollets. His work in Canada, which he reached in 1615, was chiefly among the Huron tribe, and he was the first European to explore the lake of that name. His indefatigable labors among the Indians met with scant success, though he left some valuable information concerning their language. After General Wolfe's capture of Quebec (1629) he was deported to England with others of the French population and never returned to the monastery which he had built in that city.

Lecce, ancient Lycia, or Lupia, southern Italy. The town is situated in the province of Lecce, on a plain between the Adriatic on the north, the Gulf of Taranto on the west, and the Ionian Sea on the south. It has many interesting edifices, especially churches and convents, some of which contain admirable works of art. At the gate of St. Biagio is a triumphal arch erected in commemoration of the entrance of Charles V. There is a public library and there are well-established day and evening schools and numerous charitable institutions. Lecce was very flourishing during the Roman period, escaped the barbarians, and in 1000 A.D. was governed by its own counts. Pop. 23,000.

Lecco, lĕk'kō, **Lake of** (It. *Lago di Lecco*), the name given to the southeastern arm of Lake Como in Italy. Some of the large streams of the northern part of Italy flow into Lake Lecco. The town of Lecco and many pretty villages are on its shores.

Lech, lĕH, a river which has its rise in the Alps, in Vorarlberg, in Switzerland, flows east and north until it enters Bavaria, after which its course is almost directly north to Donauwörth where it unites with the Danube. Its length is nearly 200 miles. It is not a navigable stream but it has extensive water-power. On this river, near Rain, about five miles below Donauwörth, Tilly was defeated and killed, 5 April 1632, by a Swedish force under Gustavus Adolphus.

Leche, lē-chē, in zoology, the *Onotragus leche,* from South Africa. It is a water antelope, frequenting damp, marshy places, and taking to impassable swamps. It goes in considerable herds, and may be known by the peculiar way in which it allows its horns to recline, almost touching the withers.

Lechford, Thomas, American colonial lawyer: d. about 1645. He came to the Massachusetts Bay Colony in 1638 and was the earliest lawyer in Boston. He was regarded with great suspicion by the colonial authorities on account of his profession, and the nature of his religious opinions, and he found extreme difficulty in making a living. He therefore, in 1641, returned to England, where his book, 'Plain Dealing, or News from New England,' was printed in 1642. It is a valuable source of information respecting details of early colonial existence, and in 1644 was reprinted with the new title, 'New England's Advice to Old England.' A modern edition, annotated by J. H. Trumbull (q.v.), appeared in 1867.

Lecidea, in botany, the typical genus of the *Lecidinei.* The apothecia have a border colored like the disk. It is very extensive, and is found in a great variety of situations, and at every season of the year. *Lecidea geographica* is sometimes sulphur-yellow and sometimes yellowish-geen. If a yellow specimen be suspended over a solution of carbonate of ammonia, it becomes covered with carmine-red globules, gradually loses its usnic acid, and then becomes grayish-white.

Lecithin, lē-cĭ-thin, in chemistry, a name applied to several phosphoretted fatty bodies, of very similar chemical and physical properties, derived from brain substance, nerves, blood, gall, the yelk of eggs, etc., and also from some vegetable substances (maize, etc.), and which appear as constant constituents of the cell substance of organized bodies. It is a viscous body, insoluble in water, slightly soluble in cold alcohol, but very soluble in boiling alcohol and in ether. From its saturated solution in alcohol, it crystallizes in radially-grouped needles, which dry up *in vacuo* to a white powder. It may also be crystallized from glacial acetic acid. Every lecithin is a fat containing only two fatty acid radicals, the third hydroxyl group being replaced by ethylen-trimethyl ammonic hydrate (neurine) in combination with phosphoric acid.

Lecky, lĕk'ĭ, **William Edward Hartpole,** English historian: b. Newtown Park, near Dublin, 26 March 1838; d. London 23 Oct. 1903. He was educated at Cheltenham College, and at Trinity College, Dublin, whence he was graduated in 1859, and in 1861 published anonymously his first work, 'Leaders of Public Opinion in Ireland,' dealing with Swift, Flood, Grattan, and O'Connell, which appeared under his name in a new edition in 1871. An important 'History of the Rise and Influence of the Spirit of Rationalism in Europe' followed in 1861–5 and ensured him wide reputation as scholar and thinker. His 'History of European Morals from Augustus to Charlemagne' (1869) displayed a profound knowledge though its conclusions were not always sound. His most elaborate and valuable work is a 'History of England in the Eighteenth Century' (Vols. I.–II., 1878; III.–IV., 1882; V.–VI., 1887; VII.–VIII., 1890), in which he treats very fully of Irish affairs to the time of the Addington ministry. In a new edition of this history, published in 12 volumes in 1893, the chapters on Ireland were removed from their original context and arranged in a continuous narrative occupying the last five volumes. This work is in reality a history of civilization for the period covered; treating of the forces contributed to the making of 19th century England, whether of native or of foreign origin. Lecky's other works are: 'Poems' (1891); 'Democracy and Liberty' (1896), in which he arraigns modern British political life, and makes some comments upon Gladstone which once aroused considerable discussion; and 'The Map of Life: Conduct and Character' (1899). In 1895 he was elected to the House of Commons as member for the University of Dublin, and in 1897 was sworn of the Privy Council. In politics he was at first a Liberal and from 1886 a Liberal-Unionist with an undisguised aversion to democratic government. He became corresponding member of the Institute of France in 1894, and an honorary member of the Royal English Academy upon its organization.

Leclaire, Edmé-Jean, ĕd-mā-zhŏṅ lė-klăr, French social scientist: b. Aisy-sur-Armançon 14 May 1801; d. Herblay 10 Aug. 1872. At first a farm-worker, then apprentice to a mason, he afterward apprenticed himself to a house-painter in Paris, and in 1827 began the painting business on his own account. He proved remarkably successful, and soon took a leading position in his trade. In 1835 the principle of profit-sharing (q.v.) was proposed to him, and in 1842 he began to put it in practice in his own establishment, dividing the amount available in sums proportioned to yearly wages. A mutual-aid society which he formed in 1838 and reorganized in 1853 sustained itself from the latter year on the profits which were shared among the members. In 1864 the right to a division of the funds of the society was superseded by a system of retiring pensions. Leclaire was elected maire of Herblay in 1865. In the company which he founded his plan of distribution is still adhered to with continued success.

Leclaire, lė-klăr', Ill., village, in Madison County, adjoining Edwardsville, the county-seat and post-office; on the Toledo, St. L. & W., the Chicago, P. & St. L., and a spur of the Wabash R.R.'s; 18 miles northeast of St. Louis. It contains the factories of the Nelson Manufacturing Company, the residences of its officers, of a number of the employees, and of some others. The village was founded by the Nelson Manufacturing Company, which, in 1886, adopted what is known as the «profit-sharing plan,»— dividing the profits of the business with the employees. After testing this plan, it was decided that more and better service could be rendered to the employees by providing good homes and social and educational facilities, than by simply paying a contingent increase in wages. In 1890 the company acquired 125 acres of high, rich, gently undulating corn land, well adapted to growing everything from blue-grass to watermelons. The tract abuts on the railroads mentioned. Coal underlies the land and there are coal-fields nearby. About 10 acres are reserved for factory purposes, 10 for a campus and other public uses, and the remainder for homes and farming use. All of the improvements, industrial, educational, and the buildings for homes, were started simultaneously. The manufacturing establishments are (1903) five factory buildings, a power-house, a dry-house, and some miscellaneous buildings, all made of brick. There are about 250 employees, who are engaged in making plumbing goods of iron, brass, wood, and marble; all of which goods are made from the raw product up to the finished article. None of what is called «raw material» is manufactured here. Adjoining the factory acres are first the bowling alley and the billiard room, then the ball grounds, next the school-house, the lecture and dancing-hall, and a skating lake. There are winding roads made of cinders, kept smooth, sprinkled in summer, never dusty and never muddy. These roads are bordered by concrete and board sidewalks and trees. The houses built for the employees by the company may be purchased and, if desired, paid for in installments about equal to city rents. The houses are mostly three to six rooms, and are built on lots with from 50 to 100 feet frontage, by 140 to 180 feet depths. They have well-kept lawns, flower beds, shade trees, fruit trees, and gardens.

There is no political organization in Leclaire; all are subject only to the State laws. There are no rules, no «Don't» signs, no boss. No case of disorder has yet (1903) occurred. There are no saloons. The church needs are supplied by Edwardsville. There has always been a kindergarten, and an «Industrial School» has been founded, wherein the pupils work half the time at productive labor and study the other half. The pupils living at home are not obliged to work. Those from a distance get their tuition and living free; they learn how to work and acquire a trade at the same time that they learn from books and capable teachers. No examination is required for entrance. The school is prepared to teach all from the lowest to the highest grade, and the pupils are promoted as rapidly as the results of their work merit. The work in the school consists of house building, farming, and varied factory work. Whenever a pupil becomes sufficiently proficient to earn, at the regular value of his work, more than the cost of his schooling and living expenses, he is paid the excess in money. The intention is to civilize work, to take it out of the category of drudgery and put it in the list of arts and crafts, to make the pupils intelligent workmen and skilled craftsmen. In this school there is a weekly lecture on hygiene, given by an experienced, broad-minded physician. The village has a free library, and each winter a course of lectures is given, two each month, with occasional musicales. A singing school is held one night each week, and a bowling party for the school and the children also one night a week, and occasionally excursions to St. Louis. In the summer there are excursions from St. Louis to Leclaire, sometimes entire train-loads of children for a day's outing. Leclaire is founded and built on simple lines; the complex and strenuous are avoided, good-will, simplicity, and the domestic enjoyments are fostered.

N. O. NELSON,
Leclaire, Ill.

Le Clear, Thomas, American painter: b. Owego, N. Y., 1818; d. New York 1882. He painted portraits in London, Canada, before he had received any instruction in art, and left that place about 1832 for New York, where he made his principal residence. He was elected a national academician in 1863. Besides his portraits, which are clever in characterization and full of life and expression, he has painted many genres, such as 'Marble Players'; 'The Itinerant' (1862); and 'Young America.' Among his portraits are those of 'William Page' in the Corcoran Gallery at Washington; and 'George Bancroft' in the Century Club, New York.

Le Clerc, lė-klăr, **John,** or **Johannes Cler'icus,** Swiss theologian: b. Geneva, Switzerland, 19 March 1657; d. Amsterdam, Netherlands, 8 Jan. 1736 He began to study theology and philosophy in his native town, and continued his studies at Grenoble, Saumur, Paris, and London. He gradually adopted the views of the Remonstrants, as the adherents of Arminius (q.v.) were then called. In 1684 he was appointed to the faculty of the Remonstrant College at Amsterdam; but in 1728 a stroke of apoplexy deprived him of his power of speech, which he never recovered. His influence has been most widely felt through his writings, which are voluminous. He edited the ‘Apostolic Fathers of Cotelerius’ (1698), and the views he held about Mosaic authorship, inspiration and kindred topics seemed to anticipate some recent deductions from the Higher Criticism. Besides a Bible commentary he published: ‘Bibliothèque universelle et historique’ (25 vols. 1686–93); ‘Bibliothèque choisie’ (28 vols. 1703–13); and ‘Bibliothèque ancienne et moderne’ (29 vols. 1714–26).

Le Clerc, Sébastien. See CLERC, SÉBASTIEN LE.

Le Clerq, Chrétien, krā-tē-ŏṅ lė klăr, French missionary: b. Artois, France, about 1630; d. Lens, France, about 1695. He labored for six years on the Island of Gaspé as a Recollet missionary with others of his order (1651–61), and then built a house for the Recollets in Montreal with money collected in France. After resuming his unsuccessful missionary work at Gaspé he returned to France. His works are interesting as throwing a side light upon early Canadian history, but are tinged with ecclesiastical partiality for Frontenac, who favored the Recollets at the expense of the Jesuits. These works are: ‘Nouvelle Relation de la Gaspésie’ (1691); and ‘Establishment of the Faith in New France’ (English translation by John G. Shea 1881).

Lecocq, lė-kŏk, **Alexander Charles,** French composer: b. Paris 3 June 1832. He received his musical education in the Conservatory of the Capital, under Bazin and Halévy, and the earliest of his operas to appear was ‘Le Docteur Miracle,’ which had won the first Offenbach prize. His operetta ‘Fleur de Thé’ gained him the widest recognition. In this as in his later productions he followed the advice he had received from Offenbach, that the operetta should be elevated into a work of art. His principal operettas are: ‘Les Jumeaux de Bergame’ (1868); ‘Gandolfo’ (1869); ‘Le beau Dunois’ (1870); ‘La Fille de Madame Angot’ (1872); ‘Giroflé Girofla’ (1874); ‘La petite Mariée’ (1875); ‘Kosiki’ (1876); ‘Le Dompteur’ (1877); ‘Le petit Duc’ (1878); ‘La Rousette’ (1881); ‘Plutus’ (1886); etc. They are 42 in number, and have attained the most remarkable popularity in France and elsewhere.

Lecomp′ton, Kan., city, in Douglas County; on the Kansas River, and on the Atchison, T. & S. Fe railroad; about 15 miles east of Topeka. It was settled in 1854 by sympathizers with the slavery side of the question which was then before the people, in relation to the admission of new States. Lecompton was the headquarters of the pro-slavery men, and it was here that the Lecompton Constitution (q.v.) was framed, in the fall of 1857. The Lane University was founded here in 1865. The place was named in honor of Judge S. D. Lecomte, one of the early workers in Kansas. Pop. 500.

Lecompton Constitution, in Kansas history a form of territorial government, adopted by a convention held at Lecompton, Kan., in 1857, the legality of which in both form and action became a matter of dispute, and caused national discussion and congressional action. For several years prior to 1857 the slave question had agitated the territory, and numerous bloody quarrels between the Free State settlers and the Missourians who came across the border into Kansas, added fuel to the strife. In June 1857 the territorial legislature, composed entirely of pro-slavery men, chosen at an election at which the free-state men had declined to participate on the ground of its illegality, met at Lecompton, and among other acts passed one providing for the election of a convention to frame a State constitution for Kansas. Meanwhile Congress had passed a bill declaring void all the enactments of the Kansas legislature on the ground that they were cruel and oppressive. The election for delegates to the constitutional convention was held 15 June, but the free-state men took no part in it. Only 2,000 votes were cast, while the legal voters in the territory numbered 10,000. The constitutional convention met at Lecompton in November and adopted a constitution, four sections of which related to slavery, declaring the rights of owners to their slaves to be inviolable, and prohibiting the legislature from passing acts of emancipation. This provision alone was to be submitted to the people at an election to be held 21 December. The ballots cast were to be endorsed: «Constitution with slavery,» or «Constitution with no slavery,» thus securing in any event the adoption of a constitution, several clauses of which, besides those submitted, were highly objectionable to a majority of the people. A provision was inserted preventing any amendment to the constitution previous to 1864. The promulgation of this constitution caused great excitement in Kansas.

At the election 21 December, the vote returned was 6,143, more than one half of which was from the counties along the Missouri border, whose total number of voters by the census did not exceed 1,000. Against the slavery clause there were but 569 votes, the free-state men generally abstaining from voting. The constitution being thus nominally adopted, an election for officers under it was to be held 4 January. At a special session the legislature passed an act submitting the Lecompton constitution to the direct vote of the people on the same day with the State election, and the result was 10,226 votes against it. Congress after a long discussion referred the matter to the people of Kansas at an election on 3 Aug. 1858, when the Lecompton constitution was again rejected by 10,000 majority. Meanwhile the territorial legislature had called another convention to meet in April to frame a new constitution, which was submitted to the people and ratified by a large majority, though by a small total vote. The territorial legislature met in January 1859 and passed an act submitting to the people the question of calling still another constitutional convention. Delegates were elected, and at a convention which met from 5 July to 27 July a constitution was finally adopted which prohibited slavery. This was ratified by a majority o 4,000 at the election 4 October, and the slavery question was at last settled and Kansas was admitted to the Union as a State 29 Jan. 1861. See also KANSAS; SLAVERY.

Lecomte Du Nouy, Jules Jean Antoine, zhül zhŏṅ äṅ-twän lė kôṅt dü noo-ē, French artist: b. Paris 10 June 1842. A pupil of Gleyre, Gérôme, and Signol at the Ecole des Beaux Arts, he won there the second Prix de Rome in 1865, and was afterward an annual exhibitor at the Salon. Among his canvases, somewhat dull in color but admirably correct in drawing and archæological exactness, are: 'The Sorcerer'; 'Bearers of Evil News before Pharoah'; 'Job and his Friends'; 'The Madness of Ajax'; and a portrait of Béranger.

Le Conte, lė kŏnt, **John,** American physicist: b. Liberty County, Ga., 4 Dec. 1818; d. Berkeley, Cal., 29 April 1891. He was a son of Lewis Le Conte (q.v.). He was graduated from Franklin College in 1838, from the College of Physicians and Surgeons, New York, in 1841; in 1846–55 was professor of natural philosophy and chemistry in Franklin College; in 1856–69 was professor of natural and mechanical philosophy in South Carolina College; in 1869 became professor of physics and industrial mechanics in the University of California; was president of the university in 1876–81; and in 1881 again assumed his professional duties. Among his publications were: 'The Philosophy of Medicine' (1849); and 'The Study of the Physical Sciences' (1858).

Le Conte, John Eaton, American naturalist: b. near Shrewsbury, N. J., 22 Feb. 1784; d. Philadelphia 21 Nov. 1860. He was a brother of Lewis Le Conte (q.v.). In 1813 he entered the army as a topographical engineer, and in 1831 was retired with the grade of major. He published 'Monographs of North American Species of Utricularia, Gratiola, and Ruellia,' and other studies in natural history.

Le Conte, John Lawrence, American entomologist: b. New York 13 May 1825; d. Philadelphia 15 Nov. 1883. He was a nephew of Lewis Le Conte (q.v.). He was graduated from Mount St. Mary's College (Emmitsburg, Md.) in 1842, from the College of Physicians and Surgeons in 1846, became a surgeon of volunteers in the Federal army in 1862, and was later made medical inspector United States army, with rank of lieutenant-colonel. In 1873 he was chosen to the presidency of the American Association for the Advancement of Science. He was generally recognized as an important authority on entomology; and published on that subject: 'Classification of the Coleoptera of North America' (1862–73); 'List of the Coleoptera of North America' (1866); and 'New Species of North American Coleoptera' (1866–73).

Le Conte, Joseph, American geologist: b. Liberty County, Ga., 26 Feb. 1823; d. Yosemite Valley, Cal., 6 July 1901. He was a son of Lewis Le Conte (q.v.). He was graduated from Franklin College, Georgia, in 1841, from the College of Physicians and Surgeons, New York, in 1845; practised medicine at Macon, Ga.; in 1850 became a pupil of Louis Agassiz, whom he accompanied on an expedition to Florida; and later was professor of natural science in Oglethorpe University, Georgia, and of natural history in Franklin College. In 1856–69 he was professor of chemistry and geology in the University of South Carolina, and from 1869 until his death held the chair of geology in the University of California. During the Civil War he was chemist in the Confederate medicine laboratory and later in the nitre and mining bureau at Columbia, S. C. He was vice-president of the International Geological Congress in 1891, and president of the American Association for the Advancement of Science in 1892. His contributions to geology include the determination of the character and age of the Cascade range; the description of the ancient glaciers of the Sierra Nevada; the development of what is called the "contractional theory" in mountain building; and researches in vein formation. He wrote also on optics, philosophy, biology, and other subjects. He was an editor of the 'Journal of Geology and of Science,' and published: 'Religion and Science' (1873), a collection of lectures; 'Elements of Geology' (1878), his best known book; a 'Compend of Geology' (1884); 'Evolution: Its Nature, its Evidences, and its Relation to Religious Thought' (1887); and other writings. Consult his 'Autobiography,' edited by W. D. Armes (1903).

Le Conte, Lewis, American naturalist: b. near Shrewsbury, N. J., 4 Aug. 1782; d. Liberty County, Ga., 9 Jan. 1838. He was graduated from Columbia in 1799, studied medicine, on his plantation of Woodmanston, Ga., established a botanical garden, particularly rich in bulbous plants of the Cape of Good Hope, and a chemical laboratory where he conducted numerous researches. He published nothing, but was of admitted aid to many botanists in their labors.

Leconte de Lisle, Charles Marie René, shärl mä-rē rė-nā lė kônt dė lēl, French poet: b. Saint Paul, Ile de Bourbon (now Réunion), 23 Oct. 1818; d. Louveciennes 17 July 1894. When a young man he went to France, studied law at Rennes, and after a course of travel settled in Paris. His progress was slow, but gradually he gathered a group of young writers, and expanded his own work, whereby he won recognition as leader of the modern Parnassian school of poetry. It was some years before he found a publisher for 'Poèmes antiques' (1852), his first volume of real significance, but with Poèmes barbares' (1862) he gained an academic prize of 10,000 francs. In 1884 he published 'Poèmes tragiques,' and in 1895 appeared 'Derniers Poèmes,' a posthumous volume containing also critiques on his precursors in lyric poetry. His hand gave its impress to 'Le Parnasse contemporain,' a series of volumes published in 1866, 1869, and 1876, which is representative of his school, and in these some of his own most notable work was first seen. He also rendered valuable service to French literature by his superior translations of the 'Iliad' (1867), Hesiod (1869), the 'Orphic Hymns' (1869), the 'Odyssey' (1870), Horace (1873), Sophocles (1877), and Euripides (1885). In imitation of the Greek he wrote the dramas 'Les Erinnyes' (1872) and 'L'Apollonide,' based on the 'Ion' of Euripides. His poetry embodies a philosophy of human life in which he sought to combine art with scientific principles and to weave in one poetic fabric the mythical past with ideal visions yet to be realized by the race. In 1887 he was elected a member of the Academy.

Lecouvreur, lė-koov-rẽr, **Adrienne,** French actress: b. Lamery, Champagne, 5 April 1692; d. Paris 20 March 1730. Arriving at Paris in her tenth year she made her first theatrical venture three years later, and was immediately engaged for the theatre at Lille. For the following ten years she was "on the road" as member of various traveling companies, but in

1717 was called to the 'Comédie Française,' and made her debut as Electra in Crebillon's tragedy. Her simple and natural impersonation made a deep impression on the most fastidious of audiences, and from that time she played the role of most of the heroines in Corneille and Racine with such success that she was welcomed into the most aristocratic circles of the city and was drawn into correspondence with some of the most intellectual men and women of the day, among whom was Voltaire. During the last ten years of her life she counted among her admirers Maurice of Saxony, Voltaire and Lord Peterborough. She perished by poison administered by the Duchesse de Bouillon, a jealous rival. This dénouement is the subject of the play 'Adrienne Lecouvreur,' by Scribe and Legouvé. Consult: Mouval, 'Lettres d'Adrienne Lecouvreur' (1892).

Le Creusot, France. See Creusot, Le.

Lec'tern, or **Lettern,** the reading-desk or stand on which the larger books used in the services of a church are placed. The most ancient lecterns were made of wood, and elaborately carved. Modern ones have been made of marble or brass, very ornamental in design and of excellent execution. They are sometimes made in the form of an eagle, the outspread wings of which form the support for the volume.

Lectionary, lĕk'shŏn-ā-rĭ (Lat. *lectionarium*) originally, a service-book of the church of the Middle Ages, so termed as it contained the lessons (*lectiones*) or passages of Scriptures read in the church service. The Roman Catholic Lectionary contained the epistles and gospels of the Roman missal, sometimes also all the lessons of the various services in the church, in which case it was termed the Plenarium. The most ancient known, the Gallican Lectionary, is believed to represent the rite of the ancient Gallican Church. It was published from a manuscript of the monastery of Luxeuil in 1685, by Mabillon (q.v.), who attributed it to the 7th century. It was written in Merovingian characters, it names the festival of St. Geneviève, and assigns three lessons to each mass, in accordance with the ancient Gallican liturgy.

In the Greek Church the lectionaries consist of lessons from the Gospels, from the Acts and Epistles. The Greek lectionary is called Synaxarion (*συναξὰριο*), and the oldest synaxarion extant is that prefixed to the Codex Cyprius (K), a manuscript of the New Testament which belongs to the 8th century.

The lectionary or calendar of the English Book of Common Prayer was first published in 1559, and contained two lessons, one from the Old Testament and one from the New for daily morning and evening prayer, and special lessons for Sundays and holidays. This lectionary was adopted by the Protestant Episcopal Church of the United States in 1789, but in 1883 the General Convention changed it by revision into the form which it now bears. In accordance with this assignment the Old Testament is appointed to be read through in the course of public worship once a year; the New Testament being read three times in the same period.

Lectister'nium, among the ancient Romans, a sacrifice of the nature of a feast offered to the gods, an evident survival of the idea common in early stages of religious development that divinities actually partook of the offerings presented to them. On occasions of extraordinary solemnity, or in times of public calamity, the Greeks and Romans placed tables with food before images of the gods reclining on couches. According to Livy the first Roman lectisternium took place 354 B.C., when a terrible plague affected the cattle. These sacrificial feasts were of two kinds — ordinary, occurring almost daily, and extraordinary, occurring at intervals, and lasting from three to eight days, or longer.

Lector (reader), a minister of the church who reads the Bible, and other writings of a religious character, to the people. The order of lectors is the second of the minor orders in the Roman Catholic, the first in the Greek Church. The office is now merely looked upon as one of the steps to the priesthood, and only in the office for Good Friday does the missal recognize the functions of the lector. Lectors were consecrated by prayers and sometimes by laying on of the hands for this office; the candidate must have completed the seventh year of his age. They are mentioned by Justin Martyr in the 2d century, and appear to have been proper officers of the church in the 3d century. The orders in the Roman Catholic Church are bishop, priest, deacon, sub-deacon, acolyte, exorcist, reader, ostiarius or door-keeper. See Orders, Holy.

Leda, lē'dạ, in Greek mythology, the wife of the Spartan king Tyndareüs. In order to enjoy her, Zeus changed himself into a swan, in which form he is represented with her in a picture from Herculaneum. By him she had Pollux and Helen, and by Tyndareus, Castor and Clytemnestra.

Ledeganck, lĕd-ė-gänk', **Karel Lodewyk,** Flemish poet: b. Eecloo 9 Nov. 1805; d. Ghent 19 March 1847. He is one of the most popular of Flemish writers. His first collection of poems was 'Flowers of my Springtide' (1839). His poem on 'The Three Sister Cities' — that is, Ghent, Bruges, Antwerp — is considered his finest production.

Ledochowski, Miecislas Halka, mē-ā-kēs'-läs häl'kä led-ō-нŏv'skē, Polish Roman Catholic ecclesiastic: b. Galicia 29 Oct. 1822; d. Switzerland 28 July 1894. He studied theology and subsequently entered the papal diplomatic service and became papal auditor successively at Madrid, Lisbon, Rio de Janeiro, and Santiago de Chile. In 1861 he was appointed Archbishop of Thebes, while his appointment to the archbishopric of Gnesen and Posen in 1866 constituted him primate *ex officio* of Poland. He actively opposed the Prussian May laws by which Bismarck sought to subject the Roman Catholic Church in Germany to state control. In consequence of his opposition, his property was confiscated and himself imprisoned in 1873 for two years. He was made cardinal 15 March 1875, and in 1892 general prefect of the propaganda.

Ledru-Rollin, lė-drü-rōl-lăṅ, **Alexandre Auguste,** French political agitator: b. near Paris, France, 2 Feb. 1807; d. Fontenay-aux-Roses, France, 31 Dec. 1874. Admitted to the bar in 1830, he became prominent in the defense of Republican journalists and men of similar views in the reign of Louis Philippe, and later as a democratic agitator and leader of the workingmen's party. On the outbreak of the revolution of 1848 he became a member of the provisional government as minister of the interior, and in May was one of the five in whose hands the Constituent Assembly placed the interim government. But he offended everyone by his arbitrary conduct, and resigned. He was a candidate for the presidency against Louis Napoleon in the following December, but was ignominiously beaten. An unsuccessful attempt to provoke an insurrection against his rival put an end to his influence, and for the next 20 years he lived alternately in London and Brussels, being amnestied only in 1870. After his return to France he was elected to the Assembly in 1871, and again in 1874.

Le'dum Oil. See LABRADOR TEA.

Led'yard, John, American traveler: b. Groton, Conn., 1751; d. Cairo, Egypt, 17 Jan. 1789. He entered Dartmouth College in 1772, with a view of fitting himself for missionary duty among the Indians. The restraints of this mode of life proving irksome, he absented himself at one time from college for several months, during which he visited the Indians of the Six Nations; and, finally abandoning the idea of becoming a missionary, he embarked on the Connecticut River in a canoe of his own fashioning, and floated down to Hartford. After a brief experience as a theological student, he shipped at New London as a common sailor in a vessel bound for the Mediterranean, and at Gibraltar enlisted in a British regiment, but was discharged at the request of his captain. He accompanied Captain Cook on his third voyage round the world, 1776–80, and of this voyage he kept a private journal, which in accordance with a general order of the government was taken from him on the return of the expedition to England. Subsequently he wrote out from recollection, assisted by a brief sketch issued under the sanction of the admiralty, an account of the expedition, published in 1783. During the two years succeeding his return to England he remained in the British naval service, but steadily refused to take arms against his native country. In December 1782, he found means to escape. He intended to journey through northern Europe and Asia and after surmounting many obstacles arrived at Irkutsk, where on 24 Feb. 1788 he was arrested by order of the Empress Catherine, conducted with all speed to the frontiers of Poland, and there dismissed, with an intimation that he would be hanged if he re-entered Russia. Ledyard found his way back to London in the spring, and was cordially received by Sir Joseph Banks and others who had befriended him. Undaunted by previous adversities, he eagerly accepted an offer to undertake an expedition into the interior of Africa; and when asked how soon he would be ready to set out, replied: «To-morrow morning.» He departed from England in the latter part of June, intending to cross the African continent in a westerly direction from Sennaar, and had proceeded as far as Cairo, when he died. For capacity of endurance, resolution, and physical vigor, he was one of the most remarkable of modern travelers. Many extracts from his journals and his private correspondence with Jefferson and others are given in Spark's memoir of him.

Ledyard, William, American soldier: b. Groton, Conn., about 1750; d. Fort Griswold, Conn., 7 Sept. 1781. He held the commission of colonel in the militia of Connecticut, and during the marauding expedition of Arnold in September 1781, was in command of Forts Trumbull and Griswold, which protected New London. He refused a demand for the surrender of Fort Griswold, and resisted for nearly an hour the attack of a British force numbering 800 men. The command of the attacking force devolved upon Major Bromfield, a Tory, who effected an entrance into the fort after nearly 200 of his men had been disabled, including 48 killed, the Americans having lost about a dozen killed. To Bromfield's inquiry: «Who commands this garrison?» Ledyard replied: «I did, sir, but you do now,» at the same time handing him his sword. Bromfield immediately plunged it through the body of Ledyard, killing him upon the spot. A massacre of the Americans ensued, which was not ended until more than 100 of them were killed and wounded. A monument has been erected near the spot to commemorate this event.

Lee, Agnes Rand, American writer: b. Chicago. She has published ‹The Round Rabbit,› a juvenile, and a translation of ‹The Poems of Theophile Gautier› (1903).

Lee, Albert, American author and editor: b. New Orleans 11 May 1868. He was graduated from Yale in 1891, having during his senior year edited the ‹Yale Literary Magazine.› In 1891–4, he was on the editorial staff of the New York *Sun*; in 1895 became editor of ‹Harper's Round Table›; and in 1899 was for a short time associate editor of ‹McClure's Magazine,› becoming managing editor of ‹Harper's Weekly› in the same year. In 1901–3 he was associate editor of ‹Collier's Weekly,› taking the position of managing editor in January 1903. He has written ‹Tommy Toddles› (1896); ‹Track Athletics in Detail› (1897); ‹The Knave of Hearts› (1897); ‹Four for a Fortune› (1898); ‹He, She, and They› (1899).

Lee, Alfred, American Protestant Episcopal bishop: b. Cambridge, Mass., 9 Sept. 1807; d. Wilmington, Del. 12 April 1887. He was graduated at Harvard in 1827, and after studying law practised for three years in New London, Conn. Feeling, however, that his vocation was elsewhere he was admitted to the General Theological Seminary, where he was graduated in 1837. He was elected rector of Calvary Church, Rockdale, Pa. (1838), but on being consecrated first bishop of Delaware in 1841, took charge of Saint Andrew's, Wilmington, the following year. He was a member of the American Committee for Revision of the New Testament (1881) and presiding bishop (1884–7). He is the author of ‹Life of Saint Peter› (1852); ‹Life of Saint John› (1854); ‹A Treatise on Baptism› (1854); ‹Harbinger of Christ› (1857); Co-operative Revision of the New Testament› (1881); etc.

Lee, Ann, foundress of the Society of Shakers in America: b. Manchester, England, 29 Feb. 1736; d. Watervliet, N. Y., 8 Sept. 1784. She was the daughter of a blacksmith and uneducated, and in 1758 joined the Shakers, who had seceded from the Society of Friends. In 1762 she was married to a blacksmith named Standerin, or Stanley. She believed herself inspired, and in 1770 was imprisoned for preaching the new doctrine of celibacy. In 1774 she emigrated to America and founded at Watervliet two American Societies of Shakers. By her adherents she was called «Mother Ann.» See SHAKERS.

Lee, Arthur, American diplomatist: b. Stratford, Westmoreland County, Va., 21 Dec. 1740; d. Urbana, Middlesex County, Va., 12 Dec. 1792. He was educated at the University of Edinburgh; entered the practice of medicine at Williamsburg, Va.; studied law in the Temple, London (1766–70); practised in England in 1770–6; closely observed colonial questions; was a member of the society known as «The Supporters of the Bill of Rights,» by which ministerial measures were discussed; and in 1770 was appointed associate of Franklin as London agent of Massachusetts colony. When Congress appointed Franklin, Jay, and Dickinson a committee to correspond with friends of the colonies in other parts of the world, Lee became secret agent in London of the committee; and in 1776 he was chosen by Congress joint commissioner with Franklin and Deane to obtain a treaty of alliance with France. In 1777 he despatched special missions to the governments of Spain and Prussia; in 1778 became commissioner to Spain; but in 1779 was recalled owing to his disagreements with Franklin and Deane. He was a representative in the Virginia general assembly in 1781; a delegate to the Continental Congress in 1781–4; and a member of the board of treasury in 1784–9. He opposed the adoption of a Federal constitution. Consult R. H. Lee, ‹Life of Arthur Lee› (1829).

Lee, Charles, American soldier: b. Dernhall, Cheshire, England, 1731; d. Philadelphia 2 Oct. 1782. In 1751 he entered the English army as lieutenant of the 44th, which he accompanied to America in 1754, and with which he was present at Braddock's defeat on the Monongahela (9 July 1755). He was wounded in Abercrombie's attack on Ticonderoga (1 July 1758), took part in the capture of Montreal in 1760, and was promoted major in 1761. He served in Burgoyne's division in Portugal in 1762, and was for a time busy with a scheme for establishing in America two colonies, one on the Ohio, the other on the Illinois, to be recruited from Switzerland and Germany as well as New England. In 1764 he went to Poland, there was appointed to the staff of King Stanislaus Augustus, in 1766 accompanied the Polish embassy to Turkey, in 1769 as a major-general in the Polish army fought in a campaign against the Turks, and having called his superior officers fools, left the service and returned to England. He was made lieutenant-colonel on half-pay in 1772, but was further unrecognized by the British government, and in disappointment came to America 10 Nov. 1773, and by skilful display of what military knowledge he possessed attracted the attention of the Continental Congress, then eager to obtain competent leaders for the Revolutionary army. His career thenceforth was perhaps the strangest in the annals of the Revolution. He wished to become commander-in-chief of the American forces, but accepted the appointment as second of the major-generals, Artemas Ward (q.v.) being the first. To inspire public confidence he purchased for £5,000 Virginia currency (about £3,000 sterling), an estate in Berkeley County, Va.; but he did not assume his rank until guaranteed by Congress pecuniary indemnity for possible losses incurred in so doing. He undeservedly received popular credit for Moultrie's successful defense of Charleston, S. C. (28 June 1776), and was called the «Hero of Charleston.» In 1776 he became first major-general upon the resignation of Ward. He failed to obey when ordered by Washington to cross the Hudson from Westchester County with his 7,000 troops and join the latter in New Jersey; but when Washington was compelled to fall back on Princeton (2 Dec. 1776), crossed the river to Morristown and encamped there with 4,000 troops. Gates marched from Ticonderoga with seven regiments for Washington's aid, but Lee diverted three of the regiments to Morristown. Washington crossed the Delaware into Pennsylvania, and Lee diligently spread reports of the commander-in-chief's incapacity and planned a flank movement upon the British army whose success he intended should secure his own appointment to replace Washington. He was, however, captured at Baskingridge (13 Dec. 1775), and imprisoned at New York, where he deserted the American cause, and designed a plan for the subjugation of the American colonies, the original draft of which was found among the private papers of the Howes in 1857. He was exchanged in 1778, and re-entered the American service for reasons not fully known; but his insubordination at Monmouth (28 June 1778) nearly lost the day, and he was suspended from command for one year. A subsequent disrespectful letter to Congress caused his dismissal from the army. His treasonable correspondence with the British authorities was not discovered till many years after. He wrote ‹Strictures on a Friendly Address to all Reasonable Americans› (1774) in reply to Dr. Myles Cooper (q.v.); and made a foolish claim to be the author of the «Junius» letters. Consult the ‹Memoirs,› edited from his papers by Langworthy (1792); and Moore, ‹The Treason of Charles Lee› (1858).

Lee, Charles, American cabinet officer: b. Leesylvania, Va., 1758; d. Fauquier County, Va., 24 June 1815. He was a brother of Henry Lee, soldier (q.v.) He was graduated from the College of New Jersey in 1775; studied law in the office of Jared Ingersoll at Philadelphia; practised in Westmoreland County, Va.; and sat in the Virginia assembly. On 10 Dec. 1795 he was appointed by Washington attorney-general of the United States, and this office he filled until the last month of Adams' administration (1801). He declined an appointment by Jefferson as chief justice of the United States circuit court for the 4th circuit.

Lee, Eliza Buckminster, American prose writer: b. Portsmouth, N. H., 1794; d. Brookline, Mass., 22 June 1864. She was married to Thomas Lee of Boston, where the greater part of her life was spent. She was a popular author in her day and among her books are ‹Sketches of New England Life› (1837); ‹Delusion› (1839); a translation from the German of the ‹Life of Jean Paul Richter› (1842); ‹Naomi; or, Boston Two Hundred Years Ago› (1848); ‹Parthenia; or, The Last Days of

Paganism' (1858); and a translation of Berthold Auerbach's 'Barefoot Maiden' (1860).

Lee, Fitzhugh, American soldier and diplomatist: b. Clermont, Fairfax County, Va., 19 Nov. 1835; d. Washington, D. C., 28 April 1905. He was the nephew of Robert E. Lee (q.v.). Appointed as cadet at large to West Point by President Fillmore, he entered the Academy at 16, and was graduated in 1856, receiving an appointment to the famous Second Cavalry of which A. S. Johnston was colonel and R. E. Lee was lieutenant-colonel. After serving for a year at Carlisle Barracks as cavalry instructor of recruits, he reported to his regiment on the frontier of Texas and was greatly distinguished in several fights with the Indians, being mentioned in the official reports for skill and gallantry. In a fight with the Comanches, 13 May 1859, he was so severely wounded, being pierced through the lungs with an arrow, that the surgeons despaired of his life, but he recovered and joined his command, and led a part of his company in January 1860, in a very notable and successful fight with the Indians, in which he greatly distinguished himself in a single combat with an Indian chief. In November 1860 he was ordered to West Point as instructor of cavalry tactics. When Virginia seceded from the Union he promptly resigned his commission and tendered his services to his native State. He served for a time on the staff of General R. S. Ewell, and in September 1861 he became lieutenant-colonel, and in April 1862 colonel of the 1st Virginia cavalry. Henceforth he was intimately connected with Stuart's cavalry and won constant reputation for dash, daring, and intelligent execution of duty. After the battles around Richmond he was made brigadier-general, his brigade consisting of the 1st, 3d, 4th, 5th, and 9th Virginia cavalry, and a battery of horse artillery. In the campaign against Pope and the Maryland campaign the cavalry rendered most important service, and Gen. Lee did his full duty in these operations. When General Robert Lee withdrew from Sharpsburg, Fitzhugh Lee's brigade relieved the pickets and held the lines till the army had crossed the Potomac. On 17 March 1863 Averell's division of 3,000 cavalry crossed the river at Beverly's Ford, and attacked him; though he could only put 800 troopers in the saddle, he successfully resisted Averell, and after one of the most hotly contested cavalry battles of the war drove him back across the river. In the Chancellorsville movement he protected Jackson's flank, and made a very important reconnoissance by which he located the flank and rear of the enemy, and enabled Jackson to attack it to the best advantage. In the autumn of 1863 he was made major-general, and given command of a division of cavalry. In the campaign of 1864 he rendered important service, holding in check the advance of Grant's army until General R. E. Lee's infantry could occupy Spottsylvania, repelling Sherman's raid on Richmond, defeating Sheridan at Trevillians and Samaria Church, routing Wilson at Reams Station, and operating with Early in the Valley, being severely wounded at the battle of Winchester. When Hampton was sent south Lee was given the command of the entire cavalry corps of the army of northern Virginia, conducted the retreat to Appomattox, was one of the council of war whom Robert Lee consulted, and one of the leaders in the last charge of the army of northern Virginia. He «accepted the situation» after the surrender, and went to work on his farm at Richland. From 1886 to 1890 he was governor of Virginia. In 1896 he was appointed consul-general to Cuba, in which position he kept the State Department thoroughly informed of the Spanish policy during the rebellion, and vigorously upheld the rights and interests of the United States; after the destruction of the Maine he did much to prevent the premature outbreak of war with Spain, but when war was inevitable he was recalled. In May 1898 he was appointed major-general of United States volunteers, and assigned to the command of the 7th army corps. At the close of the war he was made military governor of the province of Havana, and later was given the command of the department of the Missouri.

J. W. Jones, D.D.,
President Southern Historical Society.

Lee, Francis Bazley, American lawyer and historical writer: b. Philadelphia 3 Jan. 1869. He was educated at the State Model School in Trenton, N. J., and was graduated from the Wharton School of Political Economy in the University of Pennsylvania in 1890. He was admitted to the New Jersey bar in 1893 and has since practised his profession in Trenton. In addition to various historical monographs relating to New Jersey, he is the author and editor-in-chief of 'New Jersey as a Colony and a State.'

Lee, Francis Lightfoot, American patriot: b. Stratford, Westmoreland County, Va., 14 Oct. 1734; d. Richmond County, Va., 3 April 1797. He was elected to the Virginia house of burgesses for Loudoun County in 1765, and later represented Richmond County in that assembly. He signed the Westmoreland declaration against the Stamp Act (1765), and on 15 Aug. 1775 became a member of the Continental Congress, where he served until the spring of 1779. On 4 July 1776 he was one of the 56 signers of the Declaration of Independence. He also was a member of the committee that prepared the articles of confederation, and was prominent in debate, particularly on the questions of the Newfoundland fisheries and the navigation of the Mississippi. After his retirement from Congress he served briefly in the Virginia legislature. Consult Sanderson, 'Lives of the Signers,' Vol IX. (1827).

Lee, Gerald Stanley, American Congregational clergyman and author: b. Brockton, Mass., 4 Oct. 1861. He was graduated from Middlebury College, Vt., in 1885, and from Yale Divinity School in 1888. He has lectured on literature and the arts, and is the author of 'About an Old New England Church' (1893); 'The Shadow Christ' (1896); 'The Lost Art of Reading' (1902); 'The Confessions of an Unscientific Mind' (1902).

Lee, Guy Carleton, American educator and author. He was graduated from Dickinson College, Pa., where he was for a time professor of history. He has since filled other educational posts and has been literary editor of the Baltimore *Sun* from 1901. He is the author of:

‹Hincmar: An Introduction to the Study of the Church in the 9th Century› (1898); ‹Principles of Public Speaking› (1899); ‹Historical Jurisprudence› (1900); ‹Source Book of English History› (1900); ‹A History of England› (1901).

Lee, Mrs. **Hannah Farnham Sawyer,** American novelist and miscellaneous writer: b. Newburyport, Mass., 1780; d. Boston 27 Dec. 1865. She was married to G. G. Lee of Boston. Her works, several of which exerted considerable influence during the second quarter of the 19th century, are: ‹Grace Seymour› (1835); ‹Three Experiments in Living› (1838); ‹Elinor Fulton,› a sequel to the preceding; ‹Rich Enough›; ‹The Huguenots in France and America› (1842); ‹Stories from Life› (1849); ‹Memoir of Pierre Toussaint› (1853); ‹History of Sculpture and Sculptors›; etc.

Lee, Harriet, sister of Sophia Lee (q.v.): b. London 1756; d. Clifton 1 Aug. 1851. In 1786 she published the ‹Errors of Innocence,› a novel succeeded by several others now forgotten. In 1797–1805 appeared her ‹Canterbury Tales,› 8 of the 10 tales of which were her own, the others being by her sister Sophia. They enjoyed a great popularity in the early part of the 19th century, and a new edition was published in New York in 1856–7. One of the most remarkable is ‹The German's Tale-Kruitzner,› from which Lord Byron borrowed not merely the plot and the machinery down to the most trivial incidents, but in some instances the language, of his ‹Werner.› She also wrote two dramas, the ‹New Peerage› and the ‹Three Strangers.›

Lee, Henry, American soldier: b. Leesylvania, Westmoreland County, Va., 29 Jan. 1756; d. Cumberland Island, Ga., 25 March 1818. He was graduated from the College of New Jersey in 1774; in 1775 became a captain in Col. Theodoric Bland's legion of Virginia cavalry; and in September 1777 joined Washington's army in Pennsylvania. Promoted major for services in battle (January 1778), he was given command of a partisan corps consisting of two troops of horse, and later increased by a third troop and an infantry company. This corps, which was employed in the annoyance of the British march and camp, was known as «Lee's legion,» and its commander as «Light Horse Harry.» On 19 Aug. 1779 Lee surprised and captured the British post at Paulus Hook (q.v.), N. J. For this achievement, which is regarded as one of the most brilliant exploits of the Revolution, Congress voted him a gold medal. He was promoted lieutenant-colonel, and in the autumn of 1780 was sent to South Carolina to join Greene's army. He covered the American retreat through North Carolina (February 1781), and was involved in some smart skirmishes with Tarleton's dragoons. After Greene had crossed into Virginia, Lee remained in North Carolina to harass the enemy, and, although he could not surprise Tarleton, did defeat 400 loyalists under Col. Pyle. He outfought Tarleton at Guilford Court House (15 March 1781), and with Marion, by cutting Rawdon's line of communication, compelled that officer to abandon Camden (10 May 1781). He took Augusta, Ga. (5 June 1781), and having rejoined Greene, fought with distinction at Eutaw Springs (8 Sept. 1781), and captured some of Rawdon's rear-guard in the British retreat. After having been present at Yorktown, he shortly resigned his commission. In 1785–8 he was a Virginia delegate to the Continental Congress; in 1788 was a member of the Virginia convention for the ratification of the Federal constitution; in 1789–91 sat in the general assembly of the State; and in 1792–5 was governor. In 1794 he was appointed by Washington to command the 15,000 troops sent to suppress the «Whiskey Insurrection» (q.v.) in western Pennsylvania. After service as a representative in the Sixth Congress (1799–1801), he withdrew from public life. In his ‹Funeral Oration upon President Washington,› pronounced in 1799 before both houses of Congress, occurs the since famous phrase, «First in war, first in peace, first in the hearts of his fellow-citizens.» He wrote ‹Memoirs of the War in the Southern Department of the United States› (1812), published in revision with a memoir by his son R. E. Lee (q.v.) in 1869.

Lee, Henry Washington, American Protestant Episcopal bishop: b. Hamden, Conn., 26 July 1815; d. Davenport, Iowa, 26 Sept. 1874. He was graduated from Trinity College, Hartford, in 1835; studied theology, and received deacon's orders in 1838. In 1840–8 he was rector at Springfield, Mass., and in the latter year took charge of St. Luke's Church in Rochester, N. Y. In 1854 he was made bishop of Iowa, holding the position till his death; he was one of the founders of Griswold College at Davenport, and was instrumental in obtaining an endowment for his diocese and the erection of the cathedral. He published ‹Manual of Family Prayers,› and a number of sermons and addresses; also ‹Prayers for Children› and other books for young people.

Lee, James Wideman, American Methodist clergyman: b. Rockbridge, Ga., 28 Nov. 1849. He was graduated from Emory College, Ga., in 1875; in 1876 was ordained to the ministry of the Methodist Episcopal Church South, and held Georgia pastorates in Carrollton, Dalton, Rome, and Atlanta. In 1893 he went to St. Louis as pastor of St. John's Church; was presiding elder in St. Louis from 1897 to 1901, when he returned to his pastorate at St. John's. In 1894 he was the head of an expedition to Palestine to secure material for the ‹Earthly Footsteps of Christ and His Apostles,› which he published in 1895 (with J. H. Vincent, q.v.). He has also written: ‹The Making of a Man› (1892), translated into Japanese and Chinese; ‹Henry W. Grady, Editor, Orator and Man› (1896); ‹History of Methodism› (1900); and has edited and illustrated the ‹Self Interpreting Bible.›

Lee, Jennette Barbour Perry, American novelist: b. Bristol, Conn., 10 Nov. 1860. She was graduated from Smith College, Mass., in 1886, was professor of English in the College for Women at Western Reserve University 1893–6, and in the year last named was married to Rev. G. S. Lee (q.v.). She has published: ‹Kate Wetherell› (1900); ‹A Pillar of Salt› (1901); ‹The Son of a Fiddler› (1902).

Lee, Jesse, American Methodist clergyman: b. Prince Edward County, Virginia, 1758; d. September 1816. He was admitted to the Conference as a preacher among the Methodists in 1783, and was chosen as a friend and traveling companion by Francis Asbury. His writings have been the basis of much of the history of early Methodism in America. In 1789 he traveled over New England and preached Methodism from Connecticut to Maine. He formed the first Methodist congregation in New England at Stratfield, Conn., 26 Sept. 1787. In 1792 he preached in Massachusetts, and gathered the first class at Boston 13 July 1792. He was chaplain to Congress during six successive terms. He is known in New England as "The Apostle of Methodism." He wrote 'A History of Methodism in America' (1807). Consult: Lee, 'Life and Times of Jesse Lee' (1848).

Lee, John Doyle. See MOUNTAIN MEADOW MASSACRE.

Lee, Luther, American Methodist clergyman: b. Schoharie, N. Y., 30 Nov. 1800; d. Flint, Mich., 13 Dec. 1889. He entered the Genesee Conference in 1827, became an itinerant preacher and a temperance and anti-slavery lecturer, and was several times mobbed on account of his abolitionist sentiments. From 1843 to 1867 he was a member of the Wesleyan body, having as a Wesleyan clergyman been president in 1853 of Michigan Union College at Leoni, and pastor of churches at Syracuse and elsewhere, but in 1867 returned to the Methodist Episcopal denomination. He was the author of 'Universalism Examined and Exposed' (1836); 'The Immortality of the Soul' (1850); 'Slavery Examined in the Light of the Bible' (1855); 'Elements of Theology' (1856); etc.

Lee, Margaret, American novelist: b. New York 27 Nov. 1841. Among her numerous fictions may be cited 'Lorimer and Wife' (1881); 'Divorce' (1882); 'One Touch of Nature' (1892).

Lee, Mary Catherine Jenkins, American novelist: b. New Bedford, Mass. She has published: 'A Quaker Girl of Nantucket' (1889); 'In the Cheering Up Business' (1891); 'A Soulless Singer' (1895).

Lee, Nathaniel, English dramatic poet: b. Hatfield about 1653; d. London 1692. He was educated at Cambridge, turned his attention to the drama, and in 1675 produced his tragedy of 'Nero,' and from that time to 1681 produced a tragedy yearly. From 1684 to 1688 he was confined in Bethlehem Hospital on account of insanity, and after his discharge wrote two more tragedies. He is the author of 11 plays, all of which were acted with applause; but his natural fire and pathos were buried in a torrent of words, and clouded by a tendency to turgid and bombastic eloquence. In his play, 'The Rival Queens' (1677), occurs the oft-quoted line:

When Greeks joined Greeks then was the tug of war.

Lee, Richard Henry, American patriot: b. Stratford, Westmoreland County, Va., 20 Jan. 1732; d. Chantilly, Va., 19 June 1794. He was educated in England, but returned in 1752 to Virginia, where he soon became prominent in public affairs, and was elected to the house of burgesses. In 1773 he became a member of the committee of correspondence to communicate with the other colonies, and in 1774 was a delegate from Virginia to the first Continental Congress. There he attracted attention by his eloquence, and drafted the petition to the king. In the second Congress he prepared the address to the people of Great Britain. Both of these documents are remarkable state papers. On 7 June 1776 he moved "that these united colonies are and of right ought to be free and independent states; that they are absolved from all allegiance to the British crown; and that all connection between them and the states of Great Britain is and ought to be totally dissolved." He was in the Virginia legislature in 1780–4; was elected president of Congress in 1784, in 1786 was again a member of the State legislature, and in 1787 also sat in Congress. Upon the adoption of the Federal Constitution, to which he was opposed, he was elected one of the first two senators from Virginia, and there remained, at first as an anti-Federalist, until his resignation in 1792. He was one of the notable orators of his time. Consult: R. H. Lee (his grandson), 'Life and Correspondence of R. H. Lee' (1825).

Lee, Robert Edward, American soldier: b. Stratford, Westmoreland County, Va., 19 Jan. 1807; d. Lexington, Va., 12 Oct. 1870. His father, Gen. Henry Lee (q.v.), popularly known in the War for Independence as "Light-Horse Harry," left his home and country, when Robert was only 6 years of age, for a sojourn in the West Indies, on account of his health. After being away nearly five years, he returned, but the march of the fatal disease which had attacked him could not be resisted. When off the coast of Georgia, at his request he was put ashore on Cumberland Island and carried to the home of Mrs. Shaw, a daughter of Nathaniel Greene, his old commander, where he died. Robert never saw his father after he left his home and was only 11 years old when he died.

Observant, respectful and dignified, the youth was reaching out for manhood over a route that might be used as a model for those who followed him. He obtained his early education in good private schools in Alexandria, Va., and being sedate and studious stood high in the estimation of his teachers and was beloved by all his comrades. At 18, the inherited instincts of his nature became aroused and he resolved to be a soldier. A cadetship at the United States Military Academy at West Point was obtained for him by Gen. Andrew Jackson, and the natural bent of his mind was confirmed. To all duties he gave his closest attention; to all studies his profound thought; to all military drills, evolutions, tactics, strategy and commands, his perfect obedience. He became an officer in the Cadet Battalion at the proper time and was the adjutant of his class, when a first classman — a post of honor in a cadet's aspiration. After many who first entered the academy in his class had fallen by the wayside in the various examinations, semi-annually held, 46 still remained to receive graduating diplomas. Lee graduated second in his class without having received a single demerit during his whole course of study, because he conscientiously discharged all the duties confided to him; convinced then as he said many years afterward, that "duty was the most sublime word in the English language." He was at once commissioned brevet 2d lieutenant and was assigned to the engineers corps, the "Scientific Corps of the Army" as it was called, and won high reputation in that important branch of the service. On 30 June 1831, two years after leaving West Point, he married Mary Custis, daughter of G. W. P. Custis, who was a grandson of Mrs. George Washington, and thus became proprietor of Arlington on the Potomoc and other estates. Five years after, in 1836, he was promoted to 1st lieutenant and two years later, in 1838, was made captain. During the Mexican war, the opportunity was presented for the first time to show the military metal of the engineer officer, and Gen. Scott, when placed in command of the army to invade Mexico, constantly consulted with Lee, acted largely on his advice and mentioned him repeatedly in his official reports. In that campaign he made a reputation superior to all officers of his grade. He surpassed them in personal daring, scientific counsels — a *coup d'œil* of the battle-field — and for felicitous execution of orders. He was brevetted major at Cerro Gordo, 18 April 1847, lieutenant-colonel at Contreras and Churubusco, and colonel at Chapultepec. His veteran commander, Winfield Scott, said that his «success was largely due to the skill, valor and undaunted courage of Robert E. Lee,» and that «if opportunity offered, he would show himself the foremost captain of his time.»

At the close of the Mexican war his services as an engineer were again demanded by the government and he was made a member of the board of engineers of the United States Army, being employed in the construction of forts for harbor defense; 1 Sept. 1852 he was made superintendent of the academy at West Point — a complimentary detail — and the school derived such benefit from his great ability and sagacious administration of its affairs that there was a general desire to retain him. Three years afterward, in 1855, the boundary lines of the United States having been extended, making it difficult to give protection to American citizens on its frontier, two new cavalry regiments were added to the three then in service and Lee was offered the position of lieutenant-colonel of the 2nd cavalry by Jefferson Davis, the secretary of war, and accepted, serving with his regiment at various posts in western Texas and giving very efficient service in protecting the settlers from the depredations of the Comanches and other Indians. Col. Lee was at Arlington on a furlough to settle up the estate of his wife's father, Mr. Custis, when on 16 Oct. 1859, John Brown with a small force marched into Harper's Ferry to liberate slaves and inaugurate war between the whites and the blacks. No one then knew the limit of the aggressive action of Brown, but the War Department knew that an officer of balanced judgment, combined with experience and courage, should represent the government at that point. Lee was selected and he promptly responded to the summons to go to Harper's Ferry. His judicious plans to capture Brown were successful, and his trial, conviction and execution followed. Lee then returned to Washington and in a short time was again on his way to resume his duties in Texas.

Absorbed by the conscientious discharge of his duties, Lee had not noticed the increasing chasm between the northern and southern sections of the Republic, or that the citizens thereof were ranging themselves upon their respective sides. Hoping to the last that the diverging views could be brought together, Lee was at last face to face with the «irrepressible conflict» and could only consider on what side his sword, already famous, should be drawn. «We are between a state of anarchy and civil war. May God avert us from both. I must be patient and wait the end, for I can do nothing to hasten or retard it,» he said. «I cannot anticipate a greater calamity for the country than the dissolution of the Union,» he wrote in 1861. The pleading of the veteran Scott, who said that Lee's services to the Union would be worth to it 50,000 men, and the long friendship of his comrades must be resisted; but beyond all, the command of the army of the United States, offered him by President Lincoln, had to be respectfully set aside. His reply to Mr. Francis Preston Blair, who had been designated to approach him on the subject, is the key to his action. «I declined the offer he made to me to take command of the army that was to be brought into the field, stating as candidly as I could, that though opposed to secession and deprecating war, I could take no part in an invasion of the Southern States.» His inability to accept forced a prompt resignation, which read:

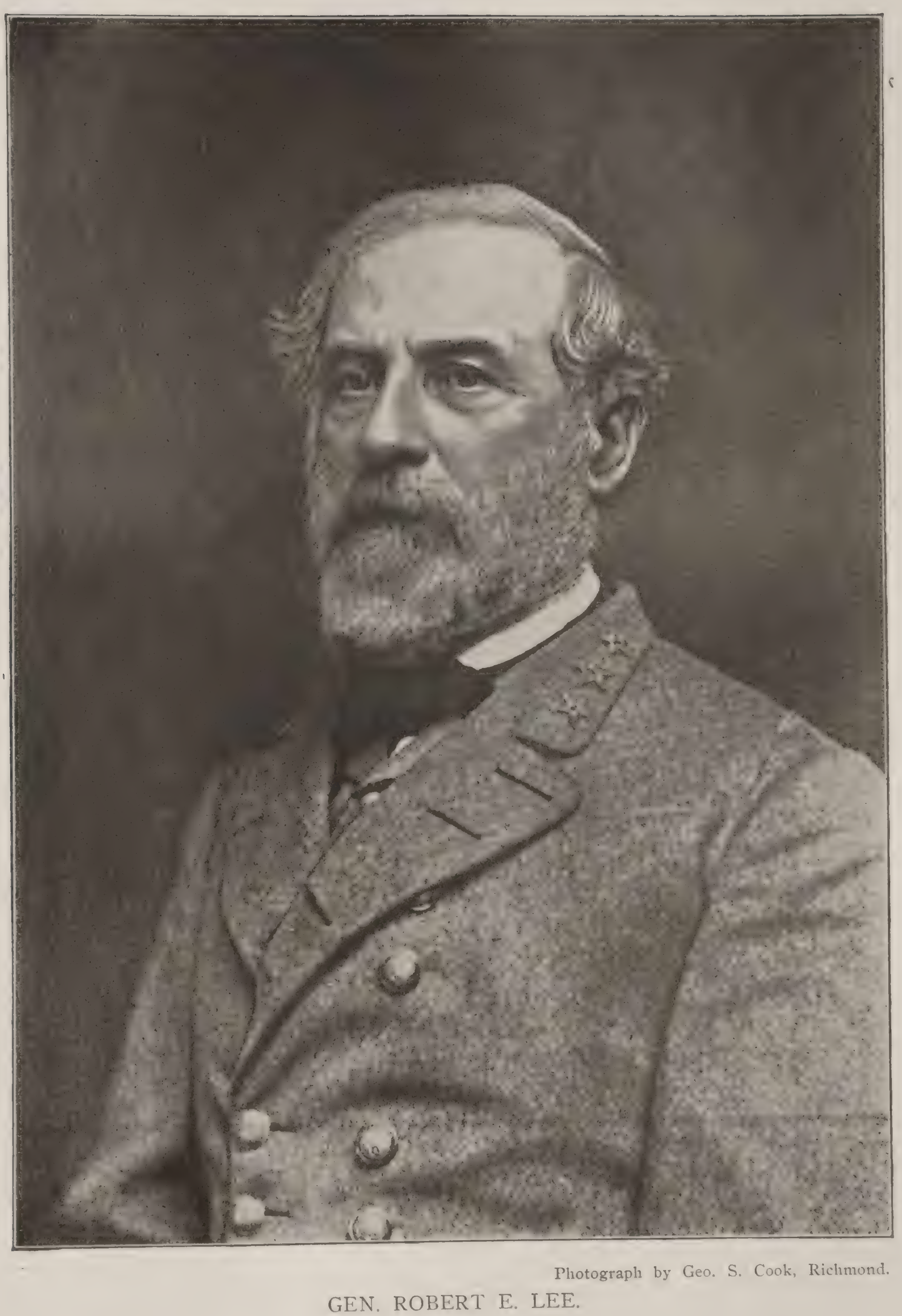
Arlington, Washington City, P. O.,
April 20, 1861.

Honorable Simon Cameron,
Secretary of War.

Sir: — I have the honor to tender the resignation of my commission as colonel of the first regiment of cavalry.

Very respectfully your obedient servant,
R. E. Lee,
Colonel First Cavalry.

Having once decided the question he never faltered in his allegiance or doubted the correctness of his decision. He said to Gen. Wade Hampton in 1869, as they were discussing the war and its results: «I could have taken no other course without dishonor, and if it were all to be gone over again, I should act in precisely the same manner.» Going to Richmond at the request of the Virginia Convention, he was made major-general and commander-in-chief of the Virginia forces, and when Virginia joined the Confederacy he was commissioned in the Confederate service and made one of the five full generals. In July 1861 he took command in Virginia, but the campaign failed through the fault of others and he was severely criticised by the newspapers. He was then put in charge of the sea-coast defenses in South Carolina and Georgia and here his knowledge and practical experience in engineering came into play, for there is little doubt but that the heroic defense which that department afterward made was only possible through his skill and energy in placing it in proper condition. In February 1862 he was made military adviser to President Davis and occupied that position till the wounding of Gen. Johnston at Seven Pines. He quickly demonstrated his power of organization. Everything had to be created — armies organized and the various necessary departments constructed, and on 3 June he was placed in command of the Army of Northern Virginia. He at once determined to drive McClellan from the siege of Richmond. He summoned «Stonewall» Jackson to his aid, collected all the reinforcements he could and on 26 June opened the «Seven Days' Battle,» attacking McClellan's lines on the Chickahominy. Several victories were won and while repulsed in a bloody bat-



Photograph by Geo. S. Cook, Richmond.

GEN. ROBERT E. LEE.

tle at Malvern Hill, where McClellan had made a last stand to save his army, Lee had prepared for a combined attack the next morning, but found that McClellan had retreated during the night under cover of his gunboats at Harrison's Landing, 30 miles below Richmond. He captured 52 pieces of artillery and quantities of stores of all kinds and left McClellan's army in a demoralized condition, and though he had not annihilated it, as he had designed and might have so done but for the failure of some of his subordinates, he had driven it away from Richmond, raised the siege and by a series of maneuvers brought it to pass that McClellan and Gen. Pope, who had taken command of the Army of Virginia, united forces near Washington. Here Lee completely routed Pope, the campaign culminating in the battles on the old field of Manasses on 28, 29 and 30 August and finally drove him to the fortifications in front of Washington (see BULL RUN, SECOND BATTLE OF). Then followed the Maryland campaign, in which Jackson captured Harper's Ferry with 11,000 prisoners and large quantities of arms and stores. At Sharpsburg (Antietam), 17 Sept. 1862, Lee repulsed every attack made by McClellan's well equipped troops and advanced his own lines, only retreating across the Potomoc when he learned that the Union Army had received large reinforcements (see ANTIETAM, BATTLE OF). On 7 November Gen. Burnside superseded McClellan in command of the Union forces and crossing the Rappahannock at Fredericksburg, tried to take the Confederate Army by surprise. Lee, however, had divined his purpose and, occupying a naturally strong position, not only repulsed his attack, but administered a crushing defeat, compelling him to recross the river, where his strong works and heavy artillery rendered him safe from a counter attack by Lee. (See FREDERICKSBURG, BATTLE OF). In February 1863 Hooker succeeded Burnside and was defeated by Lee at Chancellorsville (q.v.). In the Gettysburg campaign of 1863, Winchester was captured by Ewell and at Gettysburg, 1–3 July, Lee faced Gen. Meade, gained a decided victory the first day, gained some ground the second day, but was repulsed with heavy loss on the third day. He remained in line of battle all day the 4th of July and for 9 days at Hagerstown, but Meade did not attack him, and he later retreated into Virginia. In 1864 Gen. Grant was made commander-in-chief of the Union Army, «which was to crush Lee and capture Richmond.» He had 275,000 well equipped and provisioned troops, while Lee had not more than 75,000 men, badly armed, wretchedly equipped and poorly supplied with rations, clothing, ordnance stores and transportation. And yet he outgeneraled and defeated Grant in every battle in that campaign from the Wilderness to Petersburg, from the Rapidan to the lines in front of Richmond, compelling him to camp before Petersburg and remain idle for several months. These great contests against enormous odds are a monument of the strategic and tactical ability of Lee as well as to the courage of his troops. His defense of Richmond and Petersburg alone was a marvelous example of defensive warfare. Now the supply of money was exhausted and the question of feeding the soldiers was daily becoming more troublesome. A discontinuance in the supply of arms and ammunition was imminent. His gallant army had been exposed in a violent campaign to overwhelming numbers and he no longer had «Stonewall» Jackson and J. E. B. Stuart by his side. During the remainder of the year Lee had to guard 40 miles of breastwork with a bare skirmish line and yet meet every move of the enemy, to supply his army, to recruit his thinned ranks from a country already stripped of its men, and to witness the starving out of his army — yet he met and overcame all these obstacles with a resourcefulness which was born of the highest order of military genius. Having been made commander-in-chief of all the Confederate armies in 1865, he determined to unite with Johnston and attack Sherman before Grant could reinforce him, but, on account of the poor condition of the roads and the lack of transportation facilities, Grant forestalled him and attacked his forces under Pickett on his right on 1 and 2 April, at Five Forks, inflicting a crushing defeat and causing him to retreat. Upon reaching Amelia Court House he found that his provisions had been sent in error to the capital, and so being unable to retreat or give battle with any degree of success, after several bloody engagements had been fought, which reduced his infantry to about 8,000 muskets, on 9 April, at Appomattox Court House, the Army of Northern Virginia surrendered. It is a curious fact, that though Lee won all of the battles he fought, with the exception of Sharpsburg and Gettysburg, which were by no means decisive victories for his opponents, yet he lost the cause for which he was fighting. When the time arrived for him to yield to the inevitable and surrender his splendid army, with whose courage and heroism the whole world was familiar, he was greater if possible than ever before. «When you return to your homes,» he said to his troops at Appomattox, «you will take with you the satisfaction that proceeds from the consciousness of duty faithfully performed, and I earnestly pray that our merciful God extend to you his blessing and protection.»

Lee was now a private citizen for the first time in 40 years. He refused lucrative offers from all sides and sections. The legislature of Virginia, desiring to testify its appreciation of his services and character, directed the treasurer of the State to subscribe 100 shares of stock at a par value of $200 in a company organized for the improvement of the navigation of the James River and vest the same in Gen. Lee. He would receive the gift only on condition that he would be permitted to use it for the «education of the poor, particularly the children of such as had fallen in defense of the country,» and he gave his stock to Liberty Hall Academy, in Rockbridge County, Virginia, afterward known as Washington College and now called Washington and Lee University (q.v.). Lee was offered the presidency of the college and at first declined, saying he was «an object of censure to a portion of the country and might draw upon the college a feeling of hostility.» «I think it is the duty of every citizen,» he further added, «in the present condition of the country to do all in his power to aid in the restoration of peace and harmony and in no way to oppose the policy of the State or general government directed to that object.» He finally accepted, however, saying that after what he had written if the board still thought his services would be advantageous to the college and country he would yield to their judgment, and in October 1865 was installed. He continued to refuse highly remunerative positions because he preferred to continue the educational work he had undertaken. At last, however, the labor and exposure of his campaigns and responsibilities attendant to his position as president of the college brought bodily distress. In the spring of 1870 he was persuaded to go South for his health, but the steady progress of the disease could not be checked and his life work rapidly drew to a close. On the evening of 28 Sept. 1870 he was stricken with apoplexy from which he never recovered; he lingered on for a fortnight, breathing his last on the morning of 12 Oct. 1870.

Gen. Lee had for 63 years lived and moved among a people who will cherish his memory through succeeding generations, as long as the sun, moon and stars endure. He was a most remarkable man whether soldier or citizen. From his earliest infancy to the hour of his death he was beloved by all classes — by all people, and the people of his native State of Virginia have recently selected him as one of her two representatives whose statues are to be placed in the rotunda of the capitol at Washington. The great orator and statesman, Benjamin Hill, of Georgia, summed up Lee's character in splendid shape when he said: «He was a foe without hate, a friend without treachery, a soldier without cruelty, and a victim without murmuring. He was a public officer without vices, a private citizen without wrong, a neighbor without reproach, a Christian without hypocrisy, and a man without guilt. He was Cæsar without his ambition, Frederick without his tyranny, Napoleon without his selfishness, and Washington without his reward. He was as obedient to authority as a servant and royal in authority as a king. He was as gentle as a woman in life, pure and modest as a virgin in thought, watchful as a Roman Vestal, submissive to law as Socrates, and grand in battle as Achilles.»

Fitzhugh Lee.

Lee, Sidney, English author and literary editor: b. London 5 Dec. 1859. He was educated at Balliol College, Oxford, was assistant editor 'Dictionary of National Biography,' Vols. I.–II. (1883–90), joint-editor with Leslie Stephen (q.v.) Vols. XXII.–XXVI. (1890–1), and sole editor Vols. XXVII.–LXIII. (1891–1901), and of its Supplement, Vols. LXIV.–LXVI. (1902). To this work he contributed 820 articles. He is the author of 'A Life of William Shakespeare' (1898); 'A Life of Queen Victoria' (1902). In 1903 he delivered a course of Lowell Institute lectures in Boston, Mass., repeating them in other American cities also. These lectures, revised and somewhat extended, were collected in book form entitled 'Great Englishmen of the 16th Century' (1904).

Lee, Sophia, English author: b. London May 1750; d. Clifton, near Bristol, 13 March 1824. She was the eldest daughter of John Lee, an actor. She was the author of a comedy entitled 'The Chapter of Accidents,' brought out at Haymarket Theatre in 1780 with great success. The next year her father died, and she removed with her sisters to Bath, where she devoted the profits of her play to the establishment of a young ladies' seminary over which she and her sister Harriett (q.v.) long presided. She wrote two or three novels and contributed 'The Young Lady's Tale,' and 'The Clergyman's Tale' to the 'Canterbury Tales,' published by herself and her sister.

Lee, Stephen Dill, American soldier: b. Charleston, S. C., 22 Sept. 1833. He was graduated from West Point in 1854; served on the frontiers of Texas, Kansas, and Nebraska; was promoted to the rank of 1st lieutenant in 1856, and served in Florida in 1857. On the secession of South Carolina, he resigned from the United States army, and was made captain of South Carolina volunteers, and gradually rose from this rank to that of lieutenant-general. He was at Seven Pines, at the Seven Days' Battles around Richmond, in the campaign against Pope, and at the second battle of Bull Run. He was placed in command of the forces at Vicksburg, but was succeeded by Gen. Pemberton before the capture of the city by the Federals. After the war he settled at Columbus, Miss., and soon took a prominent part in the affairs of the State. He was elected to the State Senate in 1870, and was a prominent member of the constitutional convention in 1890. In 1880 he was made president of the State Agricultural and Mechanical College at Starkeville, holding this position till 1899, when he became commissioner of the Vicksburg National Park.

Lee, Vernon. See Paget, Violet.

Lee, William, American diplomatic representative: b. Stratford, Va., 1737; d. near Williamsburg, Va., 27 June 1795. He was a brother of Arthur Lee (q.v.), Francis Lightfoot Lee (q.v.), and Richard Henry Lee (q.v.). Prior to the Revolution he was active as a merchant in London; and there he was for a time agent of Virginia colony. In 1777 he became associated with Thomas Morris (q.v.) as superintendent of the commercial affairs of the United States at Nantes, France, and in 1778 was appointed commissioner to Prussia and Austria, but accomplished nothing. A treaty drawn up by him with Neufville, a merchant of Amsterdam, in the year 1778, and approved by the burgomaster of that city, became the avowed cause of the war declared by Great Britain against Holland. Regarding him, consult Wharton, 'Revolutionary Diplomatic Correspondence of the United States' (1889).

Lee Family, The, a family of Virginia, some of whose members have been conspicuous in public affairs at almost every stage of American history. Among all the eminent names of the South there is none that outranks this in the number or prominence of those who represent it in the records of the nation. Sprung from a cavalier line of old and distinguished English stock, the Virginia Lees have continued in the New World that order of Old-World aristocracy — an aristocracy of character and culture, of honor and of public service — which has legitimated itself under the broadening conditions of democratic development, and to which, as well as to the plainer but not less masterful middle-class English element that elsewhere entered into the making of the republic, democracy in the American Commonwealth owes its most essential traits. That Richard Lee who, during the reign of Charles I., brought his large household to Virginia, and himself became the first of this illustrious line in America, brought also to the Northern Neck in Northumberland County, where he settled, an English yeoman's sturdiness raised and enlightened and nowise debilitated by the refinements of gentility. A stout partisan of the Stuart cause, he supported Sir William Berkeley (q.v.) in his resistance to Cromwell's policy, and through this attitude the colonists, threatened by the Protector's fleet, forced its commander into a treaty styling the colony an independent dominion. Lee is said to have joined successfully with Berkeley in having Charles II. proclaimed king in Virginia nearly two years earlier than his final coronation in London. Richard Lee's son Richard and the second Richard's third son, Thomas, were leaders in the colony, Thomas dying just as his governor's commission was made out. By his wife, Hannah Ludwell, he had five sons who became distinguished for public and patriotic acts. Of these, Richard Henry Lee (q.v.), by reason of the diversity and singular efficiency of his services, rendered for many years before the Revolution, during that struggle, and for ten years afterward, to Virginia and all the colonies and later States, stands among the pre-eminent figures of his day. The steps preliminary to the Declaration of Independence can never be recalled without remembrance of him as mover of the resolutions which led to its adoption in the Continental Congress. The address to the people of Great Britain, which he wrote, is perhaps surpassed in weight and loftiness of spirit by no American state paper. His brother, Francis Lightfoot Lee (q.v.) not only was one of the signers of the Declaration, but also made liberal sacrifices for the patriot cause, all the more to be remembered to his honor when it is considered that by temper and education he was fitted rather for the occupations of a student, and for social elegancies, than for the turmoil of politics and the tragedies of war. Arthur Lee (q.v.), youngest son of Thomas, was educated in two professions, medicine and law, and distinguished himself by public services both at home and abroad. As representative of the colonies in Europe during the Revolution, he displayed abilities as a man of learning, versatility, and political sagacity, which he applied in ways highly useful to his country in critical times. William Lee (q.v.), another of the sons of Thomas, also represented the United States in Europe at that period, with less distinction than others of this family attained, but not without some exhibition of their unusual qualities. The fame of Henry Lee (q.v.), the «Light Horse Harry» of the Revolution, unique in several respects, is enduring by reason of his political and military services, while his name is endeared to the American people for his noble eulogy of Washington. As first cousin of Richard Henry and of Arthur Lee, his rights are as valid as theirs in the name to which he adds a lustre in return for that it sheds on him. His son Robert Edward Lee (q.v.) not only stands as a connector of the two great epochs of his country's history — the Revolutionary period and that of the Civil War — but in his life and deeds, too recent to call for special reference here, he worthily perpetuated the fame of the great family whose name he bore, whose blood, whose spirit, whose traditions he inherited. His nephew, Fitzhugh Lee (q.v.), whose name may fittingly close this sketch, still represents in vigorous manhood the typical family stock; and to the varied honors of his predecessors he not only adds his own well-won fame, but joins to that a signal distinction, which he shares with fellow soldiers of the South, as one of those Americans who, in civil and in military life, have proved themselves efficient factors in the final restoration of the Union.

JOHN H. CLIFFORD,
Editorial Staff, ‹Encyclopedia Americana.›

Lee-Hamilton, Eugene, English poet: b. London January 1845. He was educated at Oxford, and entered the diplomatic service in 1869, resigning in 1875. He was for many years an invalid, obliged to maintain a recumbent posture continually. Among his published works are: ‹Poems and Transcripts› (1878); ‹The New Medusa› (1882); ‹Imaginary Sonnets› (1888); ‹The Fountains of Youth› (1891). He is a half-brother of Violet Paget (q.v.), «Vernon Lee,» and married in 1898 the novelist Annie E. Holdsworth (q.v.),

Lee, Mass., town, in Berkshire County; on the Housatonic River, and on the New York, N. H. & H. railroad; about 33 miles northwest of Holyoke, and 13 miles south of Pittsfield. The town includes the villages of South and East Lee. Lee is situated in an agricultural region; but the country is traversed by the southern spurs of the Green Mountains, known as the «Berkshire Hills» in this region. The delightful climate and beautiful scenery make Lee and vicinity favorite summer resorts. The town was settled in 1760 and incorporated in 1777. A fine white marble found in the town is much used for building purposes. The principal manufactures are paper and dairy products. The government of the town is administered by a town meeting or by officials elected at the annual town meeting. Pop. (1900) 3,596. Consult: Hyde and Hyde, ‹Centennial History of Lee.›

Lee-board. See CENTRE-BOARD.

Lee-Metford Rifle, a military weapon manufactured for the use of the United States navy. It is a gun discharging a steel-jacketed bullet with smokeless powder. The velocity of the bullet is 2,460 feet per second, and the penetration, at the regulation range of 15 feet, is 62 pine boards each seven eighths of an inch in thickness. The pressure on the gun when fired is 60,000 pounds to the square inch. The rifle will kill at over a mile.

Leech, John, English illustrator: b. London 29 Aug. 1817; d. there 29 Oct. 1864. He studied at the Charterhouse School nine years, where Thackeray was his school-fellow; began the study of medicine at St. Bartholomew's Hospital; but soon he gave up his medical studies, and began making drawings. The first of his important works were the illustrations to the ‹Ingoldsby Legends.› He joined the staff of ‹Punch› in 1841. In that field he worked with pre-eminent success, supplying weekly pictures of all sections of English life — scenes of field and forest, of the busy streets, of the rustic cottage and ale-house, and the elegant city dwelling and club; the huntsman, the swell, the injured paterfamilias; the fast young lady and her grave portly mother; the housemaid and her follower, etc., all thrown off with remarkable precision, and showing a steady growth in artistic power. He was buried beside Thackeray in Kensal Green Cemetery. His designs for 'Punch' have nearly all been published separately as 'Pictures of Life and Character' and as 'Pencillings from Punch.' He also executed the Illustrations for 'The Comic History of England,' 'The Comic History of Rome,' and various other books. Consult: Brown, 'John Leech' (1882); Everitt, 'English Caricaturists' (1886); 'Life,' by Frith (1891).

Leech Lake, a body of water in Cass County, Minn.; the largest of the lakes which constitute the head-waters of the Mississippi River. It is about 1,300 feet above the level of the sea; 24 miles long and 15 miles wide. The short stream, which is the direct outlet of the lake and flows into the Mississippi, is called Leech Lake River. On the south and east shores is the Leech Lake Indian Reservation. The country round is well wooded and fish and game are plentiful.

Leeches, highly specialized *Annelida* constituting the order *Hirudinea* or *Discophora.* They are distinguished from most other annelids by the nearly complete obliteration of the cœlom or body-cavity, owing to the development of parenchymatous connective tissue, muscles, etc., the presence of an anterior or oral sucker and a posterior or subanal sucker, and by the absence of setæ, except in *Acanthobdella.* In all leeches which have been carefully studied there are exactly 34 segments or somites, each represented by a ganglion in the central nervous system, and being of smaller size and simpler structure toward the ends than in the middle of the body, where each is divided into from 2 to 12 rings, one of which, sometimes regarded as the first sometimes as the middle ring, bears metameric, eye-like sense organs. Most leeches are temporary parasites, a few nearly permanent parasites; the rest are predatory hunters or scavengers, or they may change from one mode of life to another. They are marine, fresh-water, or terrestrial. The first class is most abundant, both in individuals and species, in cold seas, the second is both temperate and tropical, and the third is confined to warm regions. Four families are distinguished: the *Ichthyobdellidæ* or fish-leeches, the *Glossiphonidæ* or tortoise and snail leeches, the *Herpobdellidæ,* or worm-leeches, and the *Hirudinidæ,* or jawed leeches. The first two families possess a long protrusible proboscis and are much more closely allied than the *Herpobdellidæ* and *Hirudinidæ,* which have no proboscis. The *Ichthyobdellidæ* are chiefly parasitic on fishes and, except a few fresh-water forms, are marine. Some of them, as Branchellion, are branchiate. The *Glossiphonidæ* are richly represented in the fresh-water lakes and streams of North America by a great variety of species, most of which attach themselves to tortoises, whose blood they suck, or else they devour water-snails and small worms. A few are parasitic on fishes. In all of them the oral sucker is small and the eyes in one to four pairs placed near the median line. The *Herpobdellidæ* contains slender, six or eight-eyed, predaceous leeches, which are extremely abundant in fresh-water ponds and feed on small leeches and worms. They have no toothed jaws and the digestive tract is simple and straight. The *Hirudinidæ* have 10 eyes, generally three-toothed jaws and a spacious sacculated digestive tract. Here belong the true blood-sucking leeches, the medicinal leech of Europe, and our native *Macrobdella decora,* also formerly largely employed in this country for blood-letting. The only terrestrial leech of the United States belongs to this family. It inhabits garden soil, feeds on earthworms, and is one of the largest leeches known. Consult: Leuckart and Brandes, 'Parasiten des Menschen'; Whitman, 'Quarterly Journal Microscopical Science' (1886); and Moore, 'Bulletin Illinois State Laboratory of Natural History' (1901).

Leeds, England, a municipal, parliamentary, and county borough and large manufacturing town, in the West Riding of Yorkshire, on the river Aire, 185½ miles north of London. The river, which in passing through the city is spanned by eight bridges, is navigable from its mouth in the Humber, and connects with the Leeds and Liverpool Canal. The town extends for about seven and one half miles from east to west, and about seven from north to south. From the extent of the manufactures the town is naturally smoky, and on the whole its appearance is not prepossessing, although much modern improvement has been effected. The most conspicuous building is the Roman-Corinthian town-hall, considered one of the finest municipal buildings in the kingdom. The greater portion of one wing is allotted to the Free Public Library, to which has been added the Fine Art Gallery. Leeds Infirmary, in the Gothic style, can accommodate 300 patients. Other notable buildings are the new general post-office, in the Renaissance style; the school-board offices, the Royal Exchange, the stock exchange, the Leeds Institute of Science, Art, and Literature; the Yorkshire College, the Grand Theatre, the new Empire Theatre, the grammar-school, the Coliseum (a public hall), etc. Among the places of worship are the parish church of St. Peter's; St. George's, with a tower and spire 160 feet high; Holy Trinity, a fine building in the Early English style; some of the Dissenting places of worship, and the Roman Catholic Church of St. Ann's. The chief educational institution is the Yorkshire College, a branch of the Victoria University (whose headquarters are in Manchester, having taken its origin in Owens College). It comprises two chief departments, a department of science, technology, and arts, including classics, modern languages, history, philosophy, mathematics, physics, chemistry, engineering, etc., and a well-equipped medical department. Other institutions are the Leeds Medical School (1894), Young Men's Christian Institution, a large training college for students for the Wesleyan ministry, and a literary and philosophical society. There is an admirable central library with several branches, the number of volumes being over 200,000. The charitable institutions of Leeds are numerous. Parks have been laid out by the corporation and recreation grounds, the chief being Roundhay Park (two miles from Leeds), 300 acres in extent and containing a lake of 33 acres. The fine ruins of

Kirkstall Abbey (3 miles from Leeds), with the adjacent grounds, presented to the town by Colonel North in 1889, form an attractive resort. The waterworks supply Leeds with water from the Washburn, a tributary of the Wharfe, the daily available supply being 28,000,000 gallons.

Leeds is and has been for generations the chief seat of the woolen manufacture of Yorkshire and has become the seat of other important industries. Chief of these is the wholesale clothing trade, in which several thousand hands are employed, many being also employed in the steel-works, iron-foundries, rolling-mills, tool and machine factories; in the boot and shoe factories and the leather trade. and in the cloth-cap trade, which is also becoming a great branch of industry. There are also locomotive works, tobacco manufactories, color-printing works, extensive chemical and glass works, important works for the making of drainage pipes, fire-bricks, ornamental terra-cotta and pottery ware, etc. One of the great sources of the wealth of Leeds is its abundant supplies of coal and iron. Nearly 100 collieries are worked in the district. The history of Leeds extends over more than 1,200 years, the town being mentioned under the name of Loid or Loidis by the Venerable Bede as the capital of a small British kingdom about 616. It was made a city in 1893, and its mayor was raised to the dignity of lord-mayor in 1897. The vicinity is crowded with villages, most of the inhabitants of which are employed in manufacturing for the Leeds market. Pop. (1901) 428,953.

Leek, a mild European kind of onion (*Allium porrum*), much cultivated for culinary purposes, being often partially blanched by heaping up the earth about the stem. It is used in soups and otherwise, and is the more tender and succulent the richer the soil. The stem is rather tall, and the flowers are disposed in large compact balls, supported on purple peduncles. The leek is a Welsh national emblem. It was well known to the ancient Egyptians, Greeks and Romans. Several species of the genus grow wild in the United States, furnishing the wild leeks, wild onion, field garlic, etc., of the country folks. The cows eat these plants gratefully in the spring, and their milk and butter is tainted in consequence. Compare GARLIC.

Lee's Mill, Engagement at. Lee's Mill is a point on the Warwick River, in Virginia, near which occurred the first considerable collision of the Peninsula campaign. The Confederate forces under Gen. Magruder occupied the line of the Warwick, and between Lee's Mill and Wynn's Mill Cobb's brigade threw up intrenchments and constructed redoubts for artillery. On 16 April 1862 Gen. W. F. Smith, with his division of Keyes' corps, was ordered by Gen. McClellan to reconnoitre Cobb's position, stop his work and, if deemed judicious, drive Cobb from it. Brooks' Vermont brigade was thrown forward, and after an artillery fire of more than six hours, part of the time from 18 guns, four companies of the 3d Vermont crossed the stream below a dam and seized the rifle-pits of the 15th North Carolina, but were driven back with severe loss. The effort was renewed later in the day, when, under cover of a heavy artillery fire, which was sharply replied to, detachments of the 4th, 5th, and 6th Vermont endeavored to cross the Warwick, but were driven back. The Union loss during the day was 156 killed and wounded, and 9 missing. The Confederate loss did not exceed 75 killed and wounded. The result confirmed McClellan in his conviction that the line of the Warwick could not be carried by direct assault, and he directed all his efforts to the siege of Yorktown (q.v.). Consult: 'Official Records,' Vol. XI.; Webb, 'The Peninsula'; 'McClellan's Own Story'; Allan, 'History of the Army of Northern Virginia.' E. A. CARMAN.

Lee's Surrender. See FARMVILLE.

Leeser, Isaac, American rabbi and journalist: b. Neuenkirchen, Prussia, 12 Dec. 1806; d. Philadelphia 1 Feb. 1868. In his 18th year he removed to Richmond, Va., where he at first engaged in business. In 1829 he became Hazan or minister of Congregation Mikveh Israel of Philadelphia. His first work, 'The Jews and the Mosaic Law,' appeared in 1833, followed in 1837 by his sermons in two volumes. He edited in 1841 'Grace Aguilar's Spirit of Judaism,' and began in 1843 his monthly magazine, 'The Occident,' which he conducted until near the end of its 25th volume. In 1845 he published his Pentateuch in Hebrew and English, and in 1848 his edition of the 'Daily Prayers,' according to the German ritual. Retiring from the ministry in 1850, he issued an English translation of Schwarz's classic 'Geography of Palestine,' and an edition of the Hebrew Bible, with Jaquett. He began now an English translation of the Old Testament, completed in later years. In 1857 he was elected minister of the Beth El Emeth Synagogue, but continued his literary labors, editing 'Dias Letters' (1859); 'The Inquisition and Judaism' (1860); 'Mrs. Hester Rothschild's Meditations and Prayers' (1864); Grace Aguilar's 'Jewish Faith and Spirit of Judaism' (1864). In addition to his work as editor, translator, author and lecturer, he gave the impetus to nearly every Jewish charity in the city, while he suggested institutions that have since been established, so far-sighted was his vision. He was for decades the leader of the conservative party in American Israel and was aggressive and fearless in his opposition to the reform movement, whose progress, however, he could not check.

Leete, William, English colonial governor of Connecticut: b. England 1613; d. 1683. He was destined for the profession of law, and after being called to the bar practised in the Bishop's Court at Cambridge, but attaching himself to the Reformed faith, joined the Puritans who were emigrating in great numbers to America, and reached the western continent in 1637. He made his home in the New Haven Colony in 1639 and became a religious leader in Guilford, which he had helped to found. From 1658 to 1661 he was deputy governor of New Haven. From 1661 to 1662 he was governor, at which latter date the colony was united with Connecticut by royal charter. He was deputy governor of the Colony of Connecticut from 1669 to 1676, when he was appointed governor, a position he held till his death.

Leeuwenhoeck, lā'vĕn-hook, or **Leeuwenhoek, Antonius van,** Dutch naturalist: b. Delft 24 Oct. 1632; d. there 26 Aug. 1723. In early life he was engaged in mercantile pursuits, but applied himself during his spare moments to science, and attained the reputation of making the best microscopes in Europe. By his applications of the microscope, and researches in physiology, he attracted the attention of the Royal Society of London; and the greater part of his writings, containing accounts of his discoveries, were published in the English ‘Philosophical Transactions.’ He anticipated in his physiological discoveries much which has been confirmed in modern times. His assertions with regard to the circulation of the blood, the nature of the brain and nerves, and the structure of the crystalline lens, agree very nearly with the results of modern experiment. His investigation of the spermatic animalcules, which he claimed to have discovered in 1677, excited the curiosity of many naturalists, and they were afterward made the subject of much research and of many books by Buffon and others. Leeuwenhoeck's life was passed in scientific research and in manufacturing optical instruments in his native city. His writings were collected and published in Dutch at Delft and Leyden. They also appeared in Latin (1695).

Leeuwin, lā'vĭn or lē'wĭn, **Cape,** the name of the point of land which is the southwestern extremity of Australia. It was named after the vessel Leeuwin, in which were the Dutch navigators who discovered in 1622 this part of the island. The light from the light-house can be seen 20 miles away. The place is subject to severe storms.

Leeward (lū'ạrd or lē'wạrd) **Islands.** See WEST INDIES.

Le Fanu, lė-fä'nü or lĕf'ạ-nū, **Joseph Sheridan,** Irish journalist and novelist: b. Dublin 28 Aug. 1814; d. there 7 Feb. 1873. Having graduated from Trinity College, Dublin, he joined (1837) the staff of the Dublin University Magazine, at first as contributor, and afterward as editor and proprietor. Among modern Irish novelists he stands next in popularity to Charles Lever. ‘The House by the Churchyard’ appeared in 1863, and was succeeded by ‘Uncle Silas’ (1864), his most powerful work; ‘Guy Deverell’ (1865); ‘The Tenants of Malory’ (1867); ‘The Wyvern Mystery’ (1869); ‘In a Glass Darkly’ (1872); etc.

Lefebvre, Jules, zhül lė-fāvr, French painter: b. Tournan, Seine-et-Marne, 10 March 1836. He was when a boy apprenticed to the trade of his father who was a baker, but his mother took pains to have him sent to Paris to study art, and he became the pupil of Léon Coignet. His ‘Death of Priam,’ exhibited in the Salon (1851) won for him the Grand Prix de Rome, since which he has gained many medals and honors. His ‘Femme Couchée’ in the Salon of 1868, a nude of singular freshness and power, established his reputation as an artist of the first rank, and the votes of the judges were divided equally between this picture and a painting of Corot's for the medal of honor, which was, however, bestowed on Brion. Among his best-known canvases are: ‘Diana Surprised’ (1879), purchased in the United States for $7,000; ‘Lady Godiva,’ the Countess of Coventry, riding naked through the city — a painting also popularized by many reproductions; ‘Psyche’ (1883), now on exhibition as a loan in the Pennsylvania Academy of Fine Arts; Psyche is represented with a star on her forehead, seated on a rock by the sea, and holding in her hands the fate of the world. ‘La Vérité’ in the Salon of 1870 attracted wide attention, and in recognition of its merits the painter was decorated with the cross of the Legion of Honor. ‘Truth’ is represented as holding aloft to the world a shining mirror. The action is impressive, the lines and proportion of the figure admirable, although the coloring is a little cold. As a painter of ideal heads Lefebvre has become widely popular. His ‘Vittoria Colonna’ is one of the most effective of these. But ‘La Liseuse’ (1889); ‘La Poésie Antique,’ ‘Laure’ and ‘Violetta,’ all exhibit the classic beauty, the repose and exquisite refinement of the ideal school. ‘Clemence Isaure’ is a study which is very human and life-like, the full lips and round chin suggesting physical life and passion while the bay leaves, with which the heavy locks of hair are wreathed, speak of poetic and intellectual power.

Lefebvre is one of the first of living French painters, and his influence is great in the Julien School where he is one of the instructors. Among the romanticists, classicists, realists and impressionists, he stands in the same class as Hector Leroux, Baudry, Bougereau, and Puvis de Chavannes, as an advanced idealist. Yet in opposition to such artists as Courbet, Manet and Bonnat, he is immensely popular, being in his love of ideal beauty and his refined technique, ‘French of the French.’

Lefebvre, or **Le Fevre, Nicolas** or **Nicasius,** chemist, probably a native of France: b. about 1620; d. London 1669. He was educated at the Protestant Academy at Sedan, acquired a knowledge of chemistry and became his majesty's apothecary and distiller. Here Lefebvre found ample opportunity to pursue his favorite study. In 1660 appeared his ‘Traité de la Chimie Théorique et Pratique,’ which went through several editions, and was translated into German. In 1660 he was invited to London by Charles II. to take the post of royal professor and apothecary in ordinary to the household. He was also elected to the Royal Society, which had just been founded. In 1664 appeared a translation into English of his ‘Traité,’ entitled ‘A Compleat Body of Chymistry.’ His treatise on chemistry is compiled, according to his own account, from Van Helmont, Glauber, and Paracelsus, and is divided into the theory and practice of the art. The whole work is very well done, the author shows thorough familiarity with his subject, and his descriptions of apparatus, of substances, and of preparations are clear and systematic. His work served as a model for those of succeeding chemists, especially for that of Glaser, who replaced him in the Jardin des Plantes, and of Lemery.

Lef'ferts, Marshall, American engineer: b. Bedford, Long Island, 1821; d. 1876. After receiving a common school education he took up various occupations, finally settling down in the profession of electrical engineer, which he pursued from 1849 to 1860. During that time he was in the employ of the American Telegraph Company, and consulting engineer to the Atlantic Cable Company. He made many improvements in inventions in the department of electrical transmission while in the service of these companies. During the war he commanded the 7th regiment. In 1867 he became connected with the news department of the Western Union Telegraph Company; two years later, president of the Gold and Stock Telegraph Company, and 1871 he took control of the commercial news department, which had been purchased by that company.

Leff'mann, Henry, American chemist: b. Philadelphia 9 Sept. 1847. He was graduated from Jefferson Medical College in 1869, and from the Pennsylvania College of Dental Surgery in 1884. He was elected assistant professor of chemistry at the Philadelphia Central High School and served from 1876 to 1880. He was port physician 1884–7, and 1891–2, and in 1888 was appointed but not confirmed, coiner United States Mint, political reasons interfering. Since 1888 he has been professor of chemistry at the Women's Medical College of Pennsylvania and professor of chemistry at the Wagner Free Institute of Science. Among his works are: ‘First Steps in Chemical Principles’; ‘Compend of Organic Chemistry’; ‘Compend of Chemistry’; ‘Analysis of Milk and Water Products’; ‘Sanitary Relations of Coal Tar Products’ (from the German); ‘Structual Formulæ for the Use of Students.’ He has edited Reese's ‘Medical Jurisprudence and Toxicology’ (4th and 5th editions), and ‘Allen's Commercial Organic Analysis’ (Vols. I and II., 3d edition).

Legal Education. Instruction in law schools is given by lectures, by recitations from text-books, and by discussion and explanation of selected cases. Each of these systems has its advocates. In a majority of the schools instruction is given mainly by lectures. Next in popularity comes the method of recitations on lessons previously assigned. There are only a few schools that depend mainly on the discussion and explanation of selected cases. Dean Ashley of the New York University Law School writes as follows on this subject: «The leading universities repudiate the idea of any fixed method for teaching or studying law.» Prof. Gray of Harvard says: «In all law schools, I suppose, the students learn from text-books, cases and oral instruction. At any rate they do so here. Each teacher is free to use these means as he pleases. The different professors do actually use them in different ways and proportions.» Dean Keener of Columbia says: «There is no uniform method of instruction in this school. Each instructor is at liberty to pursue the method of instruction which in his opinion will be productive of the best results.» See EDUCATION, PROFESSIONAL, IN AMERICA.

Legal Tender. See FINANCE.

Legal-tender Cases, in American finance, a series of cases before the United States Supreme Court, involving the question whether certain acts of Congress declaring United States notes a legal tender in payment of all debts, public and private, were constitutional. The cases were first argued in December 1867, and decided in November 1869, by a divided court. Five members of the court decided in the affirmative and three dissented. In 1871 after a reorganization of the Supreme Court, the cases were again brought up for argument. Again the court divided, five judges upholding the constitutionality of the act and four dissenting. All the judges agreed that Congress had full power to direct issues of paper money. In 1878 Congress decreed that legal tender notes which had been redeemed or received in the Treasury from any source, should be re-issued and kept in circulation. This latter act was assailed in the courts and the Supreme Court decided, with but one dissenting voice, that Congress had full power to make United States notes a legal tender in the payment of private debts in times of peace as well as in times of war. This decision closed all judicial action upon the subject. Consult: Thayer, ‘Legal Tender’ in Harvard Law Review (1887); Legal Tender Cases (110 U. S. 421, 1884).

Legal Terms. The following is a list of the most important legal terms commonly employed in the United States and Canada. As it would be impossible to give anything like a complete list of such terms within any reasonably brief space—there being, in number, several thousand of them,—care has been taken to select only those which are most frequently used, and, in each case, as far as possible, to specify in what particular branch of law they are applied—whether in civil law, criminal law, pleadings, or elsewhere:

ABATOR.— One who, without legal right, enters a freehold upon the death of its possessor, and before the heir or devisee.

ABALIENATION.— In civil law, the act of transferring a title in real or personal property from one person to another.

ABANDONMENT.— (a) Voluntarily leaving a person to whom one is bound by ties of obligation, as husband, wife, etc.; (b) the relinquishment of one's rights in a possession or claim.

ABETMENT.— In criminal law, the act of encouraging, counselling, or inciting a felony.

ABEYANCE.— In a state of uncertainty, or of expectation.

ABJUDICATION.— In civil law, the act of divesting a debtor of his real estate for the benefit of his creditors by means of judicial decree.

ABJURATION.— The negative part of the oath of allegiance, by the taking of which foreigners desiring to become citizens of the United States solemnly abjure their allegiance to the former sovereign.

ABLE.— In civil law, the act of having the necessary qualifications.

ABOLITION.— A suppression of proceedings, or permission to stay further prosecution.

ABSENTEE.— One who is not within the jurisdiction of a particular court.

ABSOLUTE ESTATE.— An estate the right in which has been determined so unconditionally that the owner is deemed qualified to take immediate and unlimited possession.

ABSOLUTION.— In civil law, a formal sentence or decree declaring a person to be innocent of the crime with which he has been charged.

ABSQUE HOC.— A term used in law in the denial of some matter of fact that has been alleged and is repeated.

ABSQUE TALI CAUSA.— A term used in law to denote "without such cause."

ABS. RE.— An abbreviation of the Latin phrase "absente reo," used in law to indicate the absence of the defendant.

ABUSE OF DISTRESS.— Such use of an animal or chattel distrained that the distrainer lays himself liable to prosecution for misappropriation.

ABUSE OF POWERS.—Used (a) in civil law to denote the act of resorting to intentional irregularity in order to gain a legal advantage over one's opponent: (b) in criminal law to denote a use of legal processes for illegal purposes, as when a criminal complaint is made merely for the purpose of coercing the payment of a debt, or when a valuable property is sold on execution to satisfy a very small debt.

ACCOMPLICE.— In criminal law, any participator in an offence, either before or after its commission.

ACCRUE.— In civil and criminal law, to become an enforceable right, as the statute of limitation, which accrues by lapse of time.

ACCUMULATIVE JUDGMENT.— A second judgment, which does not begin to exercise its effect until after the first judgment has expired.

LEGAL TERMS

Acquiescence.— Used in Canadian law as a synonym for "free consent."

Acquiescence.— A term used to denote any neglect to take legal proceedings that might naturally imply consent to the matter in hand.

Act in pais.— A term denoting an official act that has been performed out of court and has not been recorded.

Acts of Court.— See Law, *Legal Acts*.

Acuerdo.—A formal decision or decree of a qualified court.

Address.— In equity pleading, the technical introduction in a bill of the court in which a remedy has been sought.

Ademption.— The annulment of a grant or the lapse of a legacy by the testator, either by satisfying it or by manifesting an intention to revoke it.

Adjudication.— (a) The formal judgment of a court; (b) a decree in which the court declares an ascertained fact to be such, as in cases of bankruptcy.

Abrogation.— A term denoting the annulment of a law by the act of legislature or by usage.

Ac etiam.— A term used to denote the introduction of the statement of the real cause of action in a case where it was necessary to allege a fictitious cause of action.

Acceptilation.— In civil law, a release made by a creditor to a debtor without consideration and when the debt has not been paid.

Adjudication, Former.— A prior decision in a case between the same parties employed to bar any subsequent litigation covering the same or similar points in dispute.

Adjunction.— The act of affixing one person's property to that of another, as when one erects a building upon another's land, etc.

Admeasurement.— A term used to denote the act of ascertaining and laying off the portion due, as in cases of the settlement of an estate, the adjustment of damages, or of dower right. Sometimes known as admensuration.

Adminicle.— Synonymous for corroboratory evidence.

Admittance.— In civil law, the act of giving possession of an estate.

Adpromissor.—Synonymous for security, or bail.

Ad quod damnum.—(a) A term used to designate a writ issued commanding an inquiry as to the damage liable to result from the opening of a highway, or the institution of other public improvement; (b) the order under which the compensation for damage is paid when private property has been seized for public uses.

Affeerment.— A term used to denote the assessment of a pecuniary penalty according to the circumstances of the case.

Affiliation.— Used to denote the act of determining the paternity of a child, that the obligation for its proper maintenance may be judicially fixed.

Affirmance.— The confirmation by a higher court of the findings of a lower court.

Affirmative.— A term used in judicial proceedings to designate the side upon which the burden of proof must fall.

Aiding and Abetting.— In criminal law, a term used to denote a person who, while not directly responsible for the commission of a felony, has supported, sustained, and rendered aid to its perpetrators.

Aleatory Contract.— A term used in civil law to denote that this document is a contract, the fulfilment of the conditions of which depends upon a contingent event.

Allowance.— A term used in law to denote an extra sum awarded in addition to regular costs.

Ambidexterity.— A term applied to the act of a juror who takes money from both parties to a suit and who promises to render his verdict in favor of each of them.

Ambulatory.— A term used in civil law to denote that a thing is capable of being altered; thus, the return of a sheriff is ambulatory until it has become a matter of record.

Amercement.— Synonymous with affeerment.

Amicable Action.— A term used in civil law to denote that the action at issue has been commenced and is being prosecuted by mutual consent of both parties to the proceedings, in order that they may obtain the decision of the court on the matter as a question of law.

Amortization.— The conveyance of property to a corporation.

Ancestor.— In law, an ancestor is one who has preceded another in the possession of an inheritance, whether he be a progenitor or a collateral relative.

Ancillary Letters of Administration.— In law, the term "ancillary" denotes that the administration is a local and subordinate one, covering such part of the assets of a decedent as are not only without his domicile but which the law requires should be collected and applied to the satisfaction of the claims of creditors, the surplus being remitted to the principal administrator.

Annulment.— A judicial act making void retrospectively as well as prospectively, as in the annulment of a marriage.

Antecessor.— Synonymous for an ancestor.

Appellant.— The person appealing, or removing a cause from the lower to the higher court.

Appendant.— Any right or privilege that may pass with an inheritance.

Application.— In civil law, the appropriation of a debtor's assets among several creditors when the payment is insufficient to meet all obligations in full.

Appointment.—The designation, by a person having the right to do so, of a beneficiary to take the use of an estate created under a previous will or deed.

Approver.— In criminal law, one who is willing to turn state's evidence by confessing his part in a felony and giving evidence against all his accomplices in the commission of the crime.

Arm.— In law an arm is any object that a man may take in hand while in anger with the intention of assaulting another.

Array.— The act of empanelling a jury.

Asportation.— Used in criminal law to denote the felonious removal of goods from one place to another.

Assay.— The examination of weights and measures by the legal standard.

Attempt.— An "attempt," to be a crime in law, must be an act done in part execution of the design to commit the felony; the mere preparation, without an effort at commission, not being a criminal offence.

Attendant.—In civil law, a person who owes a service to another.

Attentate.— (a) A question improperly attempted by an inferior judge; (b) something done after an extrajudicial appeal.

Attorn.— In civil law, to acknowledge tenancy under a person who was not the original landlord but who has since claimed to have become such.

Authentic.— An action which has been executed with all respect to the formalities of law, performed by the proper persons and attested before the proper authorities. An "authentic act" in civil law is a deed that has been properly performed and attested before a proper magistrate.

Aver.— (a) To allege as a fact; (b) to offer in evidence.

Avoidance, Plea in.—A plea in which the defendant, without denying the plaintiff's allegation, introduces some new facts in the hope of evading its effect.

Bequest.—Personal property left to a person by will.

Bill in Equity.—The pleading in an equity suit in which the plaintiff explains the circumstances upon which he bases his prayer for relief.

Bill of Exceptions.— In common law practice, a document drawn after a trial by the unsuccessful party in which he presents all the rulings complained of as errors at the time of trial, and all the exceptions taken thereto, in order that they may be considered by the court to which he has appealed. See Bill.

Bill of Particulars.— A document in which the particulars of the matter at issue are set forth in detail.

Bona fide.— In law, an act done without fraudulent intent. Thus, a "bona-fide purchaser" is a person who has purchased something for the price asked and without notice of an adverse claim; a "bona-fide possessor" is one who possesses something without the knowledge that there are others who have a better right in its title.

Brief.— (a) A systematically arranged and concisely expressed, but formal, memorandum of the points of law or of fact that are to be brought out in argument or developed in the examination of witnesses at the trial; (b) a writ summoning the person upon whom it is served to answer to the action.

Burden of Proof.— A term used to denote the obligation which rests upon one of the parties to a legal action to produce sufficient evidence to establish the fact that he has alleged in his complaint under penalty of having judgment entered against him, and this burden is not shifted until the party upon whom it has first rested has submitted sufficient evidence to turn the presumption in his favor.

Capias.— In civil law, a writ directing that the person of the defendant be taken into custody. The most common kind of writs of capias are (1) the "capias ad respondendum," under which the body is taken to answer before judgment has been declared; and (2) the "capias ad satisfaciendum," which designates that the body execution was taken after judgment had been entered.

Caption.— A document setting forth the time and place that an action at law has been taken, with the court of authority before which it was performed, and such other particulars as might be required to render it valid, all of which information must have been written upon or attached to the paper to which it relates.

Carriage.— A term used in equity practice to designate the party to whom the right of going forward with the proceedings has been entrusted.

Case.— The term applied to any suit, or action in court.

Cause.— A legal proceeding calling for judicial decision.

Cause of Action.— The condition of facts which entitles one party to bring action against another.

Cause to Show.— A term usually applied to denote an order from the court commanding a person to present a reason for some action, as why he should not be punished for contempt of court, etc.

Cesser.— A term denoting that a person has neglected to perform the service or make the payment ordered by the court for two years.

Cession.— The voluntary surrender of a debtor's assets to satisfy his creditors. Also termed "cessio bonorum."

Charge.— An address delivered by a judge at the conclusion of a trial in which he instructs the jury in relation to the points of law, the weight of evidence, etc.

Charging Part.— In a bill of equity, that part in which the plaintiff alleges other and anticipatory evidence, or introduces matter to which he wishes the defendant's answer.

Cheat.— A fraud committed by imposition. Such an act is punishable by law: (1) when it deprives another of his property, even when it is not great enough to amount to a felony; and (2) when it is accomplished by some method other than that of mere words, as in the use of false weights or measures or in the substitution of worthless articles for those of real value.

Claimant.— (a) One who brings suit to obtain something which he demands as his right; (b) in admiralty proceedings, this term is applied to the person who is permitted to defend an action "in rem" brought against certain goods in which he claims property right.

Claim Notice.— A term used in mining law to denote that a miner has posted a notification of his intended occupancy upon a piece of public land.

Clause.— (a) A term used to denote a collocation of words which might be removed from the instrument without affecting its intelligibility; (b) used to specify a distinct proviso, as a clause in a contract. The term, "assumption clause," denotes a stipulation frequently inserted in a deed to property upon which there is a mortgage or other incumbrance, that, under its operation, the payment of said debt may be assumed by the grantee to the exoneration of the original debtor. The "Enacting Clause" is the leading declaration of a statute, which usually begins, "Be it enacted," etc. An "Interpretation Clause" defines the meaning and limitations of words used in an act, while the "Saving Clause" is that which exempts something which might otherwise be included in the operation of the instrument or statute.

Codicil.— An instrument containing anything which a testator might wish to add, revoke, or explain in relation to his will. Although supplementary to the will itself it is actually a part of it. See Will.

Cognizance.— (a) A plea admitting the facts as alleged in the declaration; (b) in actions for replevin, a plea that the defendant holds the goods in question contrary to his right; (c) the action of a court in taking authoritative notice of a cause.

Collateral Ancestors.— A term used in civil law to denote relatives, or antecessors who are not progenitors.

Collateral Facts.— Facts considered foreign to the matter at issue.

Collateral Issue.— Something outside of the main question at issue.

Collateral Proceedings.— Proceedings brought, not for the direct purpose of impeaching the prior proceedings, but as a fresh action, as opposed to a "direct" action.

Collation.— A term used in civil law to indicate that former advancements of a decedent's property have been returned in order that the estate may be equitably divided among all the heirs.

Collocation.— The allotment among creditors of the proceeds of a judicial sale that has been made to satisfy their claims.

Collusion.— A term used in law to denote a private, or secret, understanding by which two or more parties agree to act as though at variance with one another in order that they may prejudice those who are not a party to their secret and so obtain a remedy to which they are not legally entitled.

Comity.— A term used in international law to define that spirit of courtesy which causes one nation to recognize the laws and institutions of another in such a manner as to permit them to take effect within its own territory.

Commercial Law.— The term by which the laws relating to commerce are known. These include all laws regarding shipping, bills of exchange, insurance, brokerage, and general commercial affairs. See Commercial Law.

Comminatory.— Used to denote an act of imposing such a heavy forfeiture in a business transaction that it cannot be enforced in a court of justice.

Common Law.— A term used to define that body of law that has been derived from such sources as the reports of adjudged cases, from the opinions of legal authorities, and from popular usage and custom, rather than from any statutory enactments. See Law, Common.

Community Property.— A term used in civil law, and in the statutes of several States, to designate the property of husband and wife, exclusive of the antenuptial property of either, and of the property secured by either through the avenue of bequest or gift.

Compensation.— Used in civil law to denote the annulment of a debt by a counter-claim which the debtor holds against his creditor. See Mandate.

Compensatory Damage.— A term used in civil law to define such damage as may have been estimated as a fair equivalent for the injury received.

Competence.— (a) Legal right and authority to act; (b) also used in regard to evidence to denote its legal fitness to be heard.

Complainant.— The plaintiff in, or one who commences, a legal action against another, or in whose behalf a criminal prosecution is instituted. The claim for relief upon which such an action is brought is commonly known as the complaint.

Conclusion.— (a) The decision or finding in a case; (b) the end of a pleading; (c) an estoppel or bar by which one is held to the position which he has taken. A "conclusion of fact" is a decision on the part of a judge or referee as to the actual facts in the matter at issue; a "conclusion of law" is a similar decision in which the legal rights and obligations of the parties to the action resulting from the conclusion of fact are clearly specified.

Conclusive Evidence.— A term applied to testimony that possesses such weight as to preclude any contradiction of the fact in question.

Concurso.— A term in civil law usually applied to the litigation, or opportunity for litigation, which exists when several creditors, acting adversely to one another, claim the right to share in an estate, the object being to make one accounting cover all the claims against the fund.

Concussion.— Used in civil law as a synonym for extortion.

Condonation.— Used to denote an act of remission by which a husband or wife pardons a matrimonial offence which one knows that the other has committed by permitting the guilty party to return to all conjugal privileges. It is by such an act that the innocent party loses all right to seek a remedy for the offence in question.

Confirmation.— Used in civil law to denote the perfection of the title in an estate or possession.

Conflict.— Used legally to indicate the opposition existing between the laws of various jurisdictions when an effort is made to apply them in reference to each other.

Confusion.— A term used in civil law to denote the extinction of an obligation owing to the fact that the two persons necessary to its continuance have become one person, as when one has become the heir of the other, etc.

Conjoint.— Used in civil law to indicate a person who has a mutual interest with another in an enterprise or obligation.

Connivance.—The act of having a secret understanding with another; usually employed in relation to a wrongful act.

Consideration.— A term used in law to denote the remuneration that a contracting party accepts in exchange for something else or in return for a service rendered. A "concurrent consideration" is a consideration received at the time of the making of the agreement; an "executed consideration" is one previously received; an "executory consideration," one to be received at a date subsequent to the agreement. The term "good consideration" is used to define that natural love and affection which is usually considered an adequate motive for the transfer of property without a valuable equivalent, except as against creditors. A "valuable consideration" is an equivalent that must be admitted to be of pecuniary value. "Want of consideration" is the lack of any equivalent whatever, and "failure of consideration" denotes that an apparently good equivalent has afterwards become worthless. See Mandate.

Consolidation.— Used in civil law to denote the merging of the profit of land with the property.

Construction.— (a) Used to denote an intelligent reading with such explanations as may be necessary to define the meaning of the text; (b) when uncertainty exists as to the actual intent of an instrument; any altered reading of the text designed to show its proper application is also termed a "construction."

Contempt.— A term usually applied to define the disobedience to, or open disrespect for a court or legislative assemblage that has come to be known as "contempt of court," an offence that may be committed either in or outside of the courtroom, and which is punishable by commitment to prison or by the imposition of a fine. The term "constructive contempt" is applied when the offence, while not committed in the presence of the court, is of such a character that the law is obliged to take cognizance of it, whether it was performed intentionally or not. Any wilful or aggressive disobedience or disorder is termed "criminal contempt," while an act committed in the presence of the court is known as a "direct contempt." A person who has been committed for this act against the dignity of the judiciary, and who has not purged himself therefrom, is said to be "in contempt."

Contraband.— The term applied to goods that are prohibited from importation or exportation by the laws of the country. Such goods, when handled illegally, subject one to the charge of smuggling.

Contract.— Used in civil law to denote a document in which the rights and agreements of the two or more parties concerned in the obligation are specifically defined that they may become enforceable by law. Among the many terms used in relation to the making or execution of contracts, the following are among those which are most commonly employed: Accessory contract, one made to secure the performance of a previous contract; aleatory contract (q.v.); bare contract, an unconditional surrender or agreement; commutative contract, one in which each party gives and receives an equivalent; contract of record, one that had been entered before a judicial tribunal as a judgment, etc.; executed contract, one in which the thing agreed upon has been done; executory contract, one in which the thing agreed upon has yet to be done; express contract, one in which the agreement is expressly stipulated in writing; gambling contract, one in which the parties agree to make good all differences that may be occasioned by chance within a specified time, but such contracts cannot be enforced at law; implied contract, one that may be imputed by construction, as when by some valuable exchange or service rendered justice demands that the contract be carried out as implied; indeterminate contract, one in which the terms cannot be fixed until other motives act; joint contract, one in which the parties are bound to perform all the obligations of the agreement, or are entitled to receive the benefit of them; mutual contract, one in which the obligation assumed by each party is in view of the obligation assumed by the other party; oral contract, one depending upon word of mouth alone; simple contract, a contract not under seal; special contract, one in which the thing to be done is specified in detail under seal; verbal contract, same as oral contract; voidable contract, one liable to be made void but which is binding until such notice is given; void contract, one that is not legally binding upon either party. See Contract.

Contribution.— In civil law, the contribution levied upon each of several persons having mutual interests in the same enterprise to equalize the loss suffered or the payments made. A "suit for contribution" is an action brought to compel the payment of such proportionate shares.

Conversion.— An unauthorized attempt to exercise the rights of ownership over personal property belonging to another.

Corpus juris civilis.— Body of the Civil Law.

Cost.—The sum fixed by law as the amount to be charged as the expense for bringing suit. In actions at law such costs are usually aggregated that they may be paid by the losing party when final judgment is entered.

Courts-Martial.— See Law, Military.

Covenant.— In civil law, any agreement under seal.

Covert.— A term used to denote that a person is under protection; usually applied to a woman, and especially to one who is married.

Covin.— An agreement in which two or more parties have entered into collusion to the detriment of another party.

Credible Witness.— One who is qualified to testify and who cannot be impeached as unworthy of credit

Creditor's Action.— (a) The term applied to a bill in equity, in which one or more creditors, acting for all other creditors, seek to reach assets that could not legally be sold on execution that they may obtain an accounting and due settlement by law; (b) the same term is applied to the bill that may be brought by creditors seeking to set aside a transfer of assets as a fraudulent transaction.

Criminal Law.— That body of law which relates to crimes and their punishment. See Law, Criminal.

Cross-action.— A suit brought by the defendant in a previous action against the plaintiff therein.

Cumulation.— A combination of causes for action, or defences, so joined that all must be tried together.

Curia advisari vult.— A term denoting a postponement after argument to give the court time for deliberation.

Dative.— Used to denote something that may be disposed of at pleasure.

De bene esse.— A legal term denoting that a thing is taken for what it is worth, as in the case of testimony that may be suppressed after more full examination.

Declaration.—The pleading in which a plaintiff explains his claim for relief in a civil action.

Dedicate.— The voluntary surrender of private property that it may be applied to public uses.

Dedit.—In Canadian law, the sum stipulated to be paid as a penalty in case of breach of contract.

De domo reparando.— (a) The term applied to a common law writ issued to a houseowner against a neighbor whose building is in danger of falling with damage to the plaintiff's property; (b) a writ issued against a cotenant to compel him to show cause why he should not share in the expense of repairing property held in common.

Deed.— A document, under seal, made for the purpose of conveying real estate. See Deed.

Deforcement.— In civil law, the withholding of property to which another person holds the rights but of which he cannot gain possession.

Degree.— The term applied to the distinctions made in the culpability of various persons who have violated the criminal law; thus, the active perpetrator is charged with crime in the "first" degree; those who aided or abetted him, in the "second" degree.

De jure.— A term implying right according to law.

Delegation.— A term applied in civil law to denote that a debtor has freed himself from the responsibility for his debts by offering another person who binds himself to assure their payment.

Delivery.— In civil law, the act of placing a person in legal possession of any property.

Demise.— In civil law, a term used to denote a lease for a number of years.

Depart.— The deviation in one pleading from the defence made in a prior pleading.

De plano.— Used in law to denote that a thing is so manifestly right as to require no argument.

Determinable.— A term used in civil law to denote that a thing is liable to termination by uncertain contingencies.

Detinet.— A common law action of debt in which it is alleged that the defendant held back money that should have been paid to the plaintiff.

Devest.— A term used as a synonym for deprivation of title.

Dictum.— An opinion of a judge, but not the deliberate determination of the court.

Diminution.— Used to denote that an omission has been made in the records of a case sent from a lower to a higher court for review.

Disclaimer.— (a) A refusal to accept a position, as trustee of an estate or executor under a will; (b) a plea by which the defendant in a case in equity abandons all claim upon or interest in the subject at issue; (c) an instrument by which a patentee abandons a part of his claim of invention.

Discontinuance.— A term used to imply that a suit has been terminated through the action of the plaintiff.

Discretion.— A judicial power that is exercised purely upon personal judgment in view of existing circumstances and not upon the application of any rules of law.

Dismission.— Rejection of a suit by the court on the ground that it is unworthy of maintenance.

Distrain.—To seize and hold another's goods in order to apply them to the satisfaction of the distrainor's claim, or to maintain possession of them until such a claim is settled.

Disturbance.— In common law, the wrongful obstruction of any party in the enjoyment of his personal rights.

Divestiture.— In civil law, the act of abandoning one's effects.

Doli capax.— A term used in common law to denote that a child is of sufficient age to be able to distinguish the difference between right and wrong.

Dominus.— In civil law, the person who maintains possession of something by right.

Donation.— In civil law, the transference of something from one person to another without consideration.

Dower.— The portion of a husband's estate which reverts to the wife upon his death.

Duplicity.— Used to define the act of pleading two or more distinct matters together as if they constituted only one.

Duress.— Used to denote the exercise of such restraint as to practically amount to coercion. "Duress of goods" is the forcible seizure of goods without authority to force the claimant into settlement; "duress of imprisonment" implies actual personal restraint; "duress per minas" denotes coercion effected by threats of personal injury to life or limb. In law, no promise or agreement is held to be binding if made under duress.

Elegit.— A title to land held under a judicial writ of execution.

Elimination.— A term frequently used as a synonym for ejectment.

Encumbrance.— The amount for unpaid services or public charges that rest upon a property to diminish its value even through changes of ownership.

Enjoin.— The act of restraining a person by means of a judicial injunction.

Entireties, Tenancy by.— A tenure created when an estate is divided or conveyed to a man and his wife during coverture

Escrow.— A writing that has been fully executed but which has then been placed in the hands of a third party, to be held by him until such time as the specified conditions under which the instrument was prepared have been fulfilled.

Esplees.— A term used to denote the products of the land, whether in produce, rents, or otherwise.

Evocation.— In law, the act of taking an action from one court for the purpose of carrying it to a higher court.

Exaction.— An offence committed by officials in authority who exact or take a fee when the law requires that none be paid.

Exception.— (a) A term most frequently used to denote the action in common law practice by which all objections made to the rulings of a court are noted in writing that they may be submitted to a higher court as an explicit reason why an appeal should be granted; (b) a clause in a conveyance exempting some portion of the estate from the sale; (c) a writing employed in a case in equity to indicate the particular portions of an adversary's pleadings to which objection has been taken.

Exchange.— In civil law, a reciprocal transfer of property in which no financial consideration is offered or required.

Executor de son tort.— One who attempts to settle the affairs of a deceased person without authority.

Ex facie.— A term used to denote what may be assumed from the face of a writing.

Expatriation.— The act of renouncing the country of one's birth to become a citizen of another country.

Expromissor.— In civil law, one who binds himself to pay the debts of another person.

Extend.— In civil law, to seize lands in satisfaction of a debt.

Extortion.— (a) A gross overcharge which could not be upheld in law; (b) the act of obtaining money from another person when none, or a smaller amount, is due.

Extradotal.— In civil law, that portion of a woman's property that is exempt from consideration under dower right.

Factum.— The term used to denote the statement of a case to the court.

Fee.— An estate held in trust. When it is vested in the owner and his heirs and assigns forever, it is commonly known as a "fee simple."

Feigned Issue.— A term used to denote that the issue has been prepared for court by agreement, or by judicial order, rather than by the ordinary procedure.

Fiduciary Capacity.— A term often used to denote that the position occupied by the party referred to was one of trust and confidence, the idea being that violations of such confidence are not covered either by discharge in bankruptcy or by the laws and rulings regarding imprisonment for debt.

Fieri facias.— A civil law writ that may be issued after judgment, empowering the sheriff to levy upon goods or lands to secure the amount due.

Forbearance.— In civil law, the act of restraining the enforcement of one's legal rights.

Force and Arms.— A term used to denote that the act complained of was done with violence.

Forcible Entry.— The act of taking possession of property by means of threats, or by arms, etc.

Foreign Attachment.— The process of seizing the local property of an absent debtor in order that he must either put in an appearance or allow the claims of the creditor to be satisfied.

Foreign Matter.— Actions that must of necessity be tried in some other county.

Forfeiture.— The act of having one's property transferred to another as the result of one's negligence or by reason of the misdeed of another person.

Furniture.— In civil law, personal chattels in use by a family, and, ordinarily, exempt from legal process.

Gage.— A term used to denote the personal property that has been placed in a creditor's hands by a debtor as security for the payment of his indebtedness.

Gager del ley.— Used synonymously with a "wager of law."

Garnishee.— The person who takes possession of the money or property of another with the avowed intent to keep it to answer the claim of the creditor, or until the defendant is otherwise discharged.

Gift.— In civil law, a conveyance that is made without consideration, either in blood or money.

Go Without Day.— A term used to denote that a case has been dismissed from court.

Giving Time.— In civil law, an agreement by which all the creditors agree to give a debtor time to pay his debts instead of forcing him to abide by the terms of the first agreement.

Grant.— A generic term applied in civil law to all transfers of real estate.

Gross Negligence.— A term used to indicate that the ordinary care which even a thoughtless man might take of his own person or property has in this instance been omitted.

Habeas corpus.— A term used to denote a writ issued to parties suspected of detaining another, and commanding them to produce the body of that person at a certain time and place, there to submit to such judgment as the court may see fit to make in the matter. This habeas corpus action is one of the most famous in law, it having been used so often to protect human rights that it has come to be known as the "Great writ of Liberty." See Habeas Corpus.

Habitation.— In civil law, the right of an individual to live in a house owned by another person without prejudice to the property.

Habitual Criminals.— Persons who are so well-known as malefactors by reason of their criminal past history and associations as to be punishable by penalties of more severity than are ordinarily imposed upon persons who have no such record against them.

Hearsay Evidence.— The term applied to testimony that cannot derive its value in credibility from the witness himself, but must depend largely upon the veracity of another person.

Heritage.— In civil law, every kind of immovable property, whether acquired by purchase, descent, or otherwise.

High Seas.— A term often used in the settlement of questions of jurisdiction, etc. It denotes the uninclosed water of the ocean and all those of the sea-board that may be beyond the boundaries of the low-water mark.

Hold.— Used technically in civil law as a part of the term "To have and to hold," the clause known as the "tenendum," by which the grantee's tenure to the land in question is expressed.

Homologation.— A term used in civil law to denote the approbation of the award and order necessary before execution may take place.

Hypothecation.— A term used in civil law to denote a creditor's right over a debtor's property: the power to cause it to be disposed of by sale that he may secure his payment from the proceeds. There are various forms of hypothecation recognized by law: Conventional hypothecation, or those effected by the agreement of parties; general hypothecation, as when a debtor hypothecates his entire estate for the benefit of his creditors; legal hypothecation, those that are not dependent upon a contract or agreement; special hypothecation, or the hypothecation of a special estate; and tacit hypothecation, as when ordered by the court to secure a debtor's creditors.

Immaterial Averment.— In pleading, a statement of unnecessary particulars sometimes included in connection with, or as description of, what is actually material to the case.

Immoral Consideration.— A term used to define a contract based upon something which is contrary to good morals; such contracts usually being void.

Immovables.— A term used in civil law to denote that kind of property which from its own nature or by its situation cannot move itself or be removed without great difficulty.

Imparlance.— A term denoting the continuance of a cause for a few days to give one of the parties to the issue time to answer the pleadings of his opponent.

Impediments.— In civil law, the legal hindrances in the making of contracts, as minority, lack of reason, coverture, etc.

Imperium.— A term used to define a power that vests only in the executive: The right to call upon the military forces of the State to enforce its statutes.

Impertinent.— A term used to denote that certain matters that have been introduced into a bill, answer, or other proceeding in equity, are not properly before the court.

Improvement.— A term used in civil law to denote the betterment in the condition of a property due to the expenditure of labor and money.

In fraudem legis.—A term used to imply that a thing is "contrary to the law."

In Full Life.— A term used to indicate that a person is neither physically nor civilly dead.

In loco parentis.— Literally, in place of a parent.

In pari causa.—A term employed to denote that two parties are in equal right according to law, in which case, according to usage, the party having possession is regarded as of best right.

In pari delicto.— A term indicating that both parties to an issue are equally at fault, a case in which no relief can be obtained.

In propria persona.—Literally, in his own person.

In solidum in solido.— A term used in the making of a contract, and meaning, "For a whole as a whole."

In statu quo.— Literally, in the same condition as before.

In toto.— Used legally to imply "in the whole."

Inalienable.— Properties that cannot be transferred from one to another, as the public highways, parks, etc.

Incompatibility.— A term denoting the incapability of two persons to exercise the rights and privileges when together, as in the case of landlord and tenant, husband and wife, etc.

Indirect Evidence.— A term used to denote that kind of evidence that, while it does not establish the fact in question, furnishes a presumptive proof in its favor.

Inducement.— Employed in civil law to denote the consideration, or benefit which was used to induce the promisor to make the contract in question.

Induciae.— Used in civil law to indicate the declaration of a truce in judicial hostilities.

Injuria absque damno.—A term used to imply that the wrong incurred was without damage or loss, in which the action at law cannot be maintained.

Jeopardy.— The condition of a prisoner when a trial jury has been impanelled and sworn to try his case. If he escapes this jeopardy he cannot again be subjected to the same danger, the United States Constitution clearly defining the point that "No person shall be subject for the same offence to be twice put in jeopardy of life or limb."

Joinder.— (a) In civil law, the merging of several causes of action in a single declaration; (b) in criminal law, the act of joining several cases of the same nature in one indictment.

Joint Action.— A term used when two or more persons are alike parties to a suit, as two or more plaintiffs against two or more defendants.

Jus abutendi.— A term meaning, literally, the right to abuse, but generally employed to denote that the party in question has every possible right over his property.

Justifying Bail.— A term used to denote that the parties who have been produced as bail have been able to justify themselves in spite of any exceptions taken by the opposition.

Labor a Jury.— A term used to denote that an effort has been made to reach the jury for the purpose of tampering with it, or affecting its decisions.

Laches.— Neglect to perform a certain duty or to protect a claim at the proper time.

Law of Equity.— See Law.

Law of Merchants.— See Law.

Law of Nations.— See Law.

Lese Majesty.— Apparent disrespect for a monarch. In some countries such an offence is treated as treason.

Letters Testimentary.— An instrument in writing, granted by a judge or other official having authority and jurisdiction over the probate of wills, making it known that the will in question has been proved in proper form and that the estate is in order to be administered.

Levitical Degree.— A term used in law to denote the degrees of kindred that are prohibited in the 18th chapter of Leviticus.

Lex loci.— A term used to denote the local law, or, literally, the law of the place.

Liquidated Damages.— Damages, the amount of which have been decided upon by an anticipatory agreement between the parties concerned.

Made Known.— A term used to denote that a writ of scire facias has been duly served upon the defendant.

Mainour.— A term which literally means "found in hand," and which is used in criminal law to denote that the goods stolen were found with the person who stole them. "To be taken in the mainour," therefore, is synonymous with being caught in the act.

Maintenance.— A term used in law to denote any officious interference with the course of justice.

Malpractice.— A term denoting bad medical practice, whether due to ignorance, carelessness, or criminal intent.

Malfeasance.— A term used to denote the unlawful or wrongful conduct of a public official in office.

Malum in se.— A term denoting that an act is evil in itself, in counterdistinction to the offences that, while not naturally evil, have become so because of the fact that they have been specifically prohibited.

Manbote.— The compensation paid to the relatives of a murdered man by the murderer, or on behalf of the latter.

Mandamus.— A writ issued by a superior court by which an inferior court, a corporation, or other body is directed to perform some act therein specified on the ground that it is a part of their office and duty. A writ of mandamus which couples this command with an alternative to the effect that if this act be not done the party commanded to perform it must show cause why this order has not been obeyed, is termed an "alternative mandamus"; a writ in which the command of the superior court is absolute, is termed a "peremptory mandamus."

Manu forti.— A term used in pleading to denote that the entry was the most forcible that could be made.

Matter in Deed.— A matter that may be proved by deed.

Matter of Fact.— A matter that may be referred to a jury, as its truth is a question that may be determined by the senses, or decided upon evidence.

Matter of Law.— A matter, the truth or falsity of which must be decided by established rules of law.

Matter of Record.— Matter that may be proved by the production of an authentic record.

Mercantile Law.— That branch of law in which the rights and duties arising of mercantile relations are defined.

Metes and Bounds.— A term used to define the boundary lines of lands.

Misjoinder.— A term used in equity pleading to denote the improper union of causes of action in a single suit at law.

Moral Certainty.— A term which denotes the degree of certainty by which a jury is justified in determining its verdict.

More or Less.— A term used to convey the impression that the quantity of the matter at issue is uncertain and that neither party shall find cause for complaint in its deficiency or excess.

Mulct.— The fine imposed upon the conviction of an offender for the commission of an offence.

Municipal Law.— See Law.

Mystic Testament.— A term used to define a will under seal.

Natural Law.— See Law, Natural.

Ne baila par.— A plea in detinue, in the making of which the defendant denies that the thing sued for was ever delivered to him.

Never Indebted.— A plea in which the defendant asserts that he is not indebted to the plaintiff for the amount sued for.

New Promise.— A new contract made after the original agreement has become invalid, and by the terms of which the signers agree to fulfil the stipulations of the prior contract.

Newly Discovered Evidence.— A term used to denote that the proof of new facts that have been obtained since a verdict was rendered are of sufficient importance to affect the decision of the court.

Nihil dicit.— Literally, he says nothing. A term used to denote that judgment may be taken by default.

Nihil habet.— Literally, he has nothing. A term used in the return made by the sheriff who has been unable to discover the property required under a writ of scire facias, etc.

Nominal Damage.— A term used when a trifling sum has been awarded in a case where a breach of duty, or an infraction of the plaintiff's rights, has been shown, but by which no serious injury or loss had been sustained.

Nul tort.— A plea to a real action in which the defendant enters a denial of any wrong.

Nulla bona.— A term used in a return to a writ of fieri facias denoting that there are no goods upon which a levy may be made.

Optional Writ.— A writ which contains the alternative providing that if a thing is not done cause must be shown as to why it was not done.

Organic Law of the State.— See Law, Constitutional.

Oyer and Terminer.— Although this name was originally applied only to an English court for the trial of indictments, it has since been adopted in some portions of the United States as the title of the higher courts of criminal jurisdiction. See Court.

Particeps Criminis.— A term used to denote that a party is a partner in the crime alleged.

Pendente Lite.— A term used to denote that a matter is in statu quo pending the action of the court.

Peremptory Challenge.— A privilege permitted in criminal cases when the prisoner's counsel is granted the right to make a specified number of challenges of jurors without giving his cause.

Perpetuating Testimony.— A term applied to testimony that has been reduced to writing and duly attested according to law that it may be preserved to be read in evidence at some action not yet instituted.

Plaintiff and Defendant.— See Law.

Positive Fraud.— A term used when the deception in question was not only successful but was so clearly intentional as to be beyond the possibility of doubt.

Precarious Right.— A right that the owner has transferred to another person that the latter may enjoy it until it shall please him to revoke it.

Quiet Enjoyment.— A term employed in covenants or leases by which it is agreed that the lessee shall be permitted to peaceably enjoy the premises.

Quo warranto.—A term derived from the name of a writ issued to compel a person, or a number of persons to show by what warrant they have assumed the duties of a public office, trust, or franchise. It is, accordingly, the remedy which must be resorted to to oust usurpers from office.

Real Covenant.— A term applied to the signed and sealed agreement by which two or more persons bind themselves to pass a real thing.

Rebutting Evidence.— The testimony in a trial in which the defendant makes answer to the plaintiff's surrejoinder.

Recoupement.— The term applied to the right accorded the defendant to claim damage, in the same action, from the plaintiff because of his failure to comply with some cross-obligation or his violation of some duty imposed upon him by the terms of the contract.

Rejoinder.— The term applied to the fourth stage in the pleadings in an action at common law, in which the defendant makes answer to the plaintiff's replication. A surrejoinder is the next pleading of the plaintiff.

Replevin.— A term applied to a personal action brought to recover possession of goods that have been wrongfully taken or detained, security being given by the complainant to try the right to their ownership by means of a regular suit at law, and to return the goods replevined if such action should be determined in favor of the defendant. A "replevin in the cepit" is an action in which it is claimed that the defendant wrongfully took the goods, while a "replevin in the detinet" is an action claiming that he wrongfully detained them.

Salvage.— See Law, Maritime; Salvage.

Separate Maintenance.— An allowance made by a husband for the support of his wife from whom he has separated.

Stoppage in Transitu.—The resumption by the seller of either the actual or constructive possession of goods that have not been paid for while on their way to the vender but before the latter has acquired actual possession of a property right in such articles.

Subornation of Perjury.— The term applied to the act by which another person is persuaded to commit the crime of perjury. See Perjury.

Tender.— A term denoting an offer to deliver something in satisfaction of a debt, or to give to the other party the specific thing required by the contract in question.

True Bill.— When an indictment is found against a party accused of a felony before the grand jury the finding is termed a "true bill." See Law, Criminal.

Under and Subject.— A term used in instruments for the conveyance of land, indicating that the party taking it accepts the transfer subject to the mortgage upon it.

Vadium Mortuum.—Literally, a dead pledge. A term used to denote the security given in the form of a mortgage by which the lender agrees that if the money borrowed is not repaid at the time specified the estate shall pass to the lender.

Vadium vivum.—Literally, a live pledge. A term used to denote a pledge given in the form of a mortgage under which the lender agrees to take the sum borrowed out of the profits of the land.

Without Prejudice.— A term used in cases of overtures and communications between parties to an action at law by which it is specified that should the negotiations fail to result in the adjustment of the controversy nothing that has transpired at such meetings will be taken advantage of at subsequent hearings before the court, but all will be regarded as "without prejudice" to the matter at issue.

Yielding and Paying.— A term used in the writing of a lease that it may constitute a covenant on the part of the lessee to pay the rent stipulated.

Le Gallienne, lĕ găl'lĭ-ĕn, **Richard**, English author: b. Liverpool, England, 20 Jan. 1866. He was educated at Liverpool College and after several years spent in business served as literary critic for the 'Star' and settled in London. Since 1902 he has lived in New York. Among his numerous published works are: 'My Ladies' Sonnets' (1887); 'Volumes in Folio' (1888); 'George Meredith' (1890); 'The Book-Bills of Narcissus' (1891); 'English Poems' (1892); 'The Religion of a Literary Man' (1893); 'Prose Fancies' (1894-6); 'Robert Louis Stevenson and Other Poems' (1895); 'Retrospective Reviews' (1896); 'The Quest of the Golden Girl' (1896); 'If I were God' (1897); 'The Romance of Zion Chapel,' a novel (1898); 'Travels in England' (1900); 'Odes from the Divan of Hafiz' (1903).

Legaré, lā-grē', **Hugh Swinton**, American statesman: b. Charleston, S. C., 2 Jan. 1789; d. Boston, Mass., 20 June 1843. He was graduated at the College of South Carolina in 1814, and subsequently studied at Edinburgh University. After a tour of Europe he returned home in 1820, and two years later entered upon the practice of law. In 1821 he represented his native city in the State legislature, and in 1830 was elected attorney-general. In the same year he established the 'Southern Review,' a quarterly, with Stephen Elliott. In 1832 he was appointed *chargé d'affaires* at Brussels. In 1836 he was elected to the lower house of Congress. In 1840 he was appointed by President Tyler attorney-general of the United States. He was a brilliant orator and debater, and his contributions to the New York 'Review' on 'Demosthenes,' the 'Origin of Roman Law,' etc., were marked by much literary ability.

Legate, an ambassador sent by the Pope and armed with his authority to represent him at the court of a foreign prince or state.

Legazpe, Miguel Lopez de, mē-gĕl lō'pāth dā lā-găth'pā, Spanish soldier: b. Zumarraga, Guipuzcoa, about 1510; d. Manila, Luzon, 20 Aug. 1572. He was for several years chief secretary of the government of the City of Mexico and in 1564 was made commander of the Spanish forces sent to the Philippine Islands. He sailed from La Navidad, Mexico, in November 1564, and reached the islands in the following February. He took possession of several of the islands and founded San Miguel in Cebu, in May 1565; began the subjugation of Luzon in 1570, and founded the city of Manila in May of the next year.

Legend, originally a term applied to collections of biographies of saints and martyrs, or of remarkable stories relating to them. In the

Middle Ages a collection of the lives of the saints was known by the name of Legenda Sanctorum, or Historia Lombardica. There is a celebrated collection, called the Golden Legend (Aurea Legenda), by Jacobus de Voragine, archbishop of Genoa, who died in the year 1298. It was translated into English by Caxton, and printed by him at the command of William, earl of Arundel, in 1483. Many of the mediæval legends were of an uncritical character, and along with true history often mingled much fable. In the course of time the legend came to mean only the fictitious parts of the story and became distinct from authentic history. It has now come to mean any unauthentic or improbable story handed down from ancient times. Legend is also used for the motto or words engraved in a circular manner round the head or other figure upon a medal or coin. The meaning of this term is similar to that of *inscription;* but the latter refers chiefly to the writing placed in the middle of the coin, while the legend surrounds it.

Legendre, Adrien Marie, ä-drē-ŏṅ mä-rē lė-zhŏṅdr, French mathematician: b. Paris 18 Sept. 1752; d. Auteuil, France, 9 Jan. 1833. He was professor of mathematics in the military school at Paris and in 1783 became a member of the Academy. He was in 1787 employed by the French government with Cassini and Mechain, to measure a degree of latitude between Dunkirk and Boulogne, while English mathematicians did the same on the other side of the Channel, in order to determine the precise location of the observatories of Greenwich and Paris. In 1808 Legendre was appointed by the imperial government councillor for life to the university. He particularly distinguished himself by profound investigations as to the attraction of elliptical spheroids, and his method of calculating the course of the comets attracted great attention. His best known work is ‹Eléments de Géometrie› (1794; new edition, with additions and modifications by Blanchet 1845), which has been translated into English with notes by Sir David Brewster. He wrote also: ‹Essai sur la Théorie des Nombres› (1798); ‹Nouvelle Methode pour déterminer l'Orbite des Cometes› (1805); ‹Exercises du Calcul integral, sur divers Ordres de Transcendantes et sur les Quadratures› (1811–19); ‹Traité des Fonctions elliptiques et des Intégrales eulériennes› (1827–32); etc.

Leger, Paul Louis, pōl loo-ē lā-zhā, French scholar and author: b. Toulouse 13 Jan. 1843. In 1885 he was appointed professor of the Slav languages at the Collège de France, and has done much to awaken an interest in the history and philology of the Slav peoples by such works as: ‹Slav Studies› (1875); ‹History of Austria-Hungary› (1878), translated into English; ‹Slav Tales› (1882); ‹The Save, Danube, and Balkan› (1884); ‹Bulgaria› (1885); ‹Russians and Slavs› (1890); ‹Russian Literature› (1892).

Legerdemain, lĕj-ėr-dę-mān′, the art of performing tricks, or deceiving the human eye with apparent supernatural power. Legerdemain is usually carried on successfully by the aid of trick apparatus and machinery. Sorcery, enchantment, magic, necromacy, divination and perhaps astrology are in a sense all branches of legerdemain. For further details see MAGIC.

Leggett, lĕg′ĕt, **Mortimer Dormer,** American soldier: b. Ithaca, N. Y., 19 April 1821; d. Cleveland, Ohio, 7 Jan. 1896. After graduating in medicine at Willoughby, Ohio, he studied law and was admitted to the bar in 1845. In the following year he was instrumental in organizing the first union free school system in Ohio. He was professor of pleadings and practices in Ohio Law College 1855–8, superintendent of the Zanesville (Ohio) public schools in 1858–62, and from 1862–5 served in the Federal army and was promoted to be major-general of volunteers in August 1865. From 1881 till his death he practised in Cleveland, Ohio.

Leggett, William, American journalist: b. New York 1802; d. New Rochelle, N. Y., 29 May 1839. He was educated at the college in Georgetown, D. C., and in 1822 entered the navy as midshipman, but resigned in 1826. He had in the previous year published a volume of poems, ‹Leisure Hours at Sea, by a Midshipman of the U. S. Navy,› and in 1828 became editor of the ‹Critic,› a weekly literary journal, soon unitel with the ‹New York Mirror,› to which he contributed ‹Tales by a Country Schoolmaster› and ‹Sketches at Sea.› In 1829 he became one of the editors of the New York *Evening Post,* to which journal he was attached until 1836. He then commenced a weekly journal called the ‹Plaindealer,› which attained a large circulation, but was soon discontinued through the failure of its publisher. In May 1839, he was appointed by President Van Buren diplomatic agent to Guatemala, but died suddenly while preparing for his departure. His ‹Political Writings,› with memoir by Theodore Sedgwick, appeared in 1840. Leggett was remarkable among the journalists of his day as an unflinching advocate of freedom of opinion for his political opponents as well as for the men of his own party.

Leggett's, or **Bald, Hill, Battle of,** an engagement of the Civil War, near Atlanta, Ga. The battle of Peachtree Creek (q.v.), 20 July 1864, was a Confederate defeat. On the 21st Gen. Sherman advanced strong skirmish-lines to within about two miles of the works surrounding Atlanta. In the morning Leggett's division was ordered to carry a high, bare hill, situated about half a mile south of the Decatur railroad. Supported on the right by Giles A. Smith's division, Leggett advanced under cover of the hill itself, dashed forward when reaching its base, drove Cleburne's Confederates from it, and began to intrench. The Confederates made several vain efforts to retake it. From its summit Atlanta was in full view. Discovering at daybreak of the 22d that the advanced Confederate works had been abandoned, Sherman ordered a general advance along his line to occupy the city, and the movement began accordingly. During the night, however, the Confederate Gen. Hood had abandoned his advanced lines on the left and ordered Hardee's corps of four divisions to march entirely past Sherman's left and attack his left and rear. Giles A. Smith's division of Blair's Seventeenth corps held Sherman's left and Dodge's Sixteenth corps was some distance in rear of the centre of Blair's corps, and perpendicular to it. Blair fronted west, Dodge south.

About midnight Hardee moved out of Atlanta by the McDonough road, and about daybreak, when the troops had made a night march of 15 miles, and passed beyond Sherman's left, he halted, formed line, and gave his men needed rest. In half an hour the order was given to advance, and his corps went forward until Bates and Walther's divisions came to open ground, where they received a most deadly fire from Dodge's two Union divisions, which held them in check. Every effort to advance was repulsed with great loss, and Gen. Walther was killed. On the Federal side Gen. J. B. McPherson (q.v.), commanding the Army of the Tennessee, hastened troops to fill an interval between Dodge and Blair, rode to Dodge, and then toward Blair's line, and had gone but a short distance when he fell mortally wounded, being succeeded in command by Gen. John A. Logan. Meanwhile the left of Hardee's line had enveloped Giles A. Smith's division, attacking it in front, flank, and rear, Smith gradually yielding ground and refusing to connect his left with Dodge's right, the Confederates gradually advancing to the foot of Leggett's Hill. When Hardee's attack on Sherman's left and rear was being delivered, Hood ordered Cheatham's corps to attack in front, and the attack fell upon Leggett's Hill and the Fifteenth corps on the right of it, just as Leggett had repulsed an attack in his rear. Leggett, by desperate fighting, held his ground. The Confederates made repeated attacks until nightfall, when Hardee withdrew his right wing, leaving his left connected with the intrenched line in front of Atlanta. On the right of Logan's corps the Army of the Ohio was attacked by Smith's Georgia militia, which was readily repulsed. On Hardee's right Wheeler's cavalry attacked Sprague's brigade in Decatur, and for a time pressed it vigorously, but Reilly's brigade of the Army of the Ohio coming to its assistance, Wheeler was repulsed. The battle of Leggett's or Bald Hill was one of the greatest of Sherman's Atlanta campaign, and involved four corps of his army and two of Hood's. The loss of the Army of the Tennessee was 430 killed, 1,559 wounded, and 1,733 missing, with 10 guns; the entire Union loss during the day was about 4,000. The Confederate loss is not known; it has been variously estimated at from 6,000 to 10,000; it was probably between 5,000 and 6,000. Consult: ‘Official Records,’ Vol. XXXVIII.; Cox, ‘Atlanta’; Sherman, ‘Personal Memoirs,’ Vol. II.; The Century Company's ‘Battles and Leaders of the Civil War,’ Vol. IV.

E. A. Carman.

Leghorn, lĕg'hôrn or lĕg-hôrn' (It. Livorno, lē-vōr'nō), Italy, a walled city and a seaport, in Tuscany, on the Mediterranean. It is the capital of the province of Leghorn. It is about 200 miles northwest of Rome and 60 miles west of Florence. It is a well built and clean city; the north part called Venezia Nuova, is intersected by canals along which are warehouses and stores. Leghorn has an inner and outer harbor and a good roadstead. Neither harbor will accommodate the largest vessels. In the outer harbor is a lighthouse, built in 1303. Some of the manufactures are straw hats (originally the famous Leghorn hats), leather, woolen caps, glass, paper, soap, coral ornaments, etc. Shipbuilding is one of its important industries. The chief exports are olive oil, borax, wine, marble, quicksilver, candied fruit, hemp, hides, soap, raw silk, etc. The chief imports are sugar, cotton, coal, tobacco, grain, spirits, and petroleum. In the middle of the 16th century Leghorn had less than 800 inhabitants; but about this time it became a free port, the first one on the Mediterranean. After the decay of Porto Risano, a neighboring city, Leghorn grew into importance. Many of its ancient churches and dwellings are now in a good state of preservation, and are visited annually by many tourists. Some of the educational institutions are the Royal Commercial Marine Institute, the Royal Marine Academy, a library with over 60,000 volumes, a number of academies and seminaries. There are many charitable institutions for the sick and the poor, and for orphans. Leghorn is a popular summer resort, and its connection by electric lines with the bathing places and with beautiful villages in the vicinity make it a most desirable place of residence at any season of the year. Pop. (1901) 98,321.

Leghorn, a breed of domestic fowls. See Poultry.

Leghorn Hats, hats made in Tuscany from straw-plait obtained from bearded wheat cut green and bleached. They are so called because imported from Leghorn.

Legion, in ancient Roman armies, a body of infantry consisting of different numbers of men at different periods, from 3,000 to above 6,000, often with a complement of cavalry. Each legion was divided into 10 cohorts, each cohort into three maniples, and each maniple into two centuries. Every legion had 60 centurions, and the same number of optiones or lieutenants and standard-bearers. The standard of the legion was an eagle.

Legion of Honor (*Légion d'Honneur*), a French order for the recognition of military and civil merit, instituted by Napoleon while consul 19 May 1802, and inaugurated 14 July 1804. The decoration originally consisted of a star containing the portrait of Napoleon surrounded by a wreath of oak and laurel, with the legend, ‘Napoléon Empereur des Français’; on the reverse was the French eagle with a thunderbolt in his talons, and the legend, ‘Honneur et Patrie.’ The order has been remodeled several times. There are now five ranks or classes: ordinary chevaliers or knights, officers, commanders, grand-officers, grand-crosses. The profuse granting of the decoration of the order latterly brought the institution into discredit, and the number of chevaliers is now restricted to 25,000, the officers to 4,000, the commanders to 1,000, the grand-officers to 200, and the grand-crosses to 70. The star now bears a figure emblematic of the republic, with the inscription, ‘République Française 1870,’ on the reverse two flags, with the inscription, ‘Honneur et Patrie.’

Legislation, or **Law-making,** a subject which naturally divides into four branches: the nature of its sanctions, or in other words the body from which it emanates; the methods of preparing and enacting it; classification by its subjects, as organic, general, special, or local; and by its objects, as substantive or constructive, and remedial or punitive.

1. The final sanction of any law must be the major part of the organizable force in a com-

munity; since a law without force to compel obedience is mere counsel from an advisory body or the expression of an opinion, *brutum fulmen.* But the source which promulgates it need not be, as in modern states it usually is, an expressly constituted legislative body. The law may be an edict from a monarch; or a decree from an administrative council; or (as with State constitutions in general) the work of a popular convention, itself now usually called by a legislative body, but originally (see CONVENTION) the expression of the popular will through its leaders, not disowned by the people; or by judges who practically make new legislation by construing the old. A broad distinction between the United States and the continent of Europe in this respect is, that in the constitutional governments of the former, a large part of the work which loads the State and national legislatures here is done by administrative orders with the force of law. Each minister in the great departments of state promulgates executive decrees, of a sort which are classed as legislation and taken charge of by legislatures here (to the exhaustion of their time and energies needed for broader care over the public interests): city charters and county and town governmental regulations are there counted as administration, not legislation.

2. When entrusted to regular legislative bodies, the methods of imposing it on the community are practically divided into two, corresponding to Mr. Bagehot's classical division of governments into cabinet and presidential; or still more accurately, the difference as legislative bodies is between one supreme committee and an aristocracy of theoretically equal committees, of which some are grandees (see CONGRESS). In the former, the grand parliamentary committee called the cabinet initiates nearly all legislation, of its own motion or by adoption of outside proposals; shapes it under fire of discussion (in which the ministers take part), and dictates when it shall be voted on; and stands or falls with the general success of its measures. In the second or congressional method, also used in the State legislatures, each member introduces whatever bills he chooses; they are referred to committees, standing or special, who report and make recommendations on them (or not) at will, and those interested in their passage secure a vote when and if they can. The immense mass of projected legislation poured into legislatures under our system compels the most rigid rules as to all the stages of this process, — form, presentation, reference, readings, record, motions, balloting or ayes and noes, etc. In practically all our States the executive has a qualified veto on legislation (see EXECUTIVE). Much in favor now is the Referendum (q.v.), which throws the final responsibility on the people; but in no case have the results justified any confidence in it as an improvement.

3. Organic laws are those which form the working basis of an independent (or locally autonomous) community, assign rights and duties of sovereign and subject, distribute and delegate powers. These form the source of authority for all the working bodies which put into effect the organic provisions; to them, therefore, must be referred all questions as to the scope of their delegated powers, by legislatures and executive bodies. All that contravenes this organic law is «unconstitutional.» From its fundamental and far-reaching nature, it is always made difficult of change; and for the same reason, incessant and too often successful efforts are made, by over-zealous reformers, to foist into them all sorts of legislative measures so opposed to the wishes of a large section that speedy repeal is feared if not so intrenched. General legislation is that which affects the interest of the whole community, or if it practically affects special sections, does so by the chance of localized interests. The rules which should guide this are outside our province. Local legislation, that relating to particular municipalities or other State subdivisions, blends so indistinguishably with special legislation — that relating to specific individuals, companies, interests, etc. — that the evils are one, and the attempted restraints are of one sort. The latter (special) is of course far the most fertile source of direct pecuniary corruption, and much more abundant; but the «hold-ups» of municipal interests, or laws interfering with their government or finance, etc., have been and remain great sources of corruption also, for large money interests are often affected by them. So great have been the evils of this that many States have amended their constitutions to prohibit or restrain it; but in the case of municipalities, this is regularly, though with more than doubtful constitutionality, evaded by dividing a State into «classes,» with but one in each class, and passing laws for the class. Special legislation for individuals or corporations can only cease with the abdication of legislative power over business; and the attempt to forbid it results in the worst class of it, — namely, the modification of general law to suit special interests.

4. Substantive or constructive legislation is that creating or defining rights and duties, or assigning powers; with this must always go, to make it a law, the provision of a penalty for disobedience, or at least a provision for enforcing obedience which implies the imposition of penalties already legal. The command or the permission to do something, in fact, implies a menace in case it is not done or the permission is interfered with. Destructive or amendatory law is the abolition of former laws; and a large part of the work of every legislature consists in undoing the work of its predecessors. But as this involves either passing others instead, or leaving in force still others, if nothing but the common law, — a mixture of legislature-made and judge-made legislation, — it belongs to the constructive order, paradoxical as it seems. Remedial legislation provides protection or remedies for wrong; this too needs its punitive accompaniment to be of any effect.

Legislature, in the United States, the law-making body of one of the States; in general, the law-making body of any constitutional state. The name always implies that there is not an autocracy promulgating self-validated decrees, but a body of representative citizens, who act for the entire citizenship in framing or consenting to their laws. It has been stated under LEGISLATION that laws need not emanate from an express legislative body; but in some shape all free modern states have such a body. The subject divides into four chief branches: (1) The origin and history of the body, and the general outcome; (2) the legal sources of its power and the methods of selecting it; (3) the extent and limits of its powers, its methods, and its periods; (4) the qualifications, tenure, and rights of its members. The first and second intertwine.

1. The original legislative bodies, like the Greek ecclesia and the Roman senate, were executive and administrative bodies also; public business was not yet differentiated. Under the empire, as the imperial power grew and the senatorial dwindled, legislation was confined to codes promulgated by the emperors, plus judge-made law. In the mediæval states, the king or prince was generally the fountain of legislation; but the Teutonic assembly, representing popular co-operation, survived in the favorable location of England, as the Witenagemot of the Saxon kingdoms. The Norman and Angevin kings replaced them with a council of leading nobles and clergy; but in the struggles with Henry III., Simon de Montfort called in the representatives of the towns. His system perished with him; but Edward I. revived it, for the sentiments of the chief sources of the royal supplies could not be disregarded. After asserting a check on one administrative department after another, the popular body wrested from the privileged orders first a share in and finally a monopoly of legislative action. The inviolability of its members, long claimed, was established against the Stuarts; the right to decide on the qualifications of its members was established against George III. by the Wilkes case. The separation of executive, judicial, and legislative functions, involved in this process, — since a representative body in a great state is unfit for the first two, though in the little Greek city-states they were combined, — had become a fixed principle of English public life by the 18th century, and was transferred to the English colonial governments. That nearly all had two chambers was due to the accident of the English parliament having that constitution; they were not due to the theory of «checks and balances,» which on the contrary was evolved from the working of the parliamentary system. This system, nevertheless, commends itself by reason and experience, to prevent hasty or factious legislation, especially from great waves of popular feeling; and is used in nearly all legislative bodies. In part, this is because all other parliamentary systems, as the countries have emerged from absolutism or dependence and undertaken constitutional life, have been copied from those of England or the United States. This copying extends to all the general forms, and often mimics unessential details under entirely different circumstances from those which generate the originals. Thus, not only in the Congress but even more needlessly in the State legislatures, the lower house only (see HOUSE OF REPRESENTATIVES) can originate money bills; though both houses are equally popular bodies, and the English provision was part of a warfare between nobles and commons. The upper or less numerous house is also usually invested with the confirmation of treaties and appointments, and sometimes with some administrative functions; in the Congress the House prefers impeachments and the Senate tries them, and the States have copied this.

2. The old legislatures represented «estates» or orders of the state, the three great ones being nobles, clergy, and commons. The English parliament still does so, except that the first two are merged in one house and vote as one, instead of separately as formerly. In essence this is the obvious and proper form of representation (by the great classes of interests and sympathies); but in a country where there are no classes, there is but one to represent, the whole people, and universal suffrage with popularly nominated candidates is the only workable method. Even where there are such, this method is general for the lower houses; but efforts are almost everywhere made to restrict the body of electors somewhat, and bar out the most ignorant, dangerous, or corruptible class. Property-holding or tax-paying are common, and educational requirements are much used, but not always for their avowed objects. The upper houses are sometimes chosen directly, as in the United States of Mexico and Brazil, but from larger districts than the lower, sometimes at large; sometimes indirectly, as in the United States and France; sometimes appointed, as in Germany, Switzerland, and Canada. In still others, it is neither elective nor appointive, but a mixture of hereditary and *ex officio,* or both, as in Great Britain and Austria-Hungary; sometimes a mixture of hereditary and elective, as in Prussia; sometimes of hereditary and appointive, as in Italy.

3. Legislatures may be divided according to their powers, into limited and omnipotent. The United States is the chief exemplar of the former; Great Britain and France represent the latter. Not only the State legislatures, but Congress, are limited to passing such laws as do not conflict with the Constitution, as interpreted by the Supreme Court; the States are still further bound by their State constitutions; and in both, President or governor can compel a reconsideration and a heavier majority. The enactments of most European parliaments are substantive law as soon as passed, with no superior authority; the English sovereign has a theoretical veto which he cannot use, the French president has none. In methods, all legislatures are hedged in by a great body of rules of their own making, found needful by experience; the choice and powers of the speaker, the appointment of committees, the method of introducing and acting on bills, the regulation of debate, the communication between the two branches and between either and the executive, the treatment of petitions, and many other matters, cannot be left to continual warfare. These rules are of great number and complexity, and throw the control of business entirely into the hands of experts (see CONGRESS): it has been said that a member of Congress needs an entire session to learn the rules sufficiently to take any effective part, and much of the time of all is spent in debating their application. A very important limitation is that on the freedom of debate by the American «previous question,» French *clôture,* English «closure,» in other governments «urgency of public business» — all are the same, and nearly all popular parliamentary bodies have been compelled to adopt it; the United States Senate being a conspicuous exception, and Great Britain a late and reluctant accession. Without it, the entire system of «government by discussion» may be made unworkable by a small knot of members playing tricks with the rules; with it free debate may be stifled, but the evil is the less of the two. Procedure must be open, save in «executive sessions» to make appointments. The matter of a quorum is settled by each for

itself, usually as a majority of the elected members; each also decides what shall constitute a majority vote, whether of members elected or members present. The former power of many legislatures to dissolve themselves has been everywhere restrained: in the States by limitation of term and of the frequency and length of sessions (usually now to biennial sessions, and often to 60 days, on a rather ludicrous theory); in Great Britain by limiting the length of a Parliament to seven years. The upper house in Congress and most States is made a continuing body, by so arranging the terms that only a part are elected on any one occasion.

4. The qualifications for the lower house are invariably citizenship; usually (though with growing exceptions) male sex; an age generally (though not always) higher than the voting age, usually 25, sometimes more; if a State of the Union, technical residence therein, and, by a custom with the force of law, residence in the district of election. Crime and pauperism are invariable disqualifications, and sometimes bankruptcy. The upper house in addition to these has almost invariably (except in the United States) a higher age limit, from 30 up to 40; often a property qualification; and when appointive, they are almost invariably from the upper business or professional ranks. The tenures are always much longer in the upper house than the lower: nowhere less than six years, nine in some, for life in many European states — save that in Germany and Switzerland they can be terminated at the will of the local governments that make the appointments. In the lower house it is from a minimum of one to a maximum of three, except in Great Britain, where it is for seven unless the Parliament is sooner dissolved. In all legislatures, the members are exempt from civil process while in actual session, even during journeys to and from home at recesses.

Légitime, François Denys, fräṅ-swä dĕ-nē lā-zhē-tēm, Haitian general: b. 1842. During the administration of President Salomon, he was accused of aspiring to the presidency, and accordingly went to Kingston, Jamaica, remaining three years, then returned to Haiti at the invitation of his followers, and on 7 Oct. 1888 was elected president of the provisionary government. Gen. Thélémaque denounced the election as a job, and attempted to make himself president, but he was killed in the battle which ensued. Légitime was elected president of Haiti 17 Dec. 1888, but resigned in 1889, owing to the opposition of Gen. Hippolyte, and again retired to Jamaica. In 1896 President Sam granted a general amnesty, and he returned to Haiti.

Legouvé, Gabriel Ernest Wilfrid, gä-brē-ĕl ėr-nā vēl-frĭd lė-goo-vā, French dramatist and miscellaneous writer: b. Paris 15 Feb. 1807; d. 14 March 1903. In 1827 he won a prize of the Academy with a poem on the art of printing, ‘Découverte de l'Imprimerie.’ While instructor in the Collège de France 1847, he lectured on the history of woman's development; and later published: ‘Moral History of Women’ (7th ed. 1882), and ‘Woman in France in the 19th Century’ (1864). These works were received with great favor, and were followed by ‘Science of the Family’ (1867), and ‘Messieurs the Young Folk’ (1868). Meanwhile Legouvé was winning high distinction as a playwright with ‘Louise de Lignerolles’; ‘Adrienne Lecouvreur’ with Scribe (1849); ‘Medea’; ‘By Right of Conquest’; ‘Miss Suzanne’ (1867); ‘Anne de Kerwiler’ (1879); ‘Consideration’; etc. In 1882 he published: ‘Recollections of Sixty Years,’ and in 1890 ‘Winter Flower, Winter Fruits: Story of my Household.’ In 1885 he became a member of the French Academy.

Legros, lĕ-grō', **Alphonse,** Anglo-French artist: b. Dijon, France, 8 May 1837. In 1857 he exhibited for the first time in the Salon, but finding small encouragement in France he removed to London in 1863, became a naturalized Englishman, and was appointed in 1876 professor at the Slade School in University College. His work, alike in painting, etching, and modeling, is strongly mannered, and as a colorist his range is somewhat limited. His more important pictures are the ‘Anglers,’ the ‘Pilgrimage,’ the ‘Spanish Cloister,’ the ‘Benediction of the Sea,’ the ‘Baptism,’ and the ‘Coppersmith.’ His etchings will prove in all probability his most enduring work, among the most noteworthy being his ‘Death and the Woodman,’ and ‘Le Repas des Pauvres,’ both marked by a fine breadth in conception and handling. His portraits are also of value.

Legu'min, or vegetable casein, a protein substance analogous to the casein of milk, obtained from beans, pease, lentils, vetches, and other leguminous seeds; the principle of the *Leguminosæ.*

Legumino'sæ, a natural order of herbs, shrubs, and trees widely distributed in all climates but most numerous in tropical and subtropical regions; growing upon all kinds of soil; exhibiting a great range of habit from creeping annual to climbing shrub; useful for a great variety of purposes — ornament, food, timber, fodder, and in the arts; and constituting the second largest family of plants, about 7,000 species distributed among about 450 genera. The species are characterized by alternate, stipulate, usually compound leaves; papilionaceous or sometimes regular flowers commonly arranged in racemes; monadelphous, diadelphous or occasionally distinct stamens, typically 10, surrounding a single simple pistil which generally becomes a pod or legume containing one to many seeds.

The species naturally fall into three suborders; (1) *Papilionaceæ,* with flowers resembling a butterfly; (2) *Cæsalpineæ,* with imperfectly or not at all papilionaceous corollas, which may sometimes be nearly regular; (3) *Mimosæ,* with small, regular flowers. The first group contains more than two thirds of the species. Its members are adapted for insect fertilization, especially by bees, which alight upon the lower petals, brush against the pistil which is thrust out by the insect's weight, then come in contact with the stamens and finally carry the pollen, which has been discharged, to other flowers. Thus the pistils receive pollen from stamens not in the same flower with them. In some instances they may also obtain pollen from these stamens, thus having a double chance to be fertilized. (See FLOWERS AND INSECTS.)

Perhaps the most interesting trait found in the order is the power possessed by the species of obtaining free nitrogen from the air by means of the tubercles or wart-like excrescences upon their roots. These tubercles are the homes of bacteria which have gained entrance to the plant's tissue through the root-hairs; and are thus the result of irritation. The plants, it is believed, furnish the bacteria with carbohydrate food in return for the nitrogenous material prepared by them, thus exhibiting excellent examples of symbiosis (q.v.). Largely owing to this reciprocal action the legumes are valued as green manures, a fact long acted upon but unexplained until the last quarter of the 19th century, when Hellriegel and other investigators proved it, and even went further to show that soils poor in the bacteria could be inoculated profitably. See Clover; Nitrogen; Root-Tubercles; Green Manuring; Vetch; Cowpea; Bean; Lupine; Acacia; Licorice; Indigo; Sweet Pea; Medic; Laburnum; Tamarind; Mimosa.

Lehigh, lē'hī, a river of Pennsylvania which has its rise east of Wilkesbarre, in Luzerne County, and flows nearly south to a point about 12 miles below Mauch Chunk, where it breaks through the Blue Ridge. From here its course is southeast to Allentown, then northeast to Easton, where it enters the Delaware River, after a course of about 120 miles. In its upper course it is a rapid and picturesque mountain stream, broken by several falls. It passes through a rich coal and iron ore region, and serves as an outlet for the products of the mines. It was made navigable by a series of extensive improvements to Whitehaven, 84 miles from its mouth.

Lehigh University, an institution at South Bethlehem, Pa., founded by Asa Packer (q.v.), in 1865. He originally donated the land, 115 acres, upon which the buildings were erected and $500,000. At his death he bequeathed $2,000,000, making in all a gift of about $3,000,000. The object the founder had in establishing such a school was to give the young men of the Lehigh Valley an opportunity to acquire a complete education, technical, literary, and scientific, suitable to fit them for those trades and professions represented in the development of the peculiar sources of the rich mining territory in which it is located. The institution was incorporated in 1866 and its first class was graduated in 1869. It has nine courses in the school of technology: civil engineering, mechanical engineering, marine engineering, metallurgical engineering, electro-metallurgy, mining engineering, electrical engineering, analytical chemistry, and chemical engineering, leading to appropriate engineering degrees. The school of general literature has a Latin scientific course, and a classical course, leading to the degree of B.A. Summer schools in the engineering courses are given each year. The master's degree in arts and sciences may be obtained by means of the graduate courses. Students in mining engineering have the advantage of frequently and regularly visiting the mines. The Bethlehem Steel Company and the Lehigh Valley Coal Company give the students many opportunities of study, especially when accompanied by an instructor. There are 14 college buildings; Packer Memorial Church, Packer Hall, laboratories, the Sayre astronomical observatory, a gymnasium, and other buildings which make a valuable group. The income is derived from the endowment fund and tuitions. In 1905 the productive fund was $1,250,000, and the income $100,000. Some assistance has been received from the State. Connected with the school, in 1905, were 56 professors and instructors, and 630 students. The library contains about 121,000 volumes. The graduates number (1905) about 1,400.

Lehigh Valley Railroad Company. The Lehigh Valley Railroad is one of the eastern trunk lines; it extends from tidewater at New York City to the Lakes at Buffalo; it was incorporated by an act of the Legislature of Pennsylvania 21 April 1846, as the Delaware, Lehigh, Schuylkill and Susquehanna Railroad Company; its name was changed to Lehigh Valley Railroad Company 7 Jan. 1853.

The construction of the road was commenced in 1852, opened for traffic from South Easton to Allentown, in June, 1855, and to Mauch Chunk three months later, and extended to Wilkes-Barre, Pa., in 1865; to the State line between Pennsylvania and New York, in 1866, and to Buffalo in September, 1892. In 1872 the construction of the line extending from the Delaware River at Easton to Perth Amboy, N. J., on the Kill von Kull, was commenced, and opened for traffic in 1875. In 1885 the extension to tidewater on the Hudson River at New York was projected and the road subsequently constructed and completed.

The Lehigh Valley Railroad system is today a double track trunk line extending through the States of New Jersey, Pennsylvania and New York, from the Atlantic Seaboard to the Great Lakes. The main line runs from New York to Buffalo, N. Y., a distance of 448 miles. The entire mileage of the system is 1,392.89 miles, with 3,003.30 miles of standard gauge tracks. The Company possesses very large terminals on the Hudson River front opposite New York City, at Perth Amboy, N. J., and on Lake Erie at Buffalo, N. Y. At the eastern end of the line in New York Harbor the Company owns a large fleet of boats consisting of 6 lake steamers, 21 tugs, 5 steam lighters, 147 barges, 23 car floats, 1 water boat and 1 wrecking boat, used in the transfer of freight around New York Harbor, along Long Island and the coast of New England. The Company also owns 6 steel freight steamers of from 3.000 to 6,000 tons capacity, operating on the Great Lakes from Buffalo to the Company's coal and freight terminals at Chicago, Milwaukee, Duluth, Detroit and other points. The Railroad connects with all of the principal lines to the West at Buffalo and Suspension Bridge. The grades of the road both east and westbound are generally limited to 4/10 of one per cent.

For operation the road is divided into four main line operating divisions — New Jersey and Lehigh Division, Wyoming Division, Pennsylvania Division and the Buffalo Division; also two branch line divisions, viz.: Mahanoy and Hazelton Division, covering the anthracite coal regions, and the Auburn Division, covering branch lines in the northern part of New York State. The roadbed is stone ballasted and the main line is protected throughout by automatic signals.

The main shops of the Company are located at Sayre, Pa.; the principal buildings cover an area of six and one-third acres.

The rolling equipment of the road consists of 747 locomotives (passenger, freight and switching), 491 passenger car equipment, 35,769 freight car equipment (of which 13,381 are coal cars), 874 road service equipment, and a floating equipment of 204 vessels in service on the Great Lakes and at tidewater in New York Harbor. The total earnings of the system for the year ended 30 June 1905, were $31,275,842.72; expenses of operation for the same period, $18,929,701.33; net earnings from operations, $12,346,141.39; percentage, operating expenses to gross earnings, 60.52 per cent. The merchandise freight transported consists principally of flour and other mill products; grain and hay; fruit and vegetables; live stock; other packing-house products; lumber; cement, lime and brick; iron and iron products; ores; stone, sand and like articles; miscellaneous merchandise. The amount of merchandise freight moved for the year ended 30 June 1905, exclusive of Company's material, was 11,255,918 tons (Company's material moved, 389,755 tons). For the same period the coal tonnage, not including supply coal, amounted to 12,518,369 tons; the coal tonnage amounted to 52.66 per cent. of the total tonnage hauled during the year.

The railroad passes in its course from New York to Buffalo a series of well-defined mineral belts and well-developed industries. At Perth Amboy and vicinity is the well-known clay, kaolin and terra-cotta territory. East of Easton, Pa., and also west of Allentown, there are numerous cement works. Iron ore mines and furnaces are located at various points along the Lehigh Division. The slate belt is penetrated at Slatington. The railroad main line and branch lines cover the Mahanoy, Hazelton and Wilkes-Barre anthracite coal regions of Pennsylvania. In addition, the territory along the entire line of the Lehigh Valley Railroad is rich in its abundance and variety of raw materials, products of the soil and various industries, such as clays of many kinds and qualities from which all kinds of brick are manufactured, drain tiles, conduits, terra-cotta and vitrified products; kaolin for the manufacture of pottery; large deposits of marl for making cement, cement rock, shale, lime, gypsum, slate, building stone, trap rock, sand of high grade for the manufacture of glass and for building purposes, iron ore, paint ore for the manufacture of yellow ochre and umber, anthracite coal, salt, gas, lumber, fruit, dairy and agricultural products.

E. B. Thomas,
President.

Le'highton, Pa., borough in Carbon County; on the Lehigh River, and on the Central of New Jersey and the Lehigh Valley R.R.'s; about 75 miles northeast of Harrisburg, the capital of the State, and 70 miles, in direct line, northwest of Philadelphia. It is a trade centre for a mining section of the county. Its chief manufactures are car-springs. flour, leather, stoves, furniture, brick, and mining tools. The borough owns the electric-light plant, but leases it to a private corporation who operates it. Pop. (1890) 2,959; (1900) 4,629.

Lehman, lā'mạn, **Rudolf Chambers,** English journalist, lawyer and authority upon rowing: b. near Sheffield, England, 3 Jan. 1856. He was educated at Cambridge and became a barrister of the Inner Temple in 1880. He has been a member of the staff of 'Punch' from 1890 and was editor of the London *Daily News* in 1901. He coached the Harvard crew in 1896 and 1897 and was given a dinner by the Harvard Club of New York on 10 April 1897. He has published among other works: 'In Cambridge Courts' (1891); 'Mr. Punch's Prize Novels' (1893); 'Isthmian Library: Rowing' (1897); 'Anni Fugaces,' verse (1901); 'Adventures of Picklock Holes' (1901).

Lehmann, Charles Ernest Rodolphe Hénri, French painter: b. Kial, in Holstein, 14 April 1814; d. Paris, 30 March 1882. His father taught him the rudiments of the art of painting and he then went to Paris where he studied under Ingres. He then began to exhibit, the greater portion of his first paintings being on religious and scriptural subjects. In 1840, 1848, and 1855 he received first-class medals for his paintings; in 1846 the cross of the Legion of Honor was bestowed upon him; in 1861 he became a professor of the Ecole des Beaux-Arts, and in 1875 a member of the superior council, and in 1864 became a member of the Institute. Among his works are: 'Tobias and the Angel' (1835); 'Jephtha's Daughter' (1836); 'Don Diego' (1836); 'Saint Catharine Borne to the Tomb by Angels' (1840); 'Hamlet;' 'Ophelia' (1846); 'Leonidas' (1848); 'The Oceanides' (1850); 'Adoration of Magi' (1855); 'Education of Tobias' (1859); 'Rest,' etc. He also decorated the throne room in the Luxembourg Palace, the ceiling of the Great Hall in the Palais de Justice, and painted portraits of Haussmann, Liszt, Karr, and others.

Lehmann, lā'män, **Lilli,** German operatic singer: b. Würzburg 1848. Her mother, who was harp-player and prima donna under Spohr at Cassel, gave her the first musical instruction, and under her training Fräulein Lehmann developed a remarkable soprano voice. She made her début in Berlin (1870) and subsequently produced so good an impression that she was appointed imperial chamber singer in 1876. She became famous from the parts she took in the Nibelungen trilogy at Baireuth, and sang in Wagner's operas in London (1884), and as principal soprano in the same operas at the Metropolitan Opera House, New York, her principal roles being Brünhilde and Isolde.

Lehmann, Liza, English singer and composer: b. London. She is a daughter of Rudolf Lehmann (q.v.). She studied vocal music at London and Rome, and composition under Freudenberg and Hamish McKunn. On 23 Nov. 1885 she made her début in London; her success was assured, and she was received well throughout Great Britain and Germany. In 1894 she retired from public singing on her marriage with Mr. Herbert Bedford, a well-known composer. She devoted herself henceforth to composition and has produced works of freshness and originality, many of them tinged with a refined feeling which recalls the modern German romantic or emotional school. Her most successful works are the 'Persian Garden'; and 'The Daisy Chain' (1901).

Lehmann, Rudolf, Anglo-German painter and writer: b. near Hamburg 19 Aug. 1819. He was educated at the Johanneum, Hamburg, and proceeding to Paris studied painting under his brother Henry Lehmann; he was afterward the pupil of Cornelius and Kaulbach (q.v.) at

Munich. He went to Rome in 1839 and remained there 16 years. His largest picture is 'The Blessing of the Pontine Marshes by Sixtus V.,' which was bought by the French government after being exhibited in France 1846. In 1886 he settled in London and became a successful portrait painter. He has published: 'An Artist's Reminiscences' (1894); 'Men and Women of the Century' (1896).

Leibnitz, Gottfried Wilhelm, gŏt′frēd vĭl′hĕlm līb′nĭtz, the most universal scientific genius of modern times: b. Leipsic 21 June 1646; d. Hanover 14 Nov. 1716. He early lost his father, a Professor of Moral Philosophy in the local university, and depended for his childish education mainly upon undirected omnivorous private reading. Having passed through the University of Leipsic, he graduated Doctor of Laws from Altdorf, near Nuremberg, in 1666, and passed almost at once into the service of the Archbishop Elector of Mainz, arch-chancellor of the Empire, in whose interests he began the series of attempts to find a basis for the reunion of Western Christendom which occupied him at intervals through a great part of his life. In 1672 Leibnitz was despatched to Paris in the hope that he might be able to promote the interests of the German States by diverting the ambitions of Louis XIV. towards the conquest of Egypt. The mission failed of its intended effect, but the residence of Leibnitz in Paris, between 1672 and 1676, which was only broken by a brief visit to London in 1673, was of the utmost importance for the development of his thought, as it brought him into contact with the chief living exponents of Cartesianism, Arnauld and Malebranche, as well as with Huygens and other leading mathematicians. From this period date Leibnitz's critical study of Cartesianism and his introduction to higher mathematics, of which the first result was his discovery of the fundamental notions of the infinitesimal calculus. This discovery, made in 1675, was announced in 1676 to Newton, who promptly replied that he had for years been in possession of methods (the «method of fluxions») leading to the same results as those of his correspondent. The nature of these methods was however disguised in a couple of anagrams. Leibnitz did not actually publish his discovery until 1684; Newton's method was only given to the world in 1693. Leibnitz's later years were unfortunately much disturbed by a bitter controversy which reflects little credit on either party, with the friends of Newton, who accused him of having stolen the idea of the calculus from papers of Newton's seen during his visit to England. It is now generally admitted that this charge, which was never made by Newton himself, was quite baseless, and that though Newton had elaborated his methods for private use as early as 1665, the discovery of Leibnitz was entirely independent, while his notation was so much more convenient that it has completely replaced that of his great rival, even in England.

On the termination of his residence in Paris Leibnitz spent several weeks in Holland in close communication with Spinoza, then living at The Hague, where he died in the following spring (1677). It appears that the two thinkers had repeated philosophical discussions, and that Leibnitz was even allowed to see the jealously guarded manuscript of Spinoza's 'Ethics.' His subsequent misrepresentation of the extent of this intercourse with the greatest thinker of the previous generation, which has only been exposed within recent years, is perhaps the greatest blot on Leibnitz's character. Leibnitz had already been deprived of his diplomatic position by the death of the Elector of Mainz in 1673. He now (1676) accepted from Johann Friedrich, Duke of Brunswick, the post of court-librarian at Hanover, which he filled for the rest of his life. Much of his time was henceforward taken up with public affairs and with preparation for a History of the House of Brunswick, in connection with which he spent two years (1687-9) in research in the archives of Austria and Italy. He negotiated long, but to no result, with Bossuet and Spinola for the reunion of the Roman and Reformed churches, did much to promote the mining industry of the Harz district, and in especial labored to advance the organization of scientific research by the foundation of academies. The sole direct result of these last exertions was the creation in 1702 of the Berlin Academy with Leibnitz as its first President. Plans for similar institutions in Dresden, Vienna, and Petersburg proved abortive.

During the lives of Johann Friedrich and his successor Ernst August, Leibnitz remained in high favor and enjoyed in particular the friendship of the «two Electresses,» Sophia, wife of Ernst August and daughter of Descartes' correspondent, Elizabeth of the Palatinate, and her daughter, Sophia Charlotte, Queen of Prussia. With the accession of the former's son, George Louis, afterwards George I. of England, to the dukedom he seems to have fallen into some disfavor, which, combined with the attacks of Newton's partisans, did much to embitter his last years.

Works.—In addition to his diplomatic and historical compositions, Leibnitz conducted an enormous scientific and philosophical correspondence, but his busy life left little time for the production of philosophical works on a large scale. He preferred to make his ideas known piecemeal in correspondence and occasional short essays on particular points. The one extended philosophical treatise published in his lifetime, the famous 'Theodicy,' a defence of Natural Theology against the sceptical attack of Bayle, is by general consent his poorest performance. (The far more important 'New Essays on Human Understanding,' a penetrating criticism of the empiricism of Locke, remained in manuscript until 1765; the even more valuable 'Discourse on Metaphysics,' composed in 1685 for Arnauld, was not printed until 1846. Even the famous *Monadology*, the best known of his shorter philosophical essays, was only published in the original French by Erdmann in 1840.) There is thus no such thing as an even approximately complete edition of the philosophical writings of Leibnitz. The best substitute available is afforded by the two editions of Gerhardt of the mathematical (Halle and Berlin 1850-63) and the philosophical works (Berlin 1875-90). But the recent publication by M. Couturat of a selection from the MSS. preserved at Hanover (Opuscules et Fragments inédits de Leibnitz, Paris, 1903), has shown that many things of first rate importance have been passed over in Gerhardt's editions, and has thrown a wholly new light on the logical foundations of Leibnitz's system. Though the great majority of the Hanover MSS. are still unprinted, it is already clear that Leibnitz had anticipated to a previously unsuspected extent many of the most important recent developments in both mathematics and philosophy. Thus he had conceived the idea of Projective Geometry, and of the Calculus of Extension, while he had completely worked out the main principles of the exact logic recreated nearly 200 years later by Boole. Similarly the feasibility of the apparently chimerical project of a universal «characteristic,» or philosophical symbolism independent of spoken language, to which so much of Leibnitz's thought was devoted, has only been shown in the last few years by its approximate realization in the mathematical logics of Peano, Freje, and others.

Philosophical System.—Leibnitz makes his first appearance as a philosopher with a settled system of his own in 1685 at the age of 39, in the 'Discourse on Metaphysics' composed for Arnauld. He had previously passed successively under several different influences. In youth he had been familiar with the traditional doctrines of the great schoolmen, particularly with the nominalist system of Duns Scotus, and had afterwards been powerfully influenced by the new materialist and mechanical philosophy of Nature as expounded by Hobbes and Gassendi. During his stay in Paris he had been a profound student and acute critic of Cartesianism, and had subsequently, as we have seen, come into relations with Spinoza, who, however, failed from the first to satisfy him. At some time between 1675 and 1685 he had evidently further made a special study of Plato and Aristotle. The system of ideas at which he finally arrived bears traces of all these preparatory studies. In its general character it is correctly described by the common statement that it represents a reaction against the exclusively mechanical interpretation of Nature and Mind and a return to the spiritualistic and teleological conceptions of the Platonic-Aristotelian philosophy. Against the purely mechanical conception of extra-human Nature assumed by Cartesianism Leibnitz maintains that the explanation of mechanical routine itself has always in the last resort to be found in final causality, in purposive activity; against the Spinozistic conception of the illusoriness of all finite individuality, which he sincerely regarded as fatal to religion, he insists upon the ultimate and absolute reality of individual finite existence. At the same time, Leibnitz's system is one of pure and consistent rationalism; he aims at ruining the mechanical philosophy by showing that it collapses of itself when the attempt is made to think it out with rigorous consistency. Physical science is absolutely justified in demanding a mechanical explanation of all events without exception, but the very nature of mechanical explanation is such that it cannot be finally satisfactory, but demands a further metaphysical explanation in terms of individual purposive activity to make it intelligible.

In his most generally known works Leibnitz contents himself with expounding the consequences of this train of thought without clearly indicating the ultimate logical premises upon which it is based. What these premises are may best be learned from some of the papers recently printed by M. Couturat. In particular the little tract headed 'Primæ Veritates' (ultimate truths) contains a deduction of all the leading doctrines of the Leibnitian system, with one exception, from one or two ultimate logical theories. This sketch will be closely followed in the next few paragraphs.

The fundamental assumption from which Leibnitz starts is the doctrine (1) that all true propositions are analytical, *i. e.* the predicate of every true proposition is part of the meaning of its subject term. This is, in fact, the very meaning of the word truth. All ultimate truths are therefore identical and can be reduced to one of the two forms. *A is A,* (Law of Identity) *A is not non-A* (Law of Contradiction, which Leibnitz wrongly regards as a mere verbal transformation of the Law of Identity). What we call an a priori or deductive proof is merely the reduction of a derivative proposition to a form in which this identity between subject and predicate is made explicit by means of logical analysis. So-called synthetic propositions, in which the predicate appears to involve a new determination of the subject, are merely propositions for which we have not succeeded in performing this analysis. It is this denial that any true proposition can be really synthetic which constitutes the fundamental difference between Leibnitz and Kant.

It is now further assumed (2) that every proposition is one which affirms or denies an *attribute* of a *substance* or *subject,* and (3) that there is an ultimate plurality of such logical subjects or substances. Of these assumptions, (2), which is, in fact, logically a mere transformation of (1), is the source of Leibnitz's worst logical difficulties, as it forces him to hold that no proposition asserting a relation between two substances can be an ultimate truth. Any statement of the form, «A has the relation x to B,» must be decomposable into a pair of statements of the form «A has an attribute x_1» «B has an attribute x_2.» (3) constitutes the only real fundamental divergence between Leibnitz and Spinoza, since according to the latter, the subject of every true proposition must ultimately be the one real substance—viz., God. Leibnitz's reason for assuming a plurality of substances seems to have been his strong conviction that the human self is a real and ultimate individual.

Leibnitz goes on to observe that the whole difference between the necessary truths of science and the contingent truths of every-day experience is explained by the distinction between explicitly and implicitly analytical propositions. When writing for others, Leibnitz habitually spoke of this difference between truths of reason and truths of fact as if it were an ultimate difference in kind. Truths of reason, he usually says depend upon the Law of Contradiction, and are therefore demonstrable; truths of fact, depend on the Principle of Sufficient Reason, and are with the one exception of the existence of God, contingent and indemonstrable. From the 'Primæ Veritates' it is clear that his real meaning was merely that truths of fact (propositions involving the assertion of existence) would require an infinitely prolonged analysis before they could be resolved into identities. Leibnitz's Law of Sufficient Reason, in fact, turns out to mean simply the doctrine that every truth is analytical and therefore capable of a priori proof, though the production of the proof may demand an infinitely prolonged analysis and thus be practically impossible for us. It now follows (1) that no two things can be exactly alike; numerical diversity always implies difference in attributes, since there must be a reason why the things are counted as two and not as one, and this reason must, on the principles just laid down, lie in some difference in their attributes. (Principle of the Identity of Indiscernibles.) Hence Leibnitz denies that space is a reality, for if it were, there would be infinitely numerous real things (the points of space), which are all exactly alike. (2) There are no «external» relations between things, *i. e.* no relations which do not arise out of the attributes of the terms related, since every truth, reduced to its simplest terms, consists in the ascription of an attribute to a subject, and no proposition asserting relation between two things can therefore be an ultimate truth. Hence, since Geometry and Mechanics consist precisely in the study of such «external» relations, the whole world of extended and moving objects must be merely apparent or phenomenal, not real. (3) The true concept of any individual substance logically involves the whole series of its past, present, and future states. Everything that can happen to such a substance is logically a consequence of the character of that substance, each substance is *causa sui,* the reason for the succession of its own states. Hence God, being omniscient, can deduce the whole history, *e. g.* of Saint Peter or Alexander the Great, from contemplation of the concept of Peter or Alexander. (4) Every individual substance involves in its concept the whole structure of the universe, so that from complete knowledge of any one substance we could deduce a priori, if our power of analysis were infinite, the whole history of the universe. This follows from the consideration that every substance stands in some relation to every other, while, according to the logic of Leibnitz, every relation presupposes as its foundation a corresponding attribute in each of its terms. Hence all the substances are different expressions of the same fundamental system. They «mirror» or «represent» the same structure but with varying degrees of clearness, like perspective drawings, taken from different points, of the same fort or city. The connection between different substances is thus ideal or metaphysical, not real or causal. Strictly speaking, no finite substance exercises a real influence on another, since every substance is the sufficient reason for the succession of its own states, and the passing over of a state or predicate from one thing into another is unintelligible. Thus what we commonly call external causes are, in truth, merely *occasions* or *conditions* of the occurrence of a change of which the real cause is always the nature of the substance in which the change takes place. But, since all substances «mirror» the same system, the result is that there appears to be causal interconnection between the states of all the things in the universe. Each thing develops from within, entirely unaffected by any other, and yet the result is the same as it would be if everything were causally affected at every moment by all the rest. This is Leibnitz's most famous theory, the doctrine of the *Pre-established Harmony* between all substances. A particular case of it is the psychophysical correspondence between the soul and the body. The soul develops independently according to the law of its own nature, and the same is true of each of the substances which, as an aggregate, compose the body, yet the correspondence between the psychical and the bodily series of changes is as complete as it would be if each series were at every step conditioned by the other, nor is there any need, after the fashion of the Occasionalists, to invoke the supernatural interference of God to effect the correspondence. The point is well illustrated by the analogy of a band of musicians who keep perfect time and tune simply because each of them is playing correctly from his own score without waiting for his cue from any of the others.

Further consequences are (5) that empty space does not exist, since it would have to consist of points which are all different, and yet all exactly alike. For the same reason, bodies do not consist as Descartes held, of mere extension, since extension, if real, would be merely the infinite repetition of elements which are exactly alike. (6) Matter is not only infinitely divisible but infinitely divided. There are no atoms, or indivisible parts of matter. If an atom were a true substance or ultimate unit it would be theoretically possible to deduce the whole constitution of the universe from adequate knowledge of the motion of one atom, whereas in fact, many different theories of the universe may agree in yielding the same series of positions for a given atom. All matter is therefore, as we read in the 'Monadology,' composite, and thus even the smallest particle is a fully organized world; every part of the «divine machine» of Nature is, in its turn, a further machine. In a word, space, motion, and body, when body is defined as extended matter in motion, are not substances but merely *vera phænomena,* orderly and connected appearances of the same kind as *e. g.* the rainbow; that is, they are appearances corresponding to composites or aggregates of individual substances. But, as there are no atoms, no body is really *one,* and consequently not really *many,* since «many» means a collection of ones. Thus the «corporeal substances» of the physical world must possess a «form,» or principle of unity, which is itself immaterial and analogous to our «soul.» The so-called material world must be regarded as an aggregate of immaterial units. This is why perception and volition, the fundamental attributes of the incorporeal elements, are inexplicable on mechanical principles, which only apply to composites. Hence the philosophical interpretation of the universe has inevitably to be given in terms of final causality, *i. e.* of the purposive activity of the ultimate simple elements.

Finally (7), since substances are simple units, no substance can begin or cease to exist bit by bit, by gradual development. The simple substance or monad, to adopt the technical term borrowed by Leibnitz from the younger Van Helmont, has no parts, and is a kind of spiritual or metaphysical «point,» and therefore can only come into existence, if at all, by instantaneous creation, and only perish, if at all, by instantaneous annihilation.

The only important doctrine of Leibnitz which does not figure in the foregoing sketch, taken from the tract on ultimate truths, is also the one doctrine which is most manifestly an excrescence on the system, the theorem of the existence of God. This is, according to Leibnitz, the only «truth of fact» which can be proved by a finite process of logical analysis. Leibnitz attempts to prove it both from a consideration of the «eternal truths» or «truths of reason,» the universals of pure science, and from the «truths of fact.» He holds, as a mathematician must, that the range of scientific truth is wider than that of actual existence. Besides the existing system of Laws of Nature, other systems are equally conceivable or logically possible, and the truths which hold for all possible constitutions of the universe form the body of «eternal truths.» But Leibnitz holds that all possibilities must be founded on something actual, otherwise there would be no means of distinguishing the possible from the impossible, a doctrine which is also fundamental in the philosophy of Lotze. The requisite foundation in actuality is provided by the existence of God. The «possible worlds» are just those systems of things which are actually present to the understanding of God. Hence the existence of God is logically necessary, provided only that it is possible, *i. e.* that the notion of a God or most real being involves no logical contradiction. With the addition of the proof, which Leibnitz believes himself to have given, that the existence of God is logically possible, the «ontological proof» of Descartes becomes completely valid. The existence of God may also be shown by a form of the «cosmological proof,» from the «truths of fact» which are concerned with the constitution of the actual world. There must be a sufficient reason why just this one, out of all the logically possible systems, is actual rather than any other, and this reason is found in the will of God. Volition, it is assumed, is always directed to the choice of the apparent best, which in the case of an omniscient God, is also the real best. Now the system of the Pre-established Harmony is the «best» of all possible systems for the universe, precisely because, owing to the complete adaptation of every nomad in it to every other, the number of «compossibles,» that is, of substances which can co-exist as members of the same system, is greater than on any other constitution of the universe. The famous doctrine that the actual world is the best possible world thus simply means that the quantity of existence in the actual world, as measured by the number of «compossibles» is a maximum. Hence God, in virtue of the principle of the choice of the best, chooses that this system rather than any other possible arrangement should exist. It is not clear how this act of choice is to be understood, nor does Leibnitz help us much by the curious conception that every possible system tends or strives to become actual with a force proportionate to the amount of reality, *i. e.* the number of «compossibles» it comprises, and that God's creative activity consists in removing from the actual world the hindrance to existence which would otherwise arise from the rival tendencies of the possible worlds to existence. If «existence» is logically a predicate, it ought, on Leibnitz's principles, to be inherent in the nature of the subject to which it belongs, and the actual world should thus exist eternally and necessarily. If it is not a predicate but an «external» relation imposed on the particular system of the Pre-established Harmony by the will of God, the doctrine of the analytic character of truth, from which the system of Pre-established Harmony is a mere deduction, must be false, and, as a further complication, the «ontological proof» of God's existence must also be worthless. It must be noted that God is not a monad, but stands quite outside the system. The common statement that Leibnitz spoke of God as the «monad of monads» seems to originate with Hegel and to have no foundation.

In the «Monadology» and the writings connected with it the consequences of the system are developed with particular reference to their bearing upon the nature and destiny of the soul. Every monad, or simple substance, is an incorporeal unit possessing a capacity of adaptation to the simultaneous condition of other monads, which is called *perception,* and a tendency to spontaneous internal change of state, which is called *appetition.* An organism is a cluster of such monads, the states of which are more readily seen to be adapted to one another than they are to those of any other monads. In Leibnitz's language, each member of the cluster «perceives» or «represents» the rest more clearly and with less confusion than it does any other monads. In each such cluster there is a dominant monad, analogous to a soul, which «represents» the rest with special clearness, and in which it is in consequence, particularly easy to discover the reasons for the succession of states in the others. In virtue of the finitude of every monad, however, there is in every monad some element of confused perception, or «passivity,» *i. e.* there are some changes of state in every monad the reasons for which cannot be discovered by us in the monad itself, but have to be found by considering other monads. Hence Leibnitz infers that no soul or dominant monad is ever completely devoid of a body or system of associated inferior monads. This element of limitation or confused perception is called «metaphysical evil,» and is treated as the source both of suffering, or *physical,* and of wrong-doing, or *moral,* evil.

The system of monads now falls into a hierarchy of three grades, according to the degree of the monad's clearness of perception. The perception and appetition of the monad are not necessarily conscious. The condition of the monads which compose the so-called inanimate world is similar to that of the soul in profound sleep or swoon; their perceptions are, as we now say, permanently «below the threshold» of distinct consciousness. Leibnitz is thus the author of the doctrine since so fateful in Psychology, of indefinitely minute «unconscious» mental modifications. In animals, when fully developed, the formation of sense-organs, which are essentially an apparatus for the collection of stimuli, renders possible the summation of such «minute perceptions» to form a single intensified and therefore conscious perception, and thus provides a basis for memory and association. Those «dominant monads» which have thus been furnished with heightened perceptions form the second stage in the hierarchy, that of animal souls. In accord with the biological ideas of his time, Leibnitz regards the process of conception and birth essentially as one of development in size; not only is there no generation of life from lifeless matter, but each living germ, even before conception, already contains, on a microscopic scale, the whole organization of the future animal. Death is the converse process of reduction, by which the organism returns to a microscopic condition; hence, strictly speaking, not only all souls, or dominant monads of organisms, but all organisms themselves, are indestructible. Rational minds form the third and highest grade in the system of monads. Their distinguishing characteristic is that, in addition to memory and the power of forming associations of ideas, they possess the power of discerning rational connections between truths, and thus of rising to reflective consciousness of the *self* as a simple substance and of God, the infinite substance. Since the perceptions of every monad are internal states of itself, Leibnitz necessarily agrees with Descartes in regarding the fundamental notions of rational science as *innate,* but is more careful than Descartes to give prominence to the necessity for analysis and reflection before these innate ideas can be brought to light. Before the reflective process has disengaged them the fundamental categories of rational thought are present in the mind as veins, which have not yet been laid bare, are present in the unshaped block of marble. In virtue of their capacity for rational thought, spirits may be said to be living mirrors not only of the universe, like all other monads, but of God, its cause. God is related to them not merely as to all created things, after the fashion of an inventor to his machine, but as a prince to his subjects or a father to his children. Thus they form, within the universe, a more special society or «city of God» over which God presides not merely in accordance with natural but also in accordance with moral law. The universe thus presents, within the Preestablished Harmony itself a second harmony between the physical and moral orders in consequence of which the mechanical sequence of physical causes and effects tends of itself, without any need for special divine interposition, to an ultimate adjustment of the happiness of each spirit to its moral deserts. Leibnitz's mathematical optimism thus culminates in ethical optimism at the cost of a rather hazardous identification of goodness in the metaphysical sense of quantity of existence with goodness in a specifically moral sense.

Two points still call for some further remark: (1) Leibnitz's conception of matter; (2) his ethical theory.

Matter.—Leibnitz's theory of matter is conditioned by his discovery of the fundamental defect of Cartesian Mechanics. Descartes had assumed that «quantity of motion,» or momentum, is independent of the direction of motion, and had consequently been led to base his Mechanics on the assertion that the quantity of motion in a dynamical system remains constant. Against this view Leibnitz contended that the capacity of a moving body for doing work, its *vis viva* or «living force,» as measured by its effects in moving another body through a greater or a less distance, is proportional not to its momentum, but to its momentum multiplied by its velocity. Hence the correct measure of force is not mv (momentum) but mv^2 (*vis viva,* the double of what we call the Kinetic energy of the body). It is this which is really conserved in dynamical transactions between bodies. (The controversies as to the true «measure of force» to which these observations gave rise have long been admitted to be largely verbal. If we measure a constant force by the momentum it generates in a given time, Descartes' formula is, of course, correct; if we measure it by the distance through which it propels a body, that of Leibnitz has to be adopted. Similarly, both the Conservation of Momentum and the Conservation of Vis Viva, if properly formulated, are truths.) The importance of the point in Leibnitz's philosophy is due to the fact that it led him to regard force as a real entity, different from actual motion, and thus to hold, as against the Cartesians, that the phenomenal physical world cannot be analyzed into extension and motion alone. For Leibnitz's own theory of phenomenal matter it is further important to distinguish *primary* from *secondary matter.* Primary matter itself is something more than mere extension or occupation of space. It is extension plus resistance (a conception which seems to combine in one inertia and impenetrability). But for this quality of resistance any one state of the physical world would be indistinguishable from any other. Primary matter is however purely passive, and is never to be found existing alone. All physical existents contain in addition force, in the sense of spontaneous tendency to change of state. It is the secondary matter thus constituted by extension *plus* resistance *plus* force which is studied by the physicist, and held by Leibnitz to be infinitely divided and organized. Secondary matter thus stands, so to say, halfway between the monads and the pure abstraction of primary matter, and is the matter of which Leibnitz speaks as a «truthful phenomenon.» There is really no very close connection between these dynamical theories and the metaphysical system of Leibnitz, though the two are made to look more intimately related than they actually are by a confusion between force in the dynamical sense of rate of change of momentum and force in the metaphysical sense of the inherent tendency of the monad to change of state.

Ethical Views.—There is nothing very individual in the Ethics of Leibnitz (which may be generally described as a doctrine of rationalistic utilitariansim of a type common enough in the 17th and early 18th centuries), except his treatment of the problem of moral freedom. As we have seen, the original source of all change is appetition in the monad. Conscious appetition is desire, and desire is always directed towards the apparent best. There is thus no such thing as unmotived willing; a volition only seems unmotived when the motive impulse is «below the threshold.» Leibnitz is consequently a consistent determinist in his analysis of choice and volition, yet he regards it as one of the merits of his system that it vindicates the reality of freedom against the Spinozistic doctrine of universal necessity. In what sense, then, are we free? Leibnitz replies by distinguishing two kinds of necessity, metaphysical and moral. That is metaphysically necessary of which the contradictory is impossible. In this sense no volition is necessary. (This, however, is, of course, inconsistent with the theory that all true propositions are analytical, since the contradictory of an analytical proposition must be false.) A thing is morally necessary when it is an indispensable means to the obtaining of the apparent best. In this sense all volitions are necessary — though for reasons which merely incline, but do not compel the will. Spinoza, according to Leibnitz, erred by confusing the two senses of necessity. Moral freedom, then, consists in spontaneity plus intelligence. We are free in proportion as we have intelligence to discern the real best, a doctrine which is only nominally distinct from Spinoza's. Leibnitz further agrees with Spinoza in his general conception of the moral good. Pleasure is assumed to accompany increase of activity, *i. e.* clear perception, and good and evil correspond to acts motived respectively by clear and by confused perception. Hence Leibnitz ought to have regarded vice as equivalent to honest and unavoidable error. He tries to escape by his distinction between metaphysical and moral evil. The former is simply the element of passivity or confused perception in the monads, and is not inconsistent with God's goodness, since a world which includes this element may contain a greater number of «compossibles,» and so be on the whole better, than one which does not. Moral evil, or vice, and physical evil, or suffering, are inconsistently regarded at once as being logical consequences of this metaphysical evil, and yet as contingent and non-necessary. The ethical system based on such ideas is naturally in the main one of enlightened egoism in which intelligence is exalted at the cost of ignorant good intentions. But since, in virtue of the harmony between monads, my own good and that of others are inextricably bound up together, Leibnitz holds that doing good to others naturally gives us pleasure, and hence he agrees with Shaftesbury in recognizing the existence of disinterested affection. To make the coincidence of my own good with the good of others complete he has further to assume, as we have seen that he does, immortality and the final proportionment of happiness to desert.

Books Useful to the Student of Leibnitz.— Besides the editions of Leibnitz by Erdmann and Gerhardt, and the volume of fragments edited by M. Couturat referred to above, the most indispensable works for the student are M. Couturat's book ‹La Logique de Leibnitz d'aprés de Documents Inédits› (Paris 1901), and ‹The Philosophy of Leibnitz› by B. Russell (Cambridge, Eng. 1900). The most important translations of works of Leibnitz into English are Latta's ‹Liebnitz, The Monadology and Other Philosophical Writings› (Oxford 1898, with introduction and commentary), and ‹Liebnitz Discourse on Metaphysics,› ‹Correspondence with Arnauld and Monadology,› trans. by G. R. Montgomery (Chicago 1902). There is a useful little monograph on Leibnitz by J. T. Merz in Blackwood's series of Philosophical Classics (Edinburgh 1884). A. E. TAYLOR,
Frothingham Professor of Philosophy, McGill University, Montreal.

Leidy, lī'dĭ, **Joseph,** American naturalist: b. Philadelphia 9 Sept. 1823; d. there 30 April 1891. He was graduated M.D. at the University of Pennsylvania in 1844, and in 1853 was elected to the chair of anatomy in that institution, a post which he long filled, as well as that of professor of natural history in Swarthmore College, Pa., to which he was appointed in 1871. He was the author of many valuable memoirs, chiefly published in the ‹Proceedings of the Academy of Natural Sciences,› the ‹Transactions of the American Philosophical Society,› and the ‹Smithsonian Contributions to Knowledge.› Among them may be cited: ‹Ancient Fauna of Nebraska› (1853); ‹Cretaceous Reptiles of the United States› (1865); ‹Fresh Water Rhizopods of North America› (1879).

Leif Ericson. See ERICKSON, LEIF.

Leighton, lā'ton, **Frederick,** LORD, English painter: b. Scarborough 3 Dec. 1830; d. London 25 Jan. 1896. He received some lessons in art at Paris as early as 1839, and then followed further instruction at Rome. At 14 he entered the Royal Academy of Berlin and subsequent art studies were made by him at Frankfort, Brussels and Paris (1850). From Rome he sent to the Royal Academy exhibition of 1855 his picture of ‹Cimabue's Madonna Carried Through Florence›— a work which called forth general admiration, and was purchased by the Queen. He resided mostly in Paris for the next four years, studying and painting, and to this period belong, among other works, ‹The Triumph of Music› (based on the story of Orpheus and Eurydice); ‹The Fisherman and the Siren,› and ‹Romeo and Juliet.› Having finally settled in London, he was elected in 1864 an associate of the Royal Academy, and in 1869 a full academician. In 1878 he succeeded Sir Francis Grant as president of the Royal Academy, was knighted, and was also named an officer of the Legion of Honor. In 1886 he was created a baronet, and on 1 Jan. 1896 was raised to the peerage. From among his numerous works may be singled for special mention: ‹Paolo and Francesca› (1861); ‹Jezebel and Ahab› (1863); ‹Orpheus and Eurydice› (1864); ‹Hercules Wrestling with Death› (1871); ‹Elijah in the Wilderness› (1879); ‹Hero Watching for Leander› (1887); ‹Captive Andromache› (1888); ‹Greek Girls Playing at Ball› (1889); ‹The Bath of Psyche› (1890); ‹Lachrymæ,› now in the Metropolitan Museum, New York; as also the two large frescoes at the South Kensington Museum, representing respectively the ‹Arts of War› and the ‹Arts of Peace.› He achieved a high place as a sculptor by his ‹Athlete Strangling a Python› (1876), and his ‹Sluggard› (1886). The special merit of his work lies in the perfection of his draftsmanship and design; his coloring, though possessing the unfailing charm of harmonious arrangement, is only thoroughly satisfactory from the decorative point of view. A fine poetic quality conjoined with elegance in drawing and great refinement in execution, mark his whole work. His ‹Addresses to the Students of the

Royal Academy' appeared in 1896. Consult 'Lives' by Mrs. Lang (1885); Rhys (1895).

Leighton, Marie Connor, English novelist: b. Clifton, near Bristol. She was married to Robert Leighton (q.v.) with whom she has written several novels mentioned under his name, and is the author of 'The Harvest of Sin'; 'A Napoleon of the Press' (1900); 'Vengeance is Mine' (1902); 'Was She Worth It?' (1902); etc.

Leighton, Robert, English journalist and novelist: b. Ayr, Scotland, 5 June 1859. He was the son of Robert Leighton, a Scottish poet, was educated at Liverpool, was editor of the Bristol 'Observer' 1886–7, and has for many years been connected with the various periodicals published by Harmsworth. He married Marie Connor in 1889 and with her wrote 'Convict 99'; 'Michael Dred, Detective'; 'In the Shadow of Guilt' and other fictions. He has written by himself 'The Pilots of Pomona' (1892); 'The Thirsty Sword' (1893); 'The Wreck of the Golden Fleece' (1894); 'Olaf the Glorious' (1895); 'The Golden Galleon' (1897); etc.

Leipsic, līp'sĭk, or **Leipzig,** līp'tsĭg, Germany, the largest town of Saxony, and the fourth largest in the German empire, situated in a broad, fertile plain at the confluence of the rivers Elster, Pleisse, and Parthe. The city comprises the inner town, the inner and outer suburbs (Vorstädte), the more outlying suburbs (Vororte), incorporated with the city in 1889–92, all traversed and connected by electric street railroads. The former fortifications surrounding the inner city have been replaced by fine streets and promenades. The old city still retains much of its ancient appearance, but the modern suburbs are characterized by broad streets and imposing buildings. Among the squares of the city are the Marktplatz, with a Siegesdenkmal; the Augustusplatz, one of the largest in Germany, with a splendid fountain; the Königsplatz, the Johannisplatz, with a Reformation monument (Luther and Melanchthon); and the Rossplatz; and among the other monuments worthy of mention are those of Gellert and Fechner in the Rosenthal, an extensive park in the northwest, between the Elster and the Pleisse; of Hahnemann, Leibnitz, Grassi, Mendelssohn, and Bismarck; together with the more recent memorial of the Völkerschlacht. Besides the parks and open spaces just mentioned, Leipsic includes, among many others, the Johannapark, the Grassipark; the König Albert Park, the scene of the 1897 exhibition; the Johannisthal, with an observatory; the botanical garden; the zoological garden, recently much extended; the palm garden, opened in 1899. The most noteworthy churches of the city are the Thomaskirche (13th century), rebuilt 1885–9; the Nikolaikirche (11th century), recently restored; the University or Paulinerkirche (1240), restored 1896–9; the Matthäikirche, restored 1879; the Johanniskirche (14th century), rebuilt and re-consecrated in 1897, and containing the remains of Sebastian Bach and Gellert; the Peterskirche; the Lutherkirche; the Andreaskirche; two modern Roman Catholic churches; an Anglo-American church; a synagogue; and churches of other denominations. Of non-ecclesiastical buildings the most notable are those of the university, which was founded in 1409, and now has 220 professors and lecturers, and over 3,200 students. These buildings are mostly modern, especially the Albertinum, erected in 1890–6 in accordance with the plans of A. Rossbach for completing and renewing the whole group. The university library (the Albertina) contains 440,000 volumes and over 4,000 manuscripts. Other buildings and institutions are: the old Rathaus (16th century); the new Rathaus, in course of construction on the site of the Schloss Pleissenburg, a 13th century building, once the citadel of the town, and famous as the scene of Luther's disputation with Eck in 1519; the old exchange (1678), now the meeting-place of the town council; the new exchange in Renaissance style; the Königshaus (17th century), the residence till 1829 of the Saxon princes; the old Gewandhaus, where the celebrated Gewandhaus concerts were long held; the new concert-hall; the imperial bank building, in German Renaissance style; the municipal library (1899), containing 110,000 volumes and many manuscripts; the municipal museum, in Italian Renaissance style; the chief post-office; the new book exchange, the headquarters of the German book trade; the Buchgewerbehaus (1897), with a Gutenberg hall; the panorama building; the Grassi Museum (1896), now including the collections of the former museums of industrial art and ethnology; the police office; the building of the Land and Amtsgericht, enlarged in 1895–6; the building of the Imperial Court, completed in 1895; the new conservatory of music; the old and the new theatre; the Krystallpalast, including concert halls, etc.; the market hall; the large Johannis hospital; a deaf and dumb and a blind institution; the hospital of St. Jakob; the Triersches Institut, for women; three gymnasia, namely, the Thomasschule (1221), the Nikolaischule (1511), and the royal Gymnasium, a Real Gymnasium; several Realschulen and many other schools; a Handelshochschule, or High Commercial School (1898), the first in Germany; a school of industrial art; a Royal Academy of Arts; and the new infantry barracks at Möckern. Leipsic has railway communication with all the chief towns of Germany, and its situation makes it of great importance as a trading centre. It has three large annual fairs, which have been held ever since the 12th century. It is the headquarters of the book trade in Germany, and takes a foremost place among European towns in the many industries associated with the publication and printing of books. Its other industries include iron-founding, cotton-spinning, wool-combing, the weaving of jute and linen, brewing, sugar-refining, distilling, and the manufacture of machinery, electrical plant, agricultural implements, ethereal oils, dyes, essences, soaps, perfumes, wax-cloth, chocolate, tobacco, paper, leather, tapestry, cement, musical and other instruments, etc. Leipsic is also a world market for furs and all similar goods. The name Leipsic, from the Slavonic *lipa,* a lime-tree, is found applied to a Slavonic fishing village near the present site of Leipsic about 1017. The history of the town during many centuries is one of gradually extending importance. It suffered much during the Thirty Years' war at the hands of both combatants. Its position of pre-eminence in the book trade dates from the latter half of the 17th century. During the earlier years of the 18th century the town became the centre of a literary movement under Gottsched. Leipsic and its neighborhood suffered greatly during the Napoleonic wars, and on 16–19 Oct. 1813 a series of severe battles fought around the town resulted in a crushing defeat of Napoleon, and the retreat of the French from Germany. During the war of 1866 Leipsic was occupied by Prussian troops for 18 months. In 1879 the Supreme Court of Justice for the empire was established in the city. Pop. (1900) 455,089.

Leisler, līs'lėr, **Jacob**, American colonial political leader: b. Frankfort-on-the-Main, Germany; d. New York 16 May 1691. He came to America as a private soldier in the service of the Dutch West India Company, and was for a time engaged in trade at Albany, and later settling in New York was appointed in 1783 one of the «commissioners» (judges) of the court of the admiralty. In 1689 he was the leader of the insurrection against Governor Nicholson, supported mostly by the militia and the lower classes; the fort and the public funds were seized on the 31st of May, and Leisler a few days later declared for William and Mary, asserting his acts to be necessary for the «preservation of the Protestant religion.» A committee of safety was formed, who on 8 June commissioned Leisler as «captain of the fort.» In this capacity he at once began to repair the fort, and strengthened it with a «battery» of six guns beyond its walls, which was the origin of the public park still known as the Battery. Nicholson and the council of the province, with the authorities of the city, attempted by pacific means to prevent the uprising, but without effect. Becoming finally alarmed for their own safety, the lieutenant-governor sailed for England, and the mayor with the other officials retired to Albany. On 16 August the committee of safety appointed Leisler «commander-in-chief of the province,» with the full power of a governor in all matters civil and military. He next attempted to reduce Albany and the northern parts of the colony, which from the first had refused to recognize his authority, but was for some time unsuccessful; Albany finally submitted to him after the Indian attack on Schenectady (1690). In December arrived a despatch from William and Mary directed «to Francis Nicholson, Esq., or in his absence to such as for the time being takes care for preserving the peace and administering the laws in his majesty's province of New York.» This Leisler construed as an appointment of himself as the king's lieutenant-governor. He therefore dissolved the committee of safety, swore in a council, and assumed the style of a royal lieutenant-governor and commander-in-chief. After the massacre at Schenectady he engaged with great vigor in the expeditions against the French, and equipped and despatched against Quebec the first fleet of men-of-war ever sent from the port of New York. A few months later Major Ingoldsby arrived with the news of Sloughter's appointment as governor, and demanded possession of the fort, which Leisler refused. On Sloughter's own demand immediately upon his arrival in March 1691, he likewise refused to surrender it, until convinced of Sloughter's identity, and the latter had sworn in his council. Leisler was immediately imprisoned, charged with treason and murder, and shortly after tried and condemned to death. His son-in-law and secretary Milborne was also condemned on the same charges. These trials were manifestly unjust; the judges were the personal and political enemies of the prisoners, and Sloughter for some time hesitated to sign the death warrants. Leisler's son secured from the English Parliament the reversal of the bill of attainder in 1695; and the confiscated estates were also returned to the heirs. Consult: Brodhead, ‹History of New York›; ‹Documentary History of New York›, and E. S. Brooks, ‹In Leisler's Times› (a historical story).

Leith-Adams, Mrs. See Laffan, Bertha Jane.

Leith, lēth, Scotland, a seaport and parliamentary burgh in the county of Midlothian, and a northeastern suburb of Edinburgh, on the south shore of the Firth of Forth, on both sides of the Water of Leith. It is connected with Edinburgh by Leith Walk and other lines of streets, and by branch lines of the railways centering in Edinburgh. Among the principal public buildings are the custom-house, exchange buildings, court-house, Trinity House, corn-exchange, the new and well equipped Leith Academy, including the Leith Technical College, and there are fine parks and public golf links. The chief manufactures are ropes, sail-cloth, oil-cake, paints, colors, artificial manures, and there are shipbuilding-yards, iron-foundries, engine-works, flour-mills, oil-mills and refineries, steam saw-mills, large maltings, an ice factory, etc. The foreign trade is chiefly with the Baltic and the principal French and German ports, and there is a trade in grain, flour, etc., with the United States and Canada. There are extensive wet-docks, and several public graving-docks, capable of receiving the largest vessels. Leith is a very ancient town, its earliest charter dating from 1128. Pop. (1901) 77,439.

Leitha, lī'tä, Austria-Hungary, a river rising in Lower Austria, and flowing northeast for the greater part of its course of 90 miles along the frontier of Austria and Hungary, until it joins the Danube at Altenburg. The Leitha Mountains rise between it and Lake Neusiedl, and it has a factitious importance in its application to Hungary as Trans-leithan and Austria as Cis-leithan.

Leitmotiv, līt'mō-tēf, in music, the leading theme, the characteristic phrase, which occurs over and over again in the same composition, in reference to the same person, phrase of feeling or scenic complication of intense passion or action. The phrase strikes the note of these several crises or conjunctures and recurs whenever they are repeated. While many operatic composers, such as Mozart and Weber, have employed the expedient of the leading theme, Wagner does so more than any other modern musician. In his Leitfäden, or analyses of his operas, in which he lays bare some of the secrets of his artistic workmanship, he shows that he has consciously individualized every one of his characters, every change in the scenery or action of the drama, or in the emotions and moods of the *dramatis personæ*, by the introduction of a specific musical theme, which he employs throughout the opera to suggest the same thing. This theme is worked upon and varied with the masterly skill which Wagner possesses in fugue and part writing. Thus in his ‘Parsifal,’ Klingsor, Kundry, Parsifal, Amfortas, and the Flower maidens are all ushered in with a special leading theme for each. There is a special theme for the Eucharist, for the spear (*Speermotiv*), for the Holy Grail (*Gralmotiv*). The children's voices raise a strain ‘Faith is still alive’ to the notes of the *Glaubensthema,* or faith-motive. There is a *Leidensmotiv,* to express the grief of Amfortas; there is the Doormotiv, expressing the promise of help; the Zaubermotiv, suggesting the devilish power of witchcraft, while the mother's sorrow is suggested by the Motiv des Herzleids, the heart-grief's theme. The Bell-theme, with its pealing sound, the Ride-theme, suggesting the clatter of horsehoofs, the Good Friday theme, with its characteristic chords, each in its way, are powerfully suggestive, and when once recognized, their recurrence has a powerful effect.

Leixner-Grünberg, līks'nĕr grün'bĕrg, **Otto von,** German poet and critic: b. Saar in Moravia 24 April 1847. Among his poetical works are: a volume of ‘Poems’ (1868); the drama ‘Resurrection of Germany’ (1870); ‘Twilight’ (1886); ‘Proverbs and Satiric Rhymes.’ He has also written short stories: ‘The Two Marys’; ‘Memento Vivere’; ‘Princess Sunshine’ (1882). Still other works are: ‘Marginal Notes by a Hermit’; ‘Gossamer’ (1886); ‘Gossipy Letters to a Young Matron’ (1890); ‘Lay Sermons’ (1894). His ‘History of German Literature’ (1879–82) is a notable work.

Le'land, Charles Godfrey, American author: b. Philadelphia 15 Aug. 1824; d. Florence, Italy, 20 March 1903. He showed poetic talent in youthful contributions to newspapers, and a growing genius, marked by unusual versatility, during his college days at Princeton, where he was graduated in 1846. He studied afterward at Heidelberg, Munich, and Paris, giving special attention to modern languages, philosophy, and æsthetics. In 1848 he took part in the revolutionary uprising in Paris; the same year returned to Philadelphia and studied law; was admitted to the bar in 1851, but gave up the legal profession and devoted himself to literary pursuits, becoming prominent in various fields of journalism and authorship. For a time he was editor of the New York ‘Illustrated News’; in 1861 established the ‘Continental Magazine’ in Boston, and two years later returned to Philadelphia, where for several years he edited the *Press.* During the Civil War he published ‘The Book of Copperheads,’ a political satire. From 1869 to 1880 he resided chiefly in London. In England and on the Continent he studied gypsies and gypsy lore, in which he became one of the leading authorities of his time. His career as poet, ethnologist, and traveler, with its mingling of literary avocations, was invested with an element of romance, and his more serious work was lightened by the interchange of humor. At the same time his achievements show the practical talents of a man of business. When in 1880 he once more returned to Philadelphia he was instrumental in establishing industrial teaching in the public schools, in furtherance of which he wrote a number of manuals and gave his supervision to the work. From 1886 he lived in Europe, mainly in Florence. He wrote and translated a large number of works, remarkable for variety as well as for literary value, the best known and most popular of which are ‘Hans Breitmann's Ballads’ (1867–70, 1895), written in «Pennsylvania Dutch,» his translations from Heine, including ‘Pictures of Travel’ (1856), and ‘Heine's Book of Songs’ (1862), ‘English Gypsies and Their Language’ (1873), ‘English Gypsy Songs’ (in collaboration, 1875), ‘The Gypsies’ (1882), and ‘Gypsy Sorcery and Fortune-Telling’ (1892). Among his other writings are: ‘The Poetry and Mystery of Dreams’ (1855); ‘Meister Karl's Sketch-Book’ (1855); ‘Sunshine in Thought’ (1862); ‘Legends of Birds’ (1864); ‘The Music-Lesson of Confucius’ (1870); ‘The Egyptian Sketch-Book’ (1873); ‘Fu-Sang: or the Discovery of America by Chinese Buddhist Priests in the Fifth Century’ (1875); ‘Johnnykin and the Goblins’ (1876); ‘Pidgin-English Singsong’ (1876); ‘Abraham Lincoln’ (1879); ‘The Minor Arts’ (1880); ‘Algonquin Legends of New England’ (1884); ‘Etruscan-Roman Remains in Popular Tradition’ (1892); ‘Autobiographical Memoirs’ (1893); ‘Songs of the Sea and Lays of the Land’ (1895); ‘Mending and Repairing’ (1896); ‘One Hundred Profitable Acts’ (1897); ‘The Unpublished Legends of Virgil’ (1899); and (his last work) ‘Kuloskap the Master, and Other Algonkin Poems’ (1903), a volume of Indian folklore in verse, written in collaboration with John Dinely Prince.

Leland, lĕl'and, or **Leyland, John,** English antiquary: b. London about 1506; d. there 18 April 1552. He was educated at Cambridge, Oxford, and Paris. Returning home he took holy orders, and Henry VIII. made him his chaplain and librarian. In 1530 he became rector of Pepeling, near Calais; in 1542 he received the rectory of Haseley, Oxfordshire, and he was a prebend of Salisbury Cathedral. In 1533 he received the title of royal antiquary, and was empowered, by a commission under the great seal, to search for objects of antiquity in the archives and libraries of all cathedrals, abbeys, priories, etc., in consequence of which he spent six years in traveling and collecting materials for the illustration of the history and archæology of England and Wales, but died without having completed his undertaking. The great bulk of his collections was placed in the Bodleian Library. The first part to be published was the ‘Commentarii de Scriptoribus Britannicis,’ issued in 1709 by Anthony Hall. In 1710 Hearne published the ‘Itinerary’ in 9 vols., and five years later the ‘Collectanea’ was issued by him in 6 vols. Leland wrote Latin poetry with considerable elegance, and a collection of his miscellaneous Latin verse and epigrams was published in 1589.

Leland Stanford Junior University, a coeducational institution at Palo Alto, California, about 35 miles southeast of San Francisco, in the Santa Clara Valley. The University Campus comprises 9,000 acres of land, partly in the level of the valley and partly rising into the foothills of the Santa Moreno Mountains which separate it from the Pacific Ocean, 33 miles beyond. The Bay of San Francisco lies in front at a distance of three miles and across it are the mountains of the Diabolo range.

The University was founded by Leland Stanford (q.v.) and his wife, Jane Lathrop Stanford (q.v.), as a memorial to their only son who died in his 16th year. The founders desired that the University should give a training primarily fitted to the needs of young men. Both sexes are admitted to equal advantages in the institution, but the number of young women who may attend at any given time is limited to 500. The object of the University as stated by its founders is «to qualify students for personal success and direct usefulness in life,» and to «promote the public welfare by exercising an influence in behalf of humanity and civilization, teaching the blessings of liberty regulated by law, and inculcating love and reverence for the great principles of government as derived from the inalienable rights of man to life, liberty and the pursuit of happiness.»

The endowment grant establishing the University was made in November 1885, under an act of legislature passed for this purpose; the cornerstone of the institution was laid in May 1887; and the University was formally opened to students on 1 Oct. 1891. The attendance for the first year numbered 559 and included all college classes with a number of graduate students, the University graduating its first class of 38 in May 1892. The original faculty numbered 35 professors and instructors and the first, and to the present time (1903) the only, president has been David Starr Jordan (q.v.).

The architecture of the University buildings is patterned after the old Spanish missions of California and Mexico. The buildings are of buff sandstone with red tile roofs. They form two quadrangles, one within another, with detached buildings grouped about them. The inner quadrangle consists of 12 one-story buildings, connected by an open arcade, facing a paved court of three and one quarter acres in extent. Connected with this quadrangle at various points by corridors, and completely surrounding it, is the outer quadrangle of 12 buildings, for the most part two stories in height above the basement. This outer quadrangle is again surrounded by a continuous open arcade. In the inner quadrangle are the departments of law, of the different languages, and mathematics, and the administrative offices. In the outer quadrangle are the scientific, engineering and geological departments, those of history, economics and English, and the library and assembly hall. In the rear of the quadrangles are the central lighting, heating and power plant and the laboratories and shops of the engineering departments. The dormitories, one for young men and another for young women, with their gymnasia and athletic grounds about them, are located to the east and west. In front on either side of the main drive are the buildings for the department of chemistry and the art museum and the new gymnasium, the latter in course of erection. The final building to complete the general scheme of buildings, which is to be the permanent home of the University library, will soon be begun.

Most striking among the architectural features of the University buildings are the Memorial Arch and the Memorial Church. The former is 100 feet in height, 90 feet in width and 34 feet deep, with an archway of 44 feet spanning the main entrance. A sculptured frieze 12 feet in height, designed by St. Gaudens, and representing the progress of civilization, surrounds the arch. The Memorial Church opens from the inner court and is opposite the main entrance. It is of Moorish-Romanesque architecture, its spire rising to a height of 188 feet. The church, erected by Mrs. Stanford in memory of her husband, is adorned within and without with costly mosaics, representing as do the beautiful stained windows, Biblical scenes and characters. It has a splendid organ of 46 stops and 3,000 pipes and a chime of sweet-toned bells. The church is non-sectarian in character and method. Religious services are held each Sunday morning and afternoon. There is a week-day vesper service and the organ is played each day at the close of recitations.

The students live in the dormitories, in club houses on the grounds, or in private boarding-houses in the village, which is situated a mile distant from the University buildings. The professors live in homes provided on the grounds or in the village. Twelve Greek-letter societies for young men and five for young women occupy chapter homes on the campus.

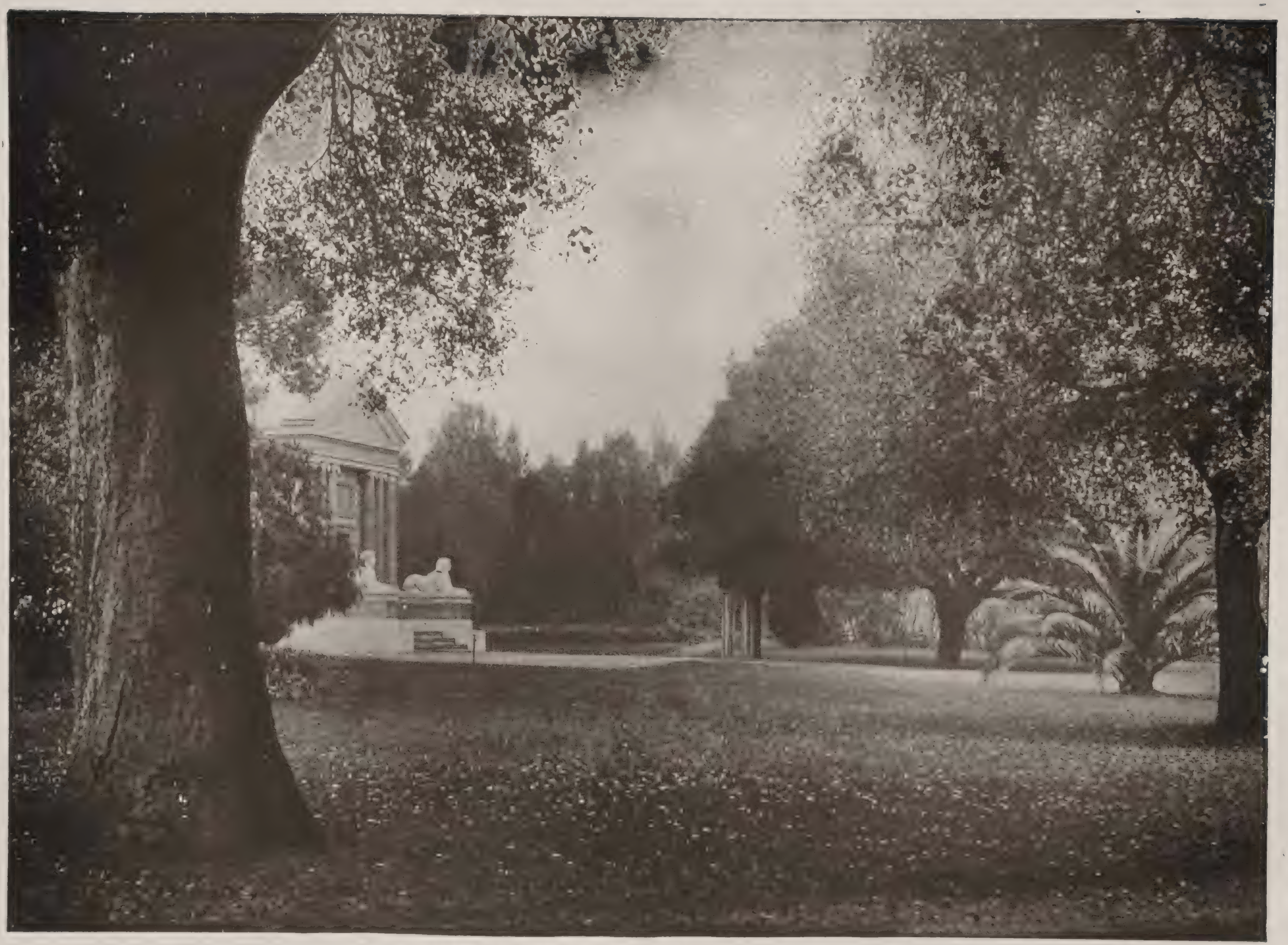
In the government of the students, «the largest liberty consistent with good work and good order is allowed. They are expected to show both within and without the University such respect for order, morality, personal honor, and the rights of others as is demanded of good citizens. Students failing in these respects or unable or unwilling to do serious work toward some definite aim are not welcomed and are quickly dismissed.»

The University Council consists of the president, professors, and associate professors of the University faculty. To it is entrusted the determination of requirements for admission, graduation, and other matters relating to the educational policies of the institution. It acts as an advisory body on questions submitted to it by the president or trustees. The routine work of the faculty is divided among various standing committees with power to act and responsible primarily to the president. Departmental affairs are in the hands of subordinate councils consisting of the instructing body in the department, a member of which is designated by the president as presiding officer.

The general control of the University's affairs was by special provision in its charter reserved to the founders or either of them during their lifetime, they to act in the capacity of a board of trustees, the trustees themselves having only a nominal connection. This provision remained in force until July 1903, when under a special act of legislature passed for the purpose, Mrs. Stanford finally turned over to the board of trustees full authority and control over the University. The board of trustees numbers 15, members being elected for a term of 10 years. In educational matters the president of the University has the initiative, his acts being subject to the confirmation of the trustees. The board through a treasurer and business manager, one of their own number, administers directly the financial affairs of the institution.

The endowment of the University comprises 90,000 acres of land, including the Palo Alto estate; the Stanford home in the city of San Francisco, and interest-bearing securities, the whole amounting to about $30,000,000, two-thirds of which is productive of income. For the present the income of the University is devoted largely to the completion of its buildings.

In its entrance requirements the University



THE MAUSOLEUM, LELAND STANFORD UNIVERSITY.
Here are buried Leland Stanford and Leland Stanford, Jr.

recognizes 29 entrance subjects of different values according to the time devoted to them in the secondary schools. The unit of value is a full year of high school work in the particular subject, and any 15 units, with certain limitations, chosen from this list constitutes preparation for full entrance standing. The University has no list of accredited schools, but considers on its merits the work of all reputable schools. The student chooses a major subject, the professor in which becomes his adviser and to which he is required to devote one fourth of his time. His remaining time is filled up by courses chosen by the student under the advice and direction of his major professor. Fifteen hours of recitations per week constitutes the regular course throughout a period of four years. Students are graduated when they have completed 120 hours of work and the requirements of their major subject. Degrees are conferred in May, September, and January.

The University grants the undergraduate degree of A. B. in all courses; the degrees of A. M. and Ph. D. for one and three years' work respectively beyond the undergraduate requirements; the LL. B. degree in law, and that of Engineer for graduate work. The University grants no honorary degrees.

The work of the University is grouped under the following departmental heads:

Greek, Latin, Germanic Languages, Romanic Languages, English Language and Literature, Philosophy, Psychology, Education, History, Economics and Social Science, Law, Drawing, Mathematics, Physics, Chemistry, Botany, Physiology and Hygiene, Zoology, Geology and Mining, Civil Engineering, Mechanical Engineering, Electrical Engineering.

The University Library contains 75,000 volumes. The attendance for the year 1902–3 was 1,483, of which 998 were men, 485 women. The faculty numbers 130. Tuition is free to California students. Those from other States pay a registration fee of $10 per semester.

George A. Clark,
Secretary of the University.

Leland University, a Baptist institution for the education of the colored people; founded in 1869, in New Orleans, La., by Holbrook Chamberlain of Brooklyn, N. Y. It has large grounds, commodious and well equipped buildings, and a fair endowment. It is a school and a system of schools, with a faculty of over 60 members and co-ordinated courses of study. It is made up of a number of academies, each built and maintained by one of the 15 Baptist Associations in the State. The courses consist of the usual work of the elementary and secondary schools, including a preparatory department where pupils are fitted for college. In addition are a college, a theological department, training classes for pastors and teachers, and departments of manual training, domestic science, and agriculture. Dr. R. W. Perkins is president (1903), and the board of trustees is made up of prominent citizens of New Orleans, La., and Brooklyn, N. Y. The number of students in 1903 was over 2,000.

E. R. W. Perkins,
Leland University.

Le Loutre, Louis Joseph, loo-ē zhō-zĕf lė lootr, French missionary: b. about 1692; d. about 1775. He was vicar-general of Acadia, and from about 1740, when he was sent to Nova Scotia, he labored for years among the Micmac Indians of that region with great success, obtaining practical control of all their affairs, spiritual and otherwise. He led them against the English, and when the country fell into the hands of Great Britain succeeded in compelling the Acadians to show their allegiance to King Louis, although for years they had been subjects of King George. The consequence was terrible suffering for the simple people, whose miseries became historic through their deportation in 1775. Le Loutre fled to Quebec, sailed for France, was taken by the English and kept prisoner in the Isle of Jersey for eight years. Being released, he returned to France, where he died.

Lely, lē′lĭ, Sir **Peter,** Dutch painter: b. Soest, Westphalia, 1618; d. London 30 Nov. 1680. His real name was Pieter van der Faes, but he assumed as his artistic title a nickname, Lely, or rather Le lys, which had been borne by his father. He was the pupil of Peter Grebber in his early manhood, but went to England in his 23d year and began his career as a portrait painter. His pictures were much admired and Charles I. appointed him court painter. He painted the portrait of that sovereign and also of Cromwell, but he reached his greatest eminence after the Restoration. He was an imitator of Van Dyck, whom he almost equaled in the excellence of some of his earlier work. But as he fell in with the artificiality of Charles II.'s licentious court his manner lost much of its dignity and originality, and with a fatal facility he assumed that mannerism which detracts so much from the artistic worth of his portraits. His coloring as well as his drawing became weak and conventional. He was, however, a great favorite with the king and his famous ‘Beauties of Hampton Court’ was painted at the request of his royal master, these «beauties» being the loveliest women of the court, including the Duchess of Cleveland. Lely founded the school of English portrait, and up to the time of Reynolds and Lawrence was its ablest representative. His method of handling, as well as his conception of the portrait, were long imitated, and even to-day have their influence.

Lemaître, Jules, zhül lė-mātr, French critic: b. Vennecy, Loiret, 27 April 1853. He was a teacher in various schools, and a professor at Grenoble in 1883–4. He then resigned his post and entered on a successful literary career at Paris. Though he wrote two books of verse and three of short stories, he won his position in French letters by his criticism, his essays having associated him with Brunetière as a representative figure. ‘Impressions du Théâtre’ (1888 et seq.), and ‘Contemporains’ (1886 et seq.) collect the best of his articles. His dramas, such as ‘Deputé Leveau’ (1891), ‘Les Rois’ (1893), and ‘Le Pardon’ (1895), have also been much approved.

Léman, lā-mäṅ, **Lake,** a name sometimes given to the Lake of Geneva. See Geneva, Lake of.

Lemars, lẹ-märz′, Iowa, city, county-seat of Plymouth County; on the Chicago, St. P., M. & O., and the Illinois C. R.R.'s; about 155 miles northwest of Des Moines, the capital of the State, and 24 miles north by east of Sioux

City. It is situated in an agricultural region in which cattle, wheat and corn are raised extensively. The chief manufactures are foundry and machine-shop products, flour, brick, blank books, and dairy products. It has a public library. Lemars is the seat of the Western Union College, under the auspices of the United Evangelicals. Pop. (1900) 4,146.

Lemberg, lĕm'bĕrg, Austria, the capital of the crownland of Galicia, on the Peltew, 365 miles by rail northeast of Vienna. Founded in the 13th century and formerly surrounded by walls, the city notwithstanding has a modern appearance, the walls having been replaced by boulevards and promenades. It is the seat of the crownland government, and of the important courts and public offices connected with it, also of three metropolitan sees, Greek, Armenian, and Roman Catholic, with their cathedrals and establishments. The university founded in 1784 and reorganized in 1817 is attended by about 2,000 students, and has a library of over 86,000 volumes. The National Institute founded in 1817 by Ossolinsk has a library of over 80,000 volumes and 3,000 MSS. chiefly of Polish literature. The manufactures are extensive and varied, and there is a large trade, mostly in the hands of Jews. The heterogeneous population consisting of Jews (over 31,000), Poles, Ruthenians, and Germans, was (1900) 159,618.

Lémery, lām-rē, **Nicolas,** French chemist: b. Rouen 17 Nov. 1645; d. Paris 19 June 1715. At an early age he displayed a taste for chemistry, went to Paris in 1666, and attached himself to Glaser. He soon left Glaser and took up his abode at Montpelier, where he had the free use of a laboratory, and began to give lectures which excited great interest and were attended by many of the influential inhabitants of the place. In 1672 he returned to Paris and gave courses of lectures on various parts of chemistry, the success of which seems to have been very great. His ‘Cours de Chimie’ appeared in 1675. This book went through numerous editions — 31, it has been calculated — and was translated into the chief European languages. The book is plainly modeled upon the prior treatises of Lefebvre and Glaser, the opening chapters being identical in manner and treatment, but shows proof of the author having profited by the work of his predecessors. In 1681 the religious troubles began to harass him; he was required to demit his office by a given time, and had ultimately, in 1683, to take shelter in England, where he was well received by Charles II., to whom he dedicated an edition of his book. He returned later to France, graduated as doctor of medicine at Caën, went to Paris, where he soon had a very large practice; but in 1685 the revocation of the Edict of Nantes forbade him, as a Protestant, the exercise of this profession. Against this he struggled for a little, but in 1686 joined the Roman Catholic Church. In 1699 he became an associate of the Academy of Sciences. Besides the ‘Course of Chemistry,’ Lémery wrote and published other works and papers, among which may be mentioned: ‘Pharmacopée universelle (1697); ‘Traité universelle des Drogues simples’ (1698); ‘Traité l'Antimoine’ (1707). It deserves to be remembered that he was one of the first to attempt the elucidation of natural terrestrial phenomena by referring them to chemical action, and to exhibit these on an experimental scale, as when he made what is still known as Lémery's volcano, by placing a mixture of sulphur and iron in a hollow, heaping up the earth over the mixture, moistening, and leaving it to itself. By-and-by combination between the iron and sulphur begins, heat is evolved, the earth heaves and swells, steam escapes, and the resemblance of the miniature eruption to the larger original is very striking. He left two sons, both of whom were afterward distinguished as chemists.

Lem'ly, Henry Rowan, American soldier: b. North Carolina 12 Jan. 1851. He was graduated from West Point in 1872, and was appointed 2d lieutenant of the 3d cavalry. In March 1898 he was promoted captain, and during the Spanish-American War commanded Battery C of the 7th United States Artillery in the Porto Rico campaign. He was retired at his own request 20 April 1899. He has published ‘What Was El Dorado?’; ‘Among the Arapahoes’; ‘West Point Romance’; ‘Padre Anselmo’; ‘A Queen's Thoughts’; etc.

Lemly, Samuel Conrad, American naval officer: b. Salem, N. C., 14 March 1853. He was graduated at the United States Naval Academy in 1873; was promoted lieutenant in January 1886; and in 1892 was appointed judge advocate-general of the navy. He was reappointed in 1896 and 1900, and in 1901 was the legal representative of the navy in the Schley Court of Inquiry.

Lem'ming, a short-tailed rat-like animal, related to the European voles and American meadow-mice, which inhabits the high mountains of Scandinavia. Its technical name is *Myodes lemmus,* and closely related species are found in northern Siberia and in Arctic America. In general appearance these animals are more like miniature short-eared, yellowish rabbits or pikas than like mice; they subsist wholly upon vegetable food, dwell in nests made of bark, grass, etc., in some sheltered nook, and do not hibernate but force their way about underneath the snow in search of moss, lichens, sprouting woody plants and other edible things. They are very prolific, rearing two broods of four to six young annually, and hence every few years they become so numerous that the mountains can no longer support the hordes. At such times, occurring at irregular intervals of several years according to circumstances, an exodus takes place, and great numbers of lemmings descend from the mountains and spread over the lowlands. There the easier climate, more abundant food and absence of enemies, permit a still further multiplication, so that by the following season the little animals have increased into a plague. They wander more and more widely, overrun and damage, or sometimes wholly devour crops, gardens and meadows, and make themselves a destructive nuisance. Such an invasion is felt more severely in the narrow and fertile valleys of Norway than in the broader and more forested spaces of Sweden. At such a time concerted measures are devised to kill them off, carnivorous mammals and birds flock to the feast, and epidemic diseases often break out among them. Spreading with a restless energy for travel, the lemmings overcome or attempt to overcome all obstacles, and heedlessly plunge into lakes too large or rivers too swift to be crossed. When the remnants of the host reach the sea many of them boldly swim out in their ignorance of its magnitude and are drowned. Such overrunning of the country by lemmings is not known in Arctic Asia or America, where different conditions exist.

Lemming-mice, certain small mice-like animals closely related to the lemmings and having similar traits, inhabit the region about Hudson Bay and the southern part of Greenland, of which the most prominent is *Cuniculus torquatus,* chiefly remarkable for its turning white in winter. Other species belong to the genera *Synaptomys, Lemmus,* etc.

Lem'mon, John Gill, American botanist: b. Lima, Mich., 2 Jan. 1832. He studied at the University of Michigan, but left to enter the Federal army in June 1862, and was a prisoner at Andersonville, Ga., from August 1864 till the end of the Civil War. He has lived in California from 1866, where he was for four years botanist of the State Board of Forestry. He has published ‹Recollections of Rebel Prisons› (1874); ‹Ferns of the Pacific Slope› (1884); ‹Handbook of North American Cone Bearers› (1895); ‹Botanizing in Apache Land› (1901); ‹How to Tell the Trees› (1902); etc.

Lem'nian Earth, a reddish earth found in the island of Lemnos, celebrated as a remedy for snake-bites and various diseases, and collected by the ancients in accordance with special religious observances on only one day in the year. Analysis shows it to be composed of silica, 67 per cent; alumina, 14 per cent; water, 8 per cent; iron oxide, 5 or 6 per cent; soda, about 3 per cent, and traces of lime and magnesia. Its classical name «terra sigillata› (sealed earth) is due to the fact that it was compressed and marked with the head of the Lemnian Diana. The earth is a fair substitute for soap, but has no medicinal properties.

Lem'nos, the classical name for STALIMENE, the northernmost island of the Grecian archipelago, between the Hellespont and Mount Athos. It anciently contained a volcano, Mosychlus, which was regarded as the workshop of Hephaistos (Vulcan), and was worshipped by the Greeks as sacred. The island belongs to Turkey and consists of two peninsulas almost separated by the harbors of Paradiso and San Antonio. It has an area of 160 square miles, and abounds in vineyards, wheatfields, olive and fruit groves. The chief town is Limno or Kastro, with 3,000 inhabitants, a fortified place on the west coast. Pop., chiefly Greeks (1903) 27,000.

Le Moine, lĕ-moin', SIR **James MacPherson,** Canadian historian: b. Quebec 24 Jan. 1825. He was educated in his native city and in 1850 was called to the bar. In 1869 he was appointed inspector of the inland revenue district of Quebec. He was knighted in 1897. Among his works are: ‹L'Ornithologie du Canada› (1860); ‹Etude sur les Navigateurs Arctiques Franklin, McClure, Kane, McClintock› (1862); ‹The Tourist's Note-Book› (1870); ‹Quebec: Past and Present› (1876); ‹The Scot in New France› (1880); ‹Picturesque Quebec› (1882); ‹The Land We Live In› (1891).

Lemon, Mark, English humorist and playwright: b. London 30 Nov. 1809; d. Crawley, Sussex, 23 May 1870. He made his first essays in the lighter drama, and the modern London stage was supplied by his facile pen with more than 60 pieces, farces, melodramas, and comedies, among which were: ‹The School for Tigers,› ‹The Serious Family,› and ‹The Ladies' Club.› On the establishment of ‹Punch› in 1841 he became joint editor with Henry Mayhew, and two years later, sole editor, controlling that periodical for 29 years. He was also literary editor of, and frequent contributor to, the ‹Illustrated London News.› Among his later productions are several novels: ‹Loved at Last,› ‹Golden Fetters,› etc. He also edited ‹Mark Lemon's Jest Book.›

Lemon, a small tree or spreading shrub (*Citrus medica* var. *limon*) of the natural order *Rutaceæ.* It is a native of India, but has been introduced into tropical and subtropical countries throughout the world, especially those of the Mediterranean region, whence it was imported into Florida and California. In Florida the cold wave of 1894–5 destroyed most of the orchards, leaving only those in the southernmost counties, the soil of which is poorly adapted to the trees and must be carefully mulched, fertilized and managed to yield profitable returns. In California the lemon was introduced about 1850, but did not become commercially important until the closing quarter of the 19th century, during the last ten years of which the annual shipments to eastern markets averaged about 1,200 carloads, although half of the 400,000 trees had not yet reached bearing age. The climate is perfect, but the water supply is deficient, so that the orchards must be irrigated. The fruit is one of the most important grown in the United States, since in addition to its value in food drink, the citric acid of its juice is used upon a commercial scale by calico-printers, who by its aid remove iron from patterns stamped with certain dyes; and the oil or extract distilled from the rind is serviceable in perfumery, for flavoring, etc.

Owing to its spreading habit the tree must be carefully pruned, else it will make the necessary cultivation impossible and will result in bearing fruit at or near the ends of long willowy branches. The trees are usually set about 20 feet apart each way, given clean cultivation and fertilization like the orange (q.v.). The fruit, which ripens during the winter is cut, not pulled, green as soon as it is two and one quarter inches in diameter, the picker carrying a gauge. These details have been found necessary since lemons ripened on the tree are of inferior quality and will not keep well, and since the market demands lemons in the summer. The fruit is spread in shallow trays and stored in a well ventilated curing house where by careful management it develops the characteristic yellow skin, which also becomes tougher, thinner, more pliable and silky and less liable to injury in handling. When properly managed, lemons are profitable, and because of the constant demand are more reliable than any other of the citrus fruits.

Lemon Oil, a volatile oil obtained, by pressure, from lemon peel. It consists chiefly of a terpene, $C_{10}H_{16}$, known as limonene, which boils at 349° F., and closely resembles citrene, though differing from it in certain essential particulars. Lemon oil has an agreeable odor, and is used chiefly as a flavor and perfume. It is reputed to change spontaneously into turpentine upon keeping, but this belief probably has no foundation in fact. Lemon oil mixes in all proportions with glacial acetic acid and with absolute alcohol.

Lemon Vine. See Barbados Gooseberry.

Le Moyne, Antoine, äṅ-twän le-mwän, Sieur de Châteauguay, French soldier and colonist in America: b. Montreal 7 July 1683; d. Rochefort, France, 21 March 1747. He was a son of Charles Le Moyne (1626–85) (q.v.). He entered the French army, and in 1704 came to Louisiana with a company of settlers. In 1705–6 he fought under D'Iberville against the English, in 1717 was appointed commandant of the French forces in Louisiana, and in 1718 king's lieutenant of that colony. With the aid of Indians he captured Pensacola from the Spanish 14 May 1719; but he surrendered it 7 August. Having been held as a prisoner of war until July 1720, he took command at Mobile upon the conclusion of the peace of that year, but returned to France in 1726. He was governor of Martinique in 1727–44, and from 1745 of Cape Breton.

Le Moyne, Charles, shärl, Sieur de Longueuil, French settler, soldier, and proprietor in America: b. Dieppe, France, 1626; d. Villemarie, Canada, 1685. He came to Canada in 1641, settled at Villemarie, and was interpreter between the Hurons and the colonists. In 1651 he successfully defended the fort from an attack by the Iroquois, whom he routed with great slaughter; and in 1653 he concluded a peace with the Five Nations. These Indians, however, in 1655 again made an attack upon the colony, which was saved from destruction largely by Le Moyne's exertions. In 1657 Le Moyne received from François de Lauzon, who held 60 leagues of land under royal grant, full seignorial rights; and in 1664 his possessions were largely increased by the cession of Isle St. Hélène and other tracts. He participated in the expedition led by Tracy and Courcelles in 1666–7, and in several campaigns against the Iroquois; and for many years was captain of Montreal. He was made Sieur de Longueuil in 1668, and to this title that of Châteauguay was later added.

Le Moyne, Charles, 1st Baron de Longueuil, French soldier in America: b. Villemarie, Canada, 10 Dec. 1656; d. there 8 June 1729. He was a son of Charles Le Moyne (1626–85) (q.v.). He entered the French army, with which he served in Flanders, but returned in 1683 to Canada, where he became mayor of Montreal. He promoted colonization in Canada, and built a stone fort on his estates at Longueuil. In the campaign of 1687 against the Iroquois he was commander of a division of militia; and in 1690 he was wounded at the repulse of Phipps' attack on Quebec. He was made baron and governor of Montreal in 1700 for services to the colony; commanded the Canadian forces at Chambly, when the English made an unsuccessful attempt to take Montreal; and in 1711 became commander-in-chief of the colonial troops. He commanded at Three Rivers in 1720, and was again governor of Montreal in 1724–6. In 1726 he rebuilt Fort Niagara.

Le Moyne, Jacques, zhäk, Sieur de Sainte Hélène, French soldier in America: b. Villemarie, Canada, 16 April 1659; d. Quebec October 1690. He was a son of Charles Le Moyne (1626–85) (q.v.). In March 1686 he accompanied the expedition led by the Chevalier de Troyes against the English on Hudson Bay, and in the capture of Forts Rupert, Monsipi, and Quitchitchonen, and the seizure of the English governor-general, took a prominent part. He was second in command of the expedition that captured, plundered and burned Fort Corlear (now Schenectady) 9 Feb. 1690. In October Phipps laid siege to Quebec, and Le Moyne was selected to direct the defense. He was mortally wounded while leading about 200 troops in the repulse of 1,300 British at the passage of the St. Charles.

Le Moyne, Jean Baptiste, zhōṅ bäp-tēst, Sieur de Bienville, French administrator in America: b. Villemarie, Canada, 23 Feb. 1680; d. Paris 1768. He was a son of Charles Le Moyne (1626–85) (q.v.). In 1691, upon the death of his brother, Charles, Baron de Longueuil (q.v.), he succeeded to the title; but he was known as De Bienville. In 1697 he served in the expedition of the Chevalier de Troyes against the English settlers in Hudson Bay. He afterward went with his brother, D'Iberville (see Iberville) to France, and 24 Oct. 1698, sailed from Brest in the expedition led by D'Iberville to take possession of the mouth of the Mississippi. Bienville was appointed lieutenant of the king, explored the surrounding region, and in 1700 became commander of a fort on the river 44 miles above its mouth. He succeeded Sauvolle in the direction of the colony, and assumed command of the camp of Biloxi 22 Aug. 1701. In December he transferred the settlement to Mobile, which prospered through the arrival of recruits from France with supplies (1703–4) and of 50 Canadians (1706). In February 1708 he was ordered to France as a prisoner, but he was later reinstated. The attempt to cultivate the soil by Indian labor having been unsuccessful, he suggested to the king in 1708 the importation of negroes from the Antilles, to be exchanged for Indians at the rate of three Indians for two negroes. In 1713 Cadillac arrived as governor, and Bienville was commissioned lieutenant-governor. Bienville led an expedition to the territory of the Natchez Indians in 1716, built a fort, and concluded a treaty. In 1718 he became governor of Louisiana, in the same year founded New Orleans, which was made the seat of government in 1723, in 1724 went to France to answer charges preferred against him, but in 1733 returned as governor with lieutenant-colonel's rank. After unsuccessful campaigns against the Chickasaws in 1736, 1739, and 1740, he sailed for France in 1743.

Le Moyne, Joseph, zhō-zĕf, Sieur de Sérigny, French soldier in America: b. Villemarie, Canada, 22 July 1668; d. Rochefort, France, 1734. He was a son of Charles Le Moyne (1626–85) (q.v.). He entered the French navy, and in 1694 and 1697 commanded the flotilla which co-operated with his brother, D'Iberville (see Iberville) in the expedition to seize Hudson Bay. Later he received command of a squadron, took to Louisiana Canadian settlers, and surveyed (1718–9) the coast of that colony. He drove the Spaniards from their fortifications at Pensacola (15 June 1719), and repulsed them at Dauphin Island, near Mobile (19 August); became a captain in 1720; and in 1723 rear-admiral. From 1723 he was governor of Rochefort.

Le Moyne, Paul, pōl, Sieur de Maricourt, French soldier in America: b. Villemarie, Canada 15 Dec. 1663; d. there 21 March 1704. He was a son of Charles Le Moyne (1626–85) (q.v.). He participated in Troyes' expedition against the English at Hudson Bay, was wounded in the attack on Fort Monsipi (20 June 1686), and remained with his brother D'Iberville (see Iberville) in command of the captured district until 1690. In 1690 he distinguished himself in the defense of Quebec against Phipps, later took part in Frontenac's expedition against the Iroquois, and in 1701 concluded peace with them.

Le Moyne, Paul Joseph, pōl zhō-zĕf, Chevalier de Longueuil, French soldier in America: b. Canada 17 Sept. 1701; d. France 12 May 1778. He was the son of Charles Le Moyne (1656–1729) (q.v.). He entered the French army in 1718. He commanded at Fort Frontenac, and was also governor successively of Detroit, Three Rivers, and Quebec. He fought with distinction in various campaigns, and in 1747 marched 180 miles in the depth of a severe northern winter to reinforce de Vaudreuil at the siege of Fort George.

Le Moyne, Pierre. See Iberville, Pierre Le Moyne Sieur d'.

Lempa, lĕm'pä, San Salvador, a river, the largest of Central America, which rises in Lake Guija on the boundary of Guatemala and San Salvador, flows eastward through a broad and fertile valley for a distance of nearly 150 miles, and then turning abruptly to the south breaks through the volcanic coast range of mountains, and finishes its course of over 200 miles in the Pacific in lat. 13° 12′ N., lon. 88° 41′ W., 35 miles southeast of San Salvador City. It has numerous large tributaries and is subject to sudden floods. The mouth of the river is obstructed by a bar, but the river is reached by a natural channel connected with the Jaltepeque estuary, and is navigable by small steamers for 100 miles.

Lempriére, John, English classical scholar: b. island of Jersey about 1765; d. London 1 Feb. 1824. He was graduated at Oxford University in 1790, was ordained and began life as a schoolmaster. He afterward was appointed to the livings of Mesth (1811), and Newton-Petrock (1823). He is the author of the well-known classical dictionary (1788), which was founded on Sabatier's ‹Dictionnaire des Auteurs Classiques.› He also published: ‹Sermons› (1791); ‹Translation of Herodotus,› first volume only (1792); and ‹Dictionary of Universal Biography› (1808).

Lemures, lem'ū-rēz, among the ancient Romans, a term applied to departed spirits, especially those of ancestors who hovered about during the night. Probably the word was derived from the festival *Lemuria* held 9, 11 and 13 May, when at midnight the father of the family, with special ceremonies, nine times threw black beans over his head, thus banishing the spirits from the household for another year.

Lemu'ria, a name given by Haeckel to a vast area assumed to exist in past ages over the area of the present Africa, Indian Ocean and Malayan archipelago, on the hypothesis that the existence of such a continent was necessary to explain the peculiar present distribution of the lemurs and other phenomena of geographical distribution. The discovery of the remains of lemurs in America and Europe rendered such hypothesis futile, and the idea was soon abandoned. Consult: Wallace, ‹Geographical Distribution of Animals› (1876).

Lemurs, lē'mėrz, the curious monkey-like animals, or «half-apes» forming the group *Lemuroidea* within the order Primates, where they stand lowest in rank. They are divisible into three families, *Lemuridæ, Tarsiidæ* and *Chiromyidæ.* The last contains only the aye-aye (q.v.); and the second only the Malayan tarsiers (q.v.). The lemurs proper (*Lemuridæ*) are confined mainly to Madagascar, but a few are found upon the African continent, and a few others, of peculiar genera, in the Oriental region. They are chiefly arboreal, and more squirrel-like than monkey-like in their manners, and quite harmless, gentle and tamable. They are usually mouse-gray or yellowish, not marked in ornamental ways, the hair is long and often woolly, and the tail usually long, bushy and never prehensile. The hind-legs are longer than the fore-legs in the true lemurs, which move about on all fours, not using their hands as do monkeys, although the thumbs are opposable; the second toe always has a sharp claw, while the other digits bear nails. In the internal anatomy many features are different from the rule of structure elsewhere in the order. The simplicity of the brain, the fact that certain arteries form retia mirabilia, and especially the nondeciduate condition of the placenta, are prominent among these lemuroid peculiarities. In general, however, the lemurs show much resemblance to the *Anthropoidea.*

The *Lemuridæ,* or lemurs proper, are divisible into four groups or sub-families. The first group (*Indrisinæ*) is limited to Madagascar, and includes several genera distinguished prominently by the great size of the hind-legs, as compared with the fore-limbs; and when upon the ground these lemurs walk erect, balancing themselves by holding their short arms above their heads. The largest is the indri (q.v.), which has no visible tail, while the smallest are the avahis (genus *Avahis*) which are the size of gray squirrels, but have very long tails. A third important genus is *Propithecus,* containing several large brightly colored species, called sifakas, which are mainly vegetarian, go about in large bands like the indris, and seek food in the daytime, whereas the avahis are nocturnal; and are often tamed and taught to hunt like dogs.

The most typical lemurs are in the sub-family *Lemurinæ,* which contains several genera, some of which inhabit the Comoro Islands as well as Madagascar. Their limbs are of nearly equal length, and they have a fuller dentition (36 teeth). Among the best known are the so-called «gentle» lemurs; the nocturnal grass-eating bokomboulis (*Haplemur*); and the handsome and highly arboreal species of the type-genus *Lemur,* which vary greatly in habits, food and appearance. One of these is familiar as the «Madagascar cat» or ring-tailed lemur (*L. catta*), since, unlike the rest, it remains upon the ground, especially about rocks, is easily caught and readily tamed. It is remarkable for the fact that the sexes differ in color, the male being black, while the female is reddish brown with white whiskers and ear-tufts, and the tail alternately ringed with brown and white. The ruffed lemur (*L. varius*) is still more strikingly diversified in black and white, and has a ruff of long hair about the neck. All these lemurs survive captivity well and furnish interesting specimens for all zoological gardens.

The third sub-family is that of the *Galagina*, represented in the continent of Africa and in Madagascar. The galagos (q.v.) have long hind-legs, causing them to hop like kangaroos, when on the ground (but the most of their life is passed in trees), large, semi-naked ears and long tails. Important genera are *Galago* (q.v.); the mouse-lemurs or chirogales (q.v); and the diminutive squirrel-like dwarf-lemurs (*Microcebus*).

The sub-family *Lorisinæ* contains a group of small lemurs, distributed widely in Africa, India, and Malaysia. «In external appearance,» remarks Beddard, «all the three genera of this sub-family agree in their small size, their short or entirely deficient tail, large staring eyes, and the rudimentary character, or absence, of the index finger, which is never provided with a nail; in all of them the thumb diverges widely from the other fingers, and the great toe is so divergent as to be directed backward.» The ears are small and rounded; and the eyes are very large, and situated close together on the front of the head. They feed on small birds and insects, and are chiefly nocturnal in habits. They inhabit India, Ceylon, and the Eastern Archipelago. The genus *Nycticebus* contains the remarkable «sloth monkey» or sloth lemur (*N. tardigradus*), which is nocturnal, howls dismally at times, and is the object of many fears and superstitions among the Malays and southern Chinese. The genus *Perodictus* contains the queer African pottos and angwantibos (q.v.). The most typical species of the group is the slender loris (*Loris gracilis*), a pretty little arboreal animal of the Malayan countries, and the subject of many fears and curious superstitions among the Malays and southern Chinese.

The geographical and geological distribution of the lemurs is very interesting. Their remains are found in the rocks as far back as the transition period (Puerco beds) between the Cretaceous and Tertiary, the oldest occurring in the western United States. These are small lemuroids, and similar forms are found in the early Tertiary rocks of Europe, Asia, and Africa. Many genera are known. The most recent, which may have survived in Madagascar until the discovery of that island by Europeans, was *Megaladapis,* which must have been three or four times bigger than any modern species. The circumstance that existing lemurs and certain other animals occur only in south-central Africa, Madagascar and the Oriental region, and nowhere between, was so extraordinary a fact in zoogeography that early attempts to account for it resulted in the hypothesis of an ancient continental land-area, called *Lemuria* (q.v.) which was supposed to connect Africa and southern Asia. This theory had little other foundation, and the subsequent discovery of remains of extinct lemurs in Europe, Western Asia, and the two Americas, showed that it was needless. It is evident that the existing lemurs are the survivors of a once world-wide race which has died out except in certain islands and favorable corners of the world where they are not exposed to cold climates nor to too many enemies. The almost complete absence of predatory animals in Madagascar doubtless explains the comparatively great number of lemurs characteristic of that isolated country.

Consult: Beddard, ‘Mammalia’ (1902); Forbes ‘Allen's Naturalists' Library’ (1894); Lydekker, ‘Royal Natural History,’ Vol. I., (1893); Mivart and Murie ‘Anatomy of the Lemuroidea,’ in Trans.-Zool. Soc. of London, Vol. VII. (1872).

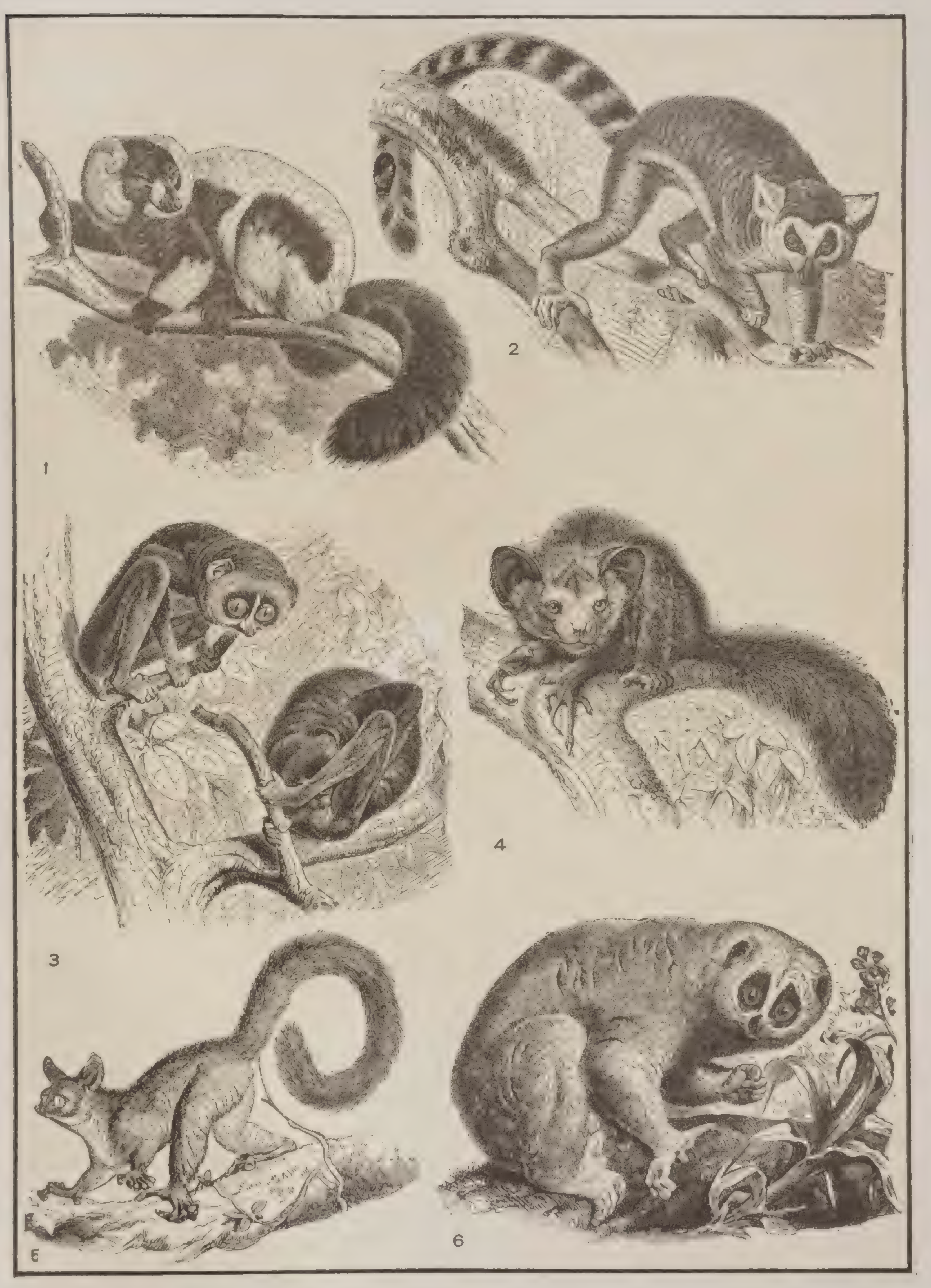
Lena, lā-nä′ or lē′nạ, Siberia, one of the largest rivers in the world, rising on the northwestern side of the mountains which skirt the western shore of Lake Baikal, about 170 miles east-northeast of Irkutsk. It flows in a winding course, north-northeast and northwest, receiving the Vitim, the Aldan, the Viliui, and other tributaries. Then a mighty stream it flows generally north, till, separating into branches, it forms a great number of deltaic islands, and discharges itself into the Arctic Ocean by several mouths, in lat. 73° N., and lon. about 128° E., having thus passed over 21° of lat. and 22° of lon. Its direct course, through a generally barren country interspersed with a few dense forests, is about 1,480 miles; its actual course, windings included, about 2,770 miles. It is navigable through the greater part of its course, but is frozen from October to May.

Lenâpé (lĕn′ạ-pā) **Stone,** in archæology, a name given by H. C. Mercer to an inscribed gorget, upon which was incised a spirited combat between men and a mastodon; lightning intervening and aiding the men in the destruction of the beast. The stone told pictorially the legend recorded by Jefferson in his ‘Notes on Virginia.’ Since its discovery the stone has been condemned by most archæologists, and not always on the same grounds, and it is probable that it will not be accepted generally as genuine until abundant corroborative evidence has been obtained. If genuine, the stone establishes two most interesting facts concerning the Indians of the Atlantic seaboard; that the mastodon or mammoth was living when these people were at the climax of their cultural development, or, if not a feature of practically our present fauna, then that the advanced Indian lived at a much more remote period than is generally supposed. The evidence now had concerning the mastodon is that it was living about 2,500 years ago, and this antedates the Indian as so advanced an occupant of this region. That man has been an occupant of our seaboard region since the Glacial Epoch is demonstrable, and his contemporaneity with so recently extinct an animal as the mastodon is certain. The principal objection that can be brought against its genuineness is that it is so far in advance of all other known specimens of Indian pictographic art.

C. C. Abbot.

Lenbach, Franz von, fränts fōn lĕn′bäн, German painter: b. Schrobenhausen, Upper Bavaria, 13 Dec. 1836; d. Munich 19 May 1904. He began life as a bricklayer, but at the suggestion of Hofner, the animal painter, turned to the study of art, and became a pupil of Geyer in Augsburg. He subsequently attended the Munich Academy for a short time, and then for two years studied the technique of painting under Gräfle. From 1855 to 1857 he lived as one of the artistic coterie of

LEMURS.



1. Ruffed Lemur.
2. Ring-tailed Lemur.
3. Slender Loris.
4. Ayeaye.
5. Great Galago.
6. Common Loris.

Schrobenhausen, and painted portraits, landscapes, and animals. He then attached himself to Piloty, and as the pupil of that artist accompanied him to Rome. Here he applied himself to the study of the old masters and painted his picture 'The Roman Forum,' whose vivid coloring and grandeur of design made his reputation. After his return to Germany he painted several portraits, which were distinguished by a power of coloring rivaling that of the Venetian school, and a vivid characterization and chiaroscuro which recalled Rembrandt. He was for a few years teacher in the Weimar school of art, but eventually returned to Munich, and attracted the attention of Baron von Schack, who engaged him to visit Italy and Spain for the purpose of making copies of the principal paintings of Giorgione, Velasquez, Titian, Rubens and others. The copies executed by the painter have all the individual tone and color of each original, and he developed immensely his own power and style by their production. This appears most plainly from an examination of his portraits which, original and fresh as they are, show plainly that the master had trained himself in the school of Titian, Rembrandt and Velasquez. Though his drawing is sometimes weak and incorrect, his paintings nevertheless are characterized by powerful modeling, life-like expression, and as a portrait painter he sees to the soul of his sitter with genial and sympathetic intuition. Since his 70th year he has produced an extraordinary number of pictures. He painted the Emperor William in the last year of that monarch's life; he also executed several portraits of Bismarck, and Von Moltke, whose features have become familiar to the world largely from the numerous reproductions of these inimitable pictures, now looked upon as classic examples of German art. Bismarck especially appears in these canvases in every attitude and costume civil and military which he assumed. Many of these portraits are in the picture galleries of Berlin. But he painted in his time every living man of eminence in Europe from Gladstone to Leo XIII. He also executed many pastel portraits as well as single ideal figures ('Sakuntala,' 'Herodias,' etc.). He was a Royal Bavarian professor. A collection of heliogravure reproductions of his paintings was published at Munich in 1891.

Lenclos, lŏṅ-klō, **Anne,** French courtesan, better known as Ninon de Lenclos; b. Paris 15 May 1615; d. there 17 Oct. 1705. She was famed for her beauty and notwithstanding her reputation, some of the most respectable ladies of the time cultivated her friendship, and in her old age her house was the rendezvous of the most distinguished personages of the city and court. Scarron consulted her on his romances, St. Evremond on his poems, Molière on his comedies, Fontenelle on his dialogues, and La Rochefoucauld on his maxims. Richelieu is said to have been her first lover, and Coligny, Condé, Sévigné, etc., were her lovers and friends. She retained the charms of her manners and conversation, and to some extent of her person, to extreme old age.

Lend a Hand Clubs, organizations of young persons established in the United States in 1871, for religious, philanthropical and social purposes. The name is derived from a story by Edward Everett Hale, entitled 'Ten Times One is Ten,' published in 1870. Each club creates its own constitution but follows a common motto:

Look up and not down,
Look forward and not back,
Look out and not in,
Lend a hand.

The badge of the club is a Maltese cross, with the inscription «In His Name.»

Lenepveu, lā-nā-vė, **Charles Ferdinand,** French composer: b. Rouen 1840. A pupil of Savard, Ambroise Thomas, and Chauvet, he obtained the Prix de Rome in 1865, and was appointed professor of harmony at the Conservatory in 1881 and of composition in 1893. His works include the sacred drama 'Jeanne d'Arc,' first given in the cathedral of Rouen in 1886, several operas, a requiem mass, 'Méditation' for orchestra, and various choral and solo compositions.

Lenepveu, Jules Eugène, zhül ė-zhān, French painter: b. Angers 1819; d. 1898. He was a pupil of Picot and the Beaux-Arts, won the Prix de Rome in 1847, painted several canvases ('Les Martyrs aux Catacombes'; 'Venetian Night'; 'Hylas'; and others), and executed many frescoes in public buildings at Paris, Angers, and elsewhere.

L'Enfant, lŏṅ-fäṅ, **Pierre Charles,** French-American engineer: b. France 1755; d. Prince George's County, Md., 4 June 1825. A lieutenant in the provisional service of France, in whose best military institutions he had been trained, he came to America with Lafayette in April 1777; built Fort Mifflin (on the Delaware), which successfully resisted one of the most vigorous attacks of the Revolutionary War; and by his skill as a designer of fortifications attracted the attention of Washington, who made him chief of engineers, with brevet of major of engineers. He remodeled and refitted the City-hall in New York for the use of the first Congress, and later also the Federal House in Philadelphia. Washington and Jefferson selected him to draw the plan for the «new federal town»; and during the spring and summer of 1791 he was employed in the elaboration of his plans. Jefferson wished the design to be that of a chess-board regularity of squares; but L'Enfant broke the monotony of this arrangement by inserting numerous avenues running at acute angles. His plan was approved by Washington, and he was retained to direct the execution of it. The commissioners in general charge of the work advertised a sale of lots for October 1791, and requested L'Enfant to furnish his plan to be engraved and published. This he refused to do, asserting that speculators would purchase the best locations in the «vistas and architectural squares,» and «permanently disfigure the city» by «huddles of shanties.» For this insubordination Washington ordered his dismissal 1 March 1792. For planning the «federal city» and devoting his time for months to the survey and other preliminary operations, L'Enfant received only $2,500 and a lot near the executive mansion, a compensation quite in accord with the general economy with which the work was prosecuted. He requested the commissioners to recall the order for the money and «not take any further trouble about the lot.» Later, Madison appointed him professor of engineering at West Point, but he declined the post. He designed several public works at Philadelphia, and was appointed to construct the present Ft. Washington (on the Potomac). He partly executed the work, but disagreed with his superiors, and was dismissed. He lived latterly at Chellum Castle, the residence of Dudley Digges, near Bladensburg, Md., and frequented the halls of Congress, seeking in vain for a reward for past services. The execution of his plan for Washington was continued by his assistant, Andrew Endicott, later professor of mathematics at West Point. L'Enfant's design may be viewed in the Library of Congress. To L'Enfant is chiefly due the fact that to-day Washington is one of the most picturesque cities of the world. See WASHINGTON.

Lenno Lenapes, lĕn'nō lĕn'ạ-pēz, the native name for the Delaware Indians (q.v.).

Len'nox, Charlotte Ramsay, English novelist: b. New York 1720; d. London, England, 4 Jan. 1804. She was the daughter of the lieutenant-governor of New York and was educated in England. She married and being left a widow in narrow circumstances took up literature for support. Her best work is ‘Shakespeare Illustrated’ (1753–4). She also wrote ‘Memoirs of Harriet Stewart’ (1751); ‘The Female Quixote,’ popular in its day (1752); ‘Sophia,’ a novel (1763); ‘The Sisters,’ a comedy (1769); etc. She was the friend of Dr. Johnson and Samuel Richardson, from the former of whom she received much literary encouragement.

Lenormant, Charles, shärl lė-nôr-mäṅ, French archæologist and art historian: b. Paris 1 June 1802; d. Athens, Greece, 24 Nov. 1859. He became inspector of fine arts in 1825, professor at the Sorbonne in 1835 and was professor of Egyptian archæology in the Collège de France from 1848 till his death. Among his writings are: ‘Thesaurus of Numismatics and Glyptics’ (20 vols., 1834–50); ‘Introduction to Oriental History’ (1838); ‘Museum of Egyptian Antiquities’ (1835–42); ‘Selection of Keramographic Monuments’ (4 vols., 1837–61); ‘Historical Questions’ (2d ed. 1854).

Lenormant, François, fräṅ-swä, French historian and archæologist, son of Charles Lenormant (q.v.): b. Paris 17 Jan. 1837; d. there 10 Dec. 1882. He is one of the foremost of French Assyriologists and from 1874 was professor of archæology at the Bibliothèque. Among his very numerous works are: ‘Archæological Researches at Eleusis’ (1862); ‘Ancient History in the East’ (1868–9); ‘Letters on Assyriology’ (5 vols., 1871–9); ‘Akkadian Studies’ (3 vols., 1873–9); ‘The Primitive Language of Chaldea’ (1875); ‘Money of Ancient Times’ (1879); ‘The Beginnings of History according to the Bible’ (3 vols., 1880–4); ‘Magna Grecia’ (1881–3).

Len'ox, James, American philanthropist: b. New York 19 Aug. 1800; d. there 17 Feb. 1880. He was educated at Columbia, and in 1839, on the death of his father, a wealthy Scottish merchant of New York, he inherited a fortune of several millions, and 30 acres of land between Fourth and Fifth avenues. After his father's death he retired from business and devoted his time to study, and the collection of fine books, statuary and painting. After some years he became the possessor of the most extensive private collection of books and paintings in the United States. In 1870 he erected a large and costly building on Fifth Avenue, between 70th and 71st streets, to contain his collection, and this now constitutes the Lenox Library, which he gave to the city on its completion. It is especially notable for its exceptionally large collection of Americana. He founded the Presbyterian Hospital near the library, his gifts to it amounting to $600,000. He also made important gifts to Princeton College and seminary, and gave liberally to numerous churches and charities connected with the Presbyterian Church.

Lenox, Mass., town in Berkshire County; on the New York, N. H. & H. railroad; about six miles south of Pittsfield and the same distance from the boundary line between New York and Massachusetts. It was settled in 1750 and named in honor of Charles Lenox, Duke of Richmond. The town includes the villages of Lenoxdale and New Lenox. It is noted for its beautiful scenery and healthy climate. Within the town limits are Laurel and Mahkeenac lakes, and spurs of the mountains called the Ledge, Perry Peak, Bald Head, and Mattoon Hill. This locality is largely residential; the industries which contribute to the wealth of Lenox are located mainly in the large cities. Many noted people have been residents of Lenox, among others Nathaniel Hawthorne. Pop. (1900) 2,942.

Lenox College, a coeducational institution, founded at Hopkinton, Iowa, in 1850, and opened in 1859, under the auspices of the Presbyterian Church. It has a preparatory department and classical courses leading to degrees. In 1903 there were connected with the school 15 instructors, and 170 students. The library contains nearly 6,000 volumes.

Lens. A transparent body, generally glass, which refracts the rays of light convergently or divergently. Converging lenses, properly speaking, are called positive (trade designation plus, +), because they bring rays of light to an actual focus, thus forming a real image. Converging lenses give, under suitable conditions, a magnified image of an object, and one or both of their bounding polished surfaces are convex. The fact of their being thicker in the middle than at the edges distinguishes them from diverging lenses. Diverging lenses are called negative (trade designation, minus, —) because they tend to cause the rays of light to diverge and form, under all conditions, a virtual, reduced image of an object. One or both of their surfaces are concave and they can be distinguished from converging lenses by their being thinner in the middle than at the edges. These two classes of lenses are each divided into three leading types. Those of the positive or convex class are (1) double or bi-convex; (2) plano convex; (3) convex meniscus (trade term, periscopic convex). Those of the negative or

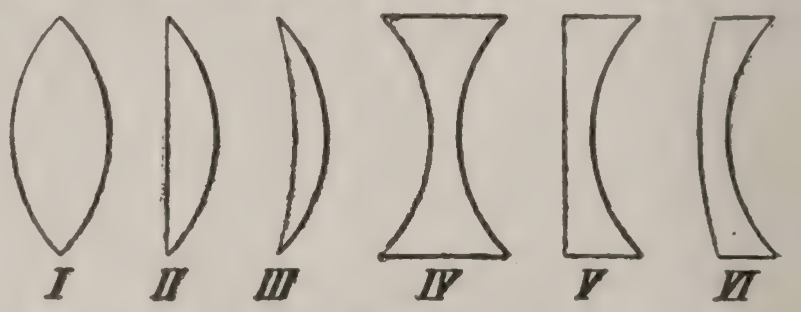


FIG. 1.

concave class are: (4) double or bi-concave; (5) plano concave; (6) concave meniscus (trade term, periscopic concave). (See Fig. 1.) Convex lenses converge parallel rays, as shown in Fig. 2, to a point (*c*) called the principal focus or focal point, and the distance from a certain point (*b*), called a principal point, which is usually within the lens, to the focal point (*c*) is the equivalent focal length. The straight line (*d b c*) which passes through the middle of the lens, joining the centres of the curvature of the two surfaces, is called the principal axis.

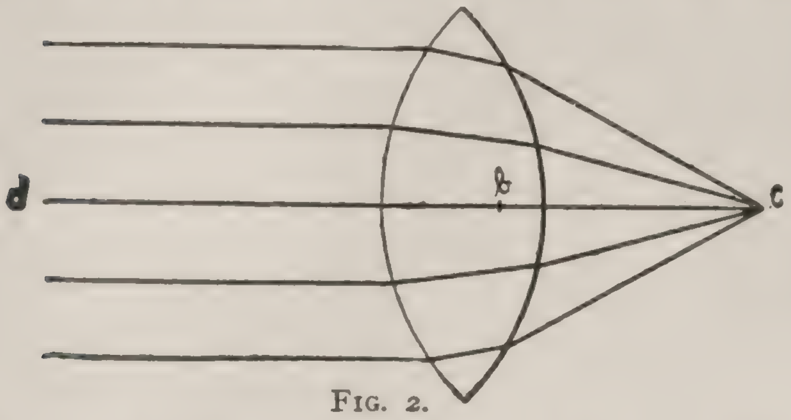


FIG. 2.

For brevity, the word «focus» is often used instead of focal length. In a concave lens, the action on parallel rays is opposite to that of a convex lens; instead of converging the light, it diverges the rays away from the axis, as shown in Fig. 3. The imaginary extension of the diverging rays should meet at *c*, and when, as in the case of the convex lens, the incident rays are parallel, the distance from the virtual focus *c* to the principal point *b* is the equivalent focal length. Generally speaking, the real or virtual focus increases with the increase of radius of curvature of the polished surfaces. The power of any lens is the quotient obtained by dividing unity by the equivalent focal length. A lens is said to be neutralized when combined with one of equal and opposite power, giving the effect of a plane glass. The distinctness of the image formed by a simple lens depends mostly on the extent to which the spherical aberration and the chromatic aberration are present, the aberrations being greater as the ratio of diameter to focal length increases in a lens of any given type. Spherical aberration of a lens is caused by the rays meeting at different intervals along the axis instead of combining at one point. In Fig. 4, *ol* is the spherical aberration. Chromatic aberration is due to the separation of the light into its different colors, thus causing, in the case of a convex lens, the violet rays to meet at a point *v* nearer the lens than do the red rays at point *r*. In Fig 5, *vr* is the chromatic aberration. Both of these defects are corrected by means of achromatic lenses.

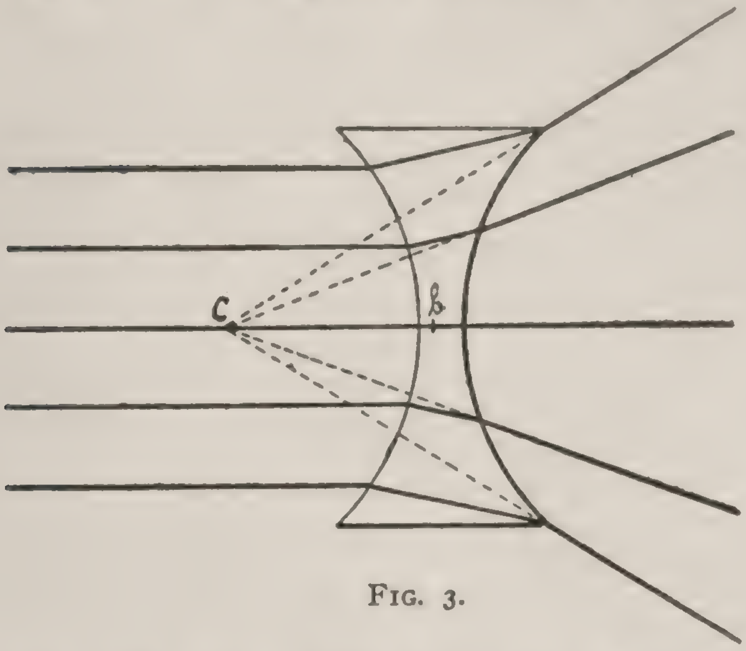


FIG. 3.

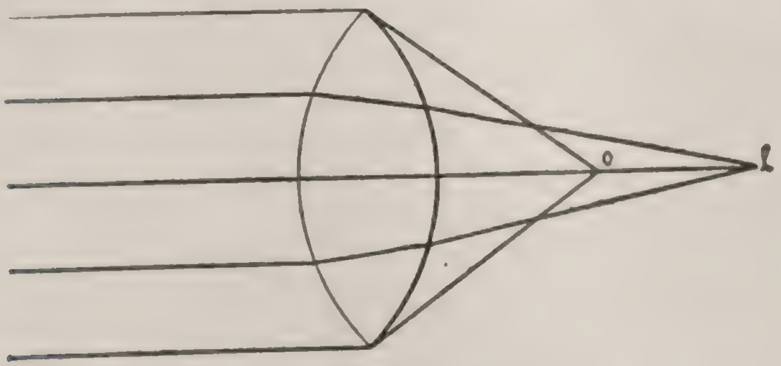


FIG. 4.

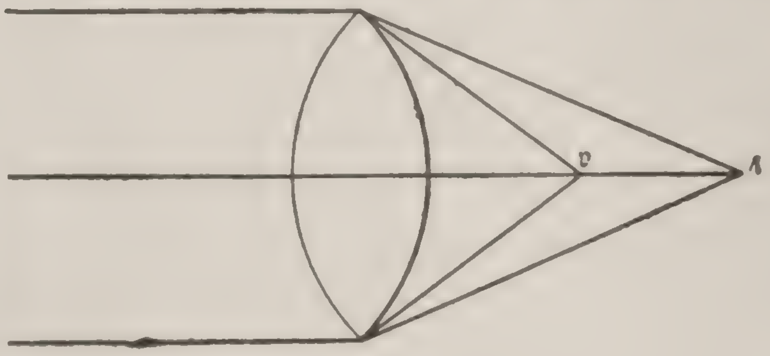


FIG. 5.

Up to the present, we have only considered lenses in which the curved surfaces are spherical, and for this reason are called spherical lenses. There are, however, other forms of lenses used, especially for the correction of defects in vision, principally astigmatism, of which the most important has one, sometimes both, of the curved surfaces cylindrical. These are called cylindrical lenses, or cylinders. In these lenses a line drawn along the summit of curvature, parallel to the axis of the imaginary cylinder is called the axis, and must be distinguished from the principal axis of a spherical lens. (Fig. 6.) When the lens has two cylindrical surfaces, with the axes at right angles, it is called a «crossed cylinder»; if one of the surfaces is spherical and the other cylindrical, the lens is called a «sphero-cylinder.» Another form of lens which has come into use in recent years is the toric (toroidal) lens on which one surface is toroidal, the meridians of the surface are at right angles to each other and

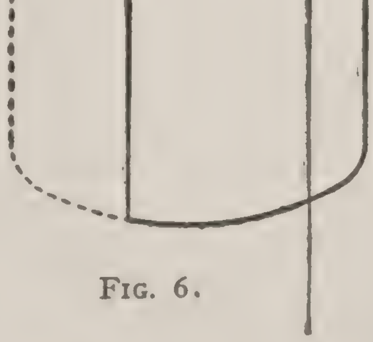


FIG. 6.

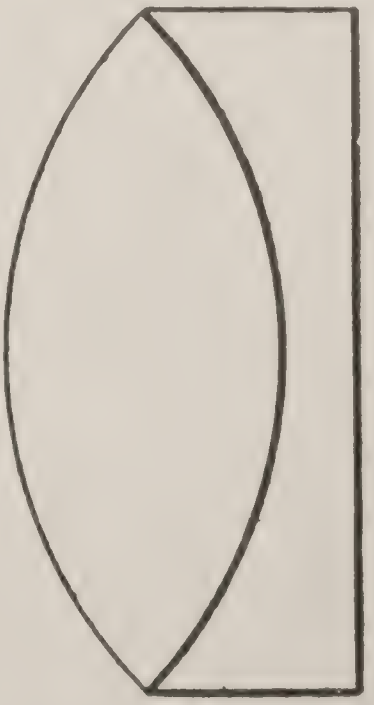


FIG. 8.

have radii of different curvature. Its form is illustrated by a section of a bicycle tire. (Fig. 7.)

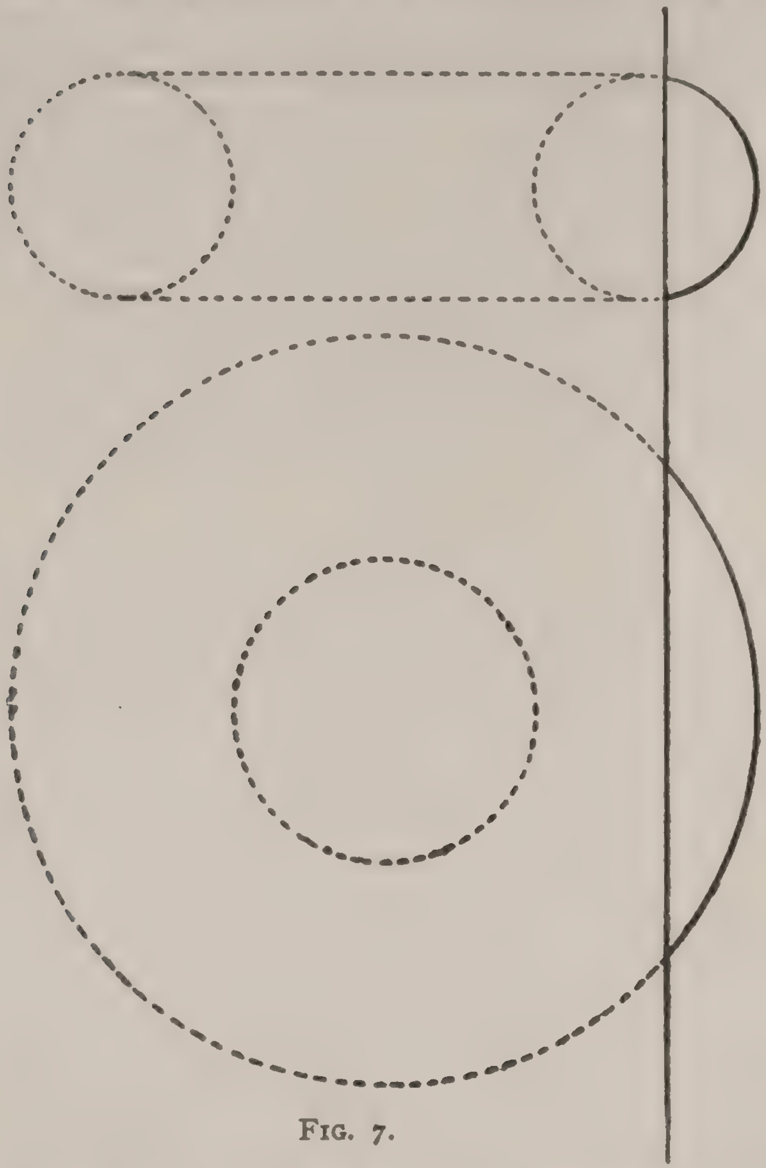


Fig. 7.

History.— The word lens is frequently used to designate a combination of lenses, or of lens-systems, as for example a photographic objective is often called a «photographic lens.» The early history of lenses is quite vague. While the magnifying property of glass globes filled with water and presumably of glass beads was known, there is no authentic information that lenses were made and used. There is in the British Museum a piece of rock-crystal about the size of a modern spectacle lens, cut to a plano convex form which was found by Layard during the excavations at Nimroud. Instead of having a spherical surface, it is made up of a series of facets and the crystal is permeated by cloudy striæ. Alhazen, who died about 1052, first described the magnifying effect of simple lenses. Spectacle lenses were well known in the 13th century, and their invention is credited to Salvino d' Armato degli Armati, about 1255. The combination of two single lenses, thus forming a compound microscope, for the purpose of magnifying objects, is believed to be due to Hans and Zacharias Janssen of Middleburg, Holland, about 1590. The discovery of the telescope which is credited to Galileo about the year 1610 was in its original form a combination of a convex lens of long focus with a concave lens of short focus, and this form is still retained in the ordinary opera glass, which is designated as a Galilean telescope. The achromatic lens was the next important invention and was made by Dolland in England in 1758.

Achromatic lens.— In its simplest form is a combination of a converging crown glass lens and a diverging flint glass lens so proportioned that the chromatic aberration is corrected for two colors. These lenses are generally combined by a thin transparent cement which makes them together appear as one lens. (See Fig. 8.) They are also made up of three, four or five lenses.

Aplanatic lens.— A lens or a lens system which is free from spherical aberration.

Apochromatic lens.— An achromatic lens in which the chromatic aberration is corrected for three colors and the spherical aberration is also very perfectly corrected.

Bi-focal lens.— A double focus spectacle lens first introduced by Benjamin Franklin, and now commonly made by adding to or inserting a segment in the lower half of the lens.

Bull's-eye lens.— A plano convex lens of relatively short focus used for illuminating purposes.

Cataract lens.— A short focus convex lens to aid vision after the removal of the crystalline of the eye for cataract.

Coddington lens.— Originally the central portion of a glass sphere but is now generally made a single lens of considerable thickness with convex surfaces, with a circular groove to cut out the marginal rays.

Collective lens.— In a microscope or telescope eyepiece the large lens nearest the objective.

Compound lens (A trade term).— A lens in which combinations of plano, spherical, cylindrical or toric surfaces are made, sometimes to the extent of obtaining a prismatic effect.

Condensing lens.— A convex lens or a system of lenses for concentrating light to a point or on a surface.

Coquille lens (Trade term).— A piece of colored glass of uniform thickness and having concentric spherical surfaces.

Crossed lens.— Either a double convex or double concave lens with the radii of curvature in the proportion of 1 to 6, and giving the minimum amount of spherical aberration.

Crystalline lens.— The double convex lens in the eye situated behind the iris and aiding to form the image on the retina.

Demonstration lenses.— A series of lenses of pronounced curvatures to illustrate the various types of lenses.

Doublet lens.— A combination of two single lenses.

Eye-lens.— The lens nearest the eye in eyepieces (oculars) used for microscopes and telescopes.

Eyeglass lens.— A spectacle lens used to aid vision. As a single lens it is held in position by muscular contraction. The eyeglass with lenses for both eyes is generally accepted to mean the form which is held in position by clamping the nose (French, pince-nez).

Finder lens.— A lens or a combination of lenses attached to a camera to locate an object in the field of view.

Fluid lens.— A lens produced by filling the space formed by two surfaces of transparent media with a suitable media.

Fresnel lens.— A lens formed of a central plano convex or toric convex lens bounded by ring-shaped prisms and lenticular prisms, used to project the rays from a lamp, as in a lighthouse or signal light.

Immersion lens.— A microscope objective of high power, the front lens of which is connected by fluid to the cover glass of an object, thus giving increased angular aperture.

Magnifying lens (Magnifier).— A lens or a combination of lenses used to increase the apparent size of an object, usually mounted in convenient form for the pocket.

Pebble lens (Trade term).— A spectacle lens made of rock crystal which is harder than glass.

Photographic lens (also photographic objective).—A lens or a combination of lenses designed for photographic purposes. It is made in a great variety of types, the simplest being the single achromatic convex meniscus lens. The form in most common use is composed of two separated achromatic menisci, with their concave surfaces toward one another (symmetrical, rectilinear, aplanat). The portrait lens is another type having great light-gathering power, and is composed of two separated achromatic lenses, one cemented and the other uncemented (Petzval type). The most modern photographic lens is the anastigmat, invented by P. Rudolph, which is free from astigmatism, a fault present in all earlier types. The new varieties of optical glass made in Jena were first successfully employed in these lenses, by means of which greater perfection in other directions was also attained.

Spectacle lens.— A lens used to correct vision and when two are combined by a bridge which rests on the nose and provided with bows which clasp the temples is now generally termed spectacle.

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Lent (from Anglo-Saxon *Lenct,* spring), the spring or vernal fast of the Christian Church as observed, in preparation for Easter, by members of the Greek, Roman, and Anglican Churches. The original fast of spring which preceded Easter; was of forty hours' duration, this being the number of hours that intervened between the death and resurrection of Christ. Additional days were added, their number varying in different churches. Cassian (420 A.D.) says six or seven weeks was the period in the several churches, but none exceeded 36 fasting days. He affirms that the observance of Lent is not primitive. The historian Sozomen (440 A.D.) writes of the fast «The Quadragesimal fast before Easter some observe six weeks, as the Illyrians and Western Churches; others make it seven weeks, as the Constantinopolitans and neighboring churches.» In the first three or four centuries much latitude was allowed in the observance of Lent; Chrysostom recommends, but does not enforce it, insisting on the prior necessity of good works and alms-giving. Distinction of foods was not made in primitive times, when the greatest ascetics ate meat in Lent, though they abstained from eating until the evening. See FASTING, ASH WEDNESDAY, HOLY WEEK.

Len'til, a European leguminous plant (*Ervum lens*), closely allied to the tares and vetches. Lentils are cultivated in southern Europe in two varieties — the large garden lentil and the common field lentil, for the sake of their seeds contained in small pods. The straw of lentils is good food for cattle and sheep, and when mixed with vetches, and sowed as food, are excellent fodder. As food for man they are very nutritious, and in Egypt, Syria, etc., are a chief article of diet. They are used in soups, etc., in England and America, but not to a great extent.

Lentulus, lĕn'tū-lŭs, the name of a patrician family of Rome of the Cornelian gens. Several of its members distinguished themselves by their virtues and services, while others were less honorably conspicuous. Publius Lentulus Sura, an accomplice of Catiline, was strangled in prison. Lentulus Spinther, one of the most luxurious and ostentatious men of his age, was a partisan of Pompey, but was pardoned by Cæsar and joined Brutus and Cassius when they took the field after the assassination of Cæsar. To Gneius Lentulus was assigned the command of the legions in Upper Germany during the reign of Tiberius. He was put to death by Caligula.

Leo, lē'ō, the name of six rulers of the Byzantine empire, as follows:

Leo I., called the ELDER: b. Thrace about 400; d. 474. He ascended the throne in 457. After attaining the highest military rank, he was proclaimed emperor by the soldiers in succession to Marcianus. He confirmed the decrees of the Council of Chalcedon against the Eutychians, and renewed the war against the Vandals; but this having resulted in failure the blame was thrown upon his general, Aspar, whom he put to death with his family in 471. The Goths, to revenge the fate of Aspar, poured into the empire, which they laid waste as far as the walls of Constantinople.

Leo II., called the YOUNGER, grandson of Leo I., succeeded his grandfather under the guardianship of his father, who caused himself to be proclaimed emperor a few months afterward. He is said to have been put to death by his own father after reigning from January to November 474.

Leo III., called the ISAURIAN: b. Isauria about 680; d. 18 June 741. Entering the army he became general-in-chief of the army of Asia, under Justinian II. In 716 he marched against Theodosius III., who had been proclaimed emperor on the deposition of Justinian II.; and himself seized the crown the next year. The Saracens, under Solyman, having ravaged Thrace, laid siege to Constantinople, which was defended by Leo, who compelled them to retire. In 726 he ordered all the images in the churches of the empire to be removed, an edict which aroused the memorable contest known as iconoclasm.

Leo IV., grandson of Leo III.: b. 750; d. 780. He succeeded his father, Constantine V., in 775. In his time the controversy raged fiercely between the Iconoclasts, or image-breakers, and their adversaries, both of whom he protected by turns. He repulsed the Saracens in Asia.

Leo V., called the ARMENIAN, from the country of which he was a native, d. 25 Dec. 820. He rose to the rank of general by his valor; but was accused of treason, disgraced, and imprisoned. Michael Rhangabus, on ascending the throne in 811, restored him to his rank; but Leo, profiting by the misfortunes of his master, headed a military revolt and was elected emperor by the troops in 813. He was one of the most violent of the Iconoclastic princes and was assassinated before the altar in his palace chapel.

Leo VI., the Philosopher: b. 865; d. 911. He was the son and successor of Basilius, the Macedonian, and ascended the throne in 886. The Hungarians, Saracens, and Bulgarians having united against the empire, he asked the aid of the Turks, who entered Bulgaria and ravaged it. He drove the patriarch Photius from his seat; and Nicholas, one of the successors of Photius, excommunicated the emperor; for which Leo VI. deposed him. He wrote ‘Oracula,’ a poem; ‘Orationes’; and a celebrated treatise on tactics, printed at Leyden in 1612. Consult: Bury, ‘Later Roman Empire’ (1887); Oman, ‘Byzantine Empire’ (1892).

Leo, the name of 13 popes, as follows:

Leo I., Saint, surnamed The Great: b. probably at Rome; d. there 10 Nov. 461. He succeeded Sextus III. in 440 and took decided action against the Manichæans and other heretics. He held a council at Rome against Eutyches in 449, and presided by legates at the General Council of Chalcedon, 451. When Attila invaded Italy, Leo I. who was sent by the Emperor Valentinian to dissuade the invader from his threatened march on Rome, was successful in his mission. He afterward saved the city from being burned by Genseric. His sermons and letters, edited by Ballerini, appeared 1753–7. Consult Arendt, ‘Leo der Grosse und seine Zeit’ (1835); Gore, ‘Leo the Great’ (1880).

Leo II., Saint: b. Sicily; d. 683. He succeeded Agatho in 682. He confirmed the decrees of the sixth general council and was instrumental in raising the grade of church music and improving the Gregorian Chant. He was succeeded by Benedict III.

Leo III., Saint: b. Rome; d. there 25 May 816. He succeeded Adrian I. in 795 and his first official act was to acknowledge the suzerainty of Charles the Great (Charlemagne) by sending him the keys of St. Peter's and the standard of the city of Rome. His rule was much disturbed by outbreaks and conspiracies in Rome and in 799 he was obliged to ask the protection of Charles. In the following year, 800, Charles visited Rome, and was there crowned by the Pope, emperor of the Romans.

Leo IV., Saint: b. Rome; d. 7 July 855. He succeeded Sergius II. in 847. The Saracens having invaded the Ecclesiastical States, he marched against them and obtained a complete victory; after which he built the Leonine wall encircling the Vatican quarter, restored the town of Porta, colonizing it with Corsicans, and founded the town of Leopolis, now deserted, some 12 miles from Civita Vecchia.

Leo V.: d. 6 Dec. 903. He was a Benedictine monk who, in 903, succeeded Benedict IV., but was imprisoned by his chaplain Christopher, and died soon after.

Leo VI.: d. 3 Feb. 929. He succeeded John X. 6 July 928, and is said to have been put to death by Marozia.

Leo VII.: d. 939. He succeeded John XI., son of Marozia. He successfully negotiated a peace between Hugo, King of Italy, and Alberic, Duke of Rome, the son of the celebrated Marozia, and is reported to have been an irreproachable man and zealous ecclesiastic. His successor was Stephen VIII.

Leo VIII.: d. 965. He was intruded in the pontificate on the pretended deposition of John XII., in 963, under the patronage of Otho I., but on Otho's withdrawal John re-entered Rome, and drove away Leo. John's death occurring soon after, Benedict V. was chosen pope. The Emperor Otho subsequently took Rome, and after the banishment of Benedict again intruded Leo, who shortly after died.

Leo IX., Saint (Bruno): b. Alsace 21 June 1002; d. Rome 19 April 1054. He was cousin to Emperor Conrad the Salic, and became bishop of Toul at 22. At the Diet of Worms, in 1048, he was elected to succeed Damasus II. as Pope. He applied himself to the reform of discipline in the Church, holding several councils against simony and concubinage. In 1058 he opposed the Normans in Italy, but was taken prisoner by their leader, Robert Guiscard, at the battle of Civitella, and confined at Benevento ten months. Falling ill he was allowed to return to Rome. Consult Hunkler, ‘Leo der Neunte und seine Zeit’ (1851).

Leo X. (Giovanni de' Medici, jō-vän'nē dā mā'dē-chē): b. Florence 11 Dec. 1475; d. Rome 1 Dec. 1521. He was the second son of Lorenzo the Magnificent, and his father had him made a cardinal by Innocent VIII. at the age of 13. When the Medici were expelled from Florence, in 1494, he spent some years in travel in Germany, France, and Flanders, and made acquaintance with many eminent men, returning to Rome in 1503 and devoting himself to science and the fine arts. He was appointed by Julius II. legate with the papal army, and in 1512 was taken prisoner by the French at the battle of Ravenna, regaining his liberty only after the evacuation of Milan by the French. In 1513 on the death of Julius II., he was elected Pope, and made his entry into Rome on 11 April, the anniversary of his capture at Ravenna. His pontificate of nine years is one of the most eventful of modern history, when viewed in relation to great political changes, to the revival of literature and, above all, to the Reformation. He succeeded in putting an end to the disputes between Louis XII. and the court of Rome; he continued and brought to a close the Council of the Lateran; and, at a conference held at Bologna, concluded a concordat with Francis I. of France. In 1517 he created the unexampled number of 31 cardinals, among whom were Cajetan, Campeggio, Trivulzio, and other learned and eminent men. He planned a great war against the Turks, and resolved about the same time to complete the church of St. Peter at Rome, and in order to raise funds for these schemes he granted to all the faithful, who should contribute by their alms, certain indulgences, the preaching of which in Saxony was one of the forces which resulted in the Reformation. Leo published his first bull against Luther in June 1520, and Luther appealed to a general council and publicly burned the bull at Wittenberg. A second bull appeared against Luther in January 1521, and the papal anathema was echoed by the doctors of the Sorbonne. At the same period war was resumed between the Emperor Charles V. and Francis I., the Pope allying himself first with Francis and soon after with Charles. As an intelligent patron of literature and the fine arts, he was surrounded with many of the most distinguished men of his time. He stimulated the study of Greek and the collection of ancient manuscripts; restored the Roman University and the great Laurentian Library of Florence. Consult: Roscoe, 'Life and Pontificate of Leo X.' (1805); Creighton, 'History of the Papacy During the Period of the Reformation,' Vols. III.–V. (1882–94); Niti, 'Leone X. e la sua politica' (1892); Conforti, 'Leo X. ed il suo secolo' (1896).

Leo XI. (Allessandro Ottaviano de' Medici, äl-lĕs-sän'drō ŏt-tä-vē ä'nō dā mā'dē-chē): b. Florence 1535; d. 21 April 1605. He was consecrated Bishop of Pistoria 1573, became Archbishop of Florence in 1574 and entered the college of cardinals. On 1 April 1605 he became pope. He survived only 26 days after his election.

Leo XII. (Annibale della Genga, än-nē-bä'lā dĕl'lä jĕn'gä): b. near Spoleto 1535; d. 10 Feb. 1829. He entered the priesthood in 1783, was made titular archbishop of Tyre ten years later and became a cardinal in 1816. In 1823 he succeeded Pius VII. He was a strong opponent of secret societies, such as the Freemasons and the Carbonari. Consult Artand de Montor, 'Histoire du Pape Leon XII.' (1843).

Leo XIII. The death of Leo XIII., on 20 July 1903, excited the most intense interest throughout the world. The Pope had been ill for many days, and each detail of his sickness had been minutely described and cabled by Roman correspondents to all parts of the civilized world. This, in ordinary cases, might have lessened a sympathy, which, as time went on and the august patient lingered, had become almost strained; but in his, it did not. Irrespective of creed, men's reverence followed the Pontiff to the very tomb, and no discordant voice was heard to break the chorus of esteem for one whose moral force had made sectarian bitterness ashamed of itself.

The death of Leo XIII., philosopher, poet, statesman and priest, has shown that theological hatreds are on the decline.

In Carpineto, on 2 March 1810, Joachim Vincent Raphael Lodovico Pecci was born. His father was Count Domenico Lodovico Pecci, then — 1810 — in his forty-first year and his mother Anna Prosperi-Buzi, then in her thirty-seventh. The palace in which Joachim was born was the country house of the family, high in the mountains,— a nest for an eagle. Count Lodovico Pecci confided his sons, Joseph and Joachim (or Vincent) to the Jesuits of Viterbo, who very recently had been restored by Pius VII. to the privileges of which Clement XIV. had deprived them. In 1818, Joachim Pecci began his education in the Jesuit college of Viterbo. He was a fragile boy,— this boy who was to become Pope at 68 and whom death found it hard to conquer at 93 — and he knew nothing of the happy robustness of other boys, in spite of his frequent vacations in his native hills. That devotion to the Greek and Latin classics which later gave him fame as a poet, showed itself early. At the age of twelve he was skilled in writing Latin verse. There still exists an epigram for the provincial of the Jesuits,—

Oh, utinam possem Peccius ipse sequi.

In 1824, Leo XII. carried further the plans of Pius VII. and re-opened the Roman College of the Society of Jesus. This college is likewise known as the Gregorian University. Young Pecci entered and applied himself to his studies with so much earnestness that his health gave way, and, in 1830, though he received the highest honor — that of being chosen for a public disputation in philosophy on theses taken from the whole course,— the Prefect of Studies was obliged reluctantly to excuse him. Still he strove for that perfect health which was denied him. He was a mighty hunter and his gun,— very old-fashioned, with a barrel decorated in the Arabian manner,— is still preserved, and he walked great distances.

In 1832, Joachim Pecci took the degree ot doctor, with all possible honors, chiefly recorded in the annals of the Sapienza University. In the College of Noble Ecclesiastics he studied Canon and Civil Law. In 1837, Gregory XVI. named him domestic prelate, and he became known as Monsignor Pecci. On the last day of the year 1837, he was ordained priest by Cardinal Odescalchi, the Vicar General of Gregory XVI. One of the most important epochs in the history of Mgr. Pecci is his administration of the Duchy of Benevento. It was the haunt of smugglers and brigands, licensed by public opinion and supported by noble families. It had given Gregory XVI., who was a lover of justice and order, profound anxiety. At the age of twenty-eight Mgr. Pecci was made Delegate and sent to do what the Neapolitan neighbors of Benevento sneeringly said was «impossible.» Mgr. de Z'Saeclaes well says that his government of Benevento is «a little epic.» He was then called to Spoleto. From thence he went to Perugia, where he busied himself in perfecting measures for the economic and educational progress of the place. The capital of Umbria still reveres him as its benefactor, and his records at Benevento and Perugia,— one destructive of evil, the other constructive of good,— indicated what his future was to be. Early in January 1843, he was chosen for a difficult diplomatic post, the Nunciature at Brussels, and on 19 February he was consecrated Archbishop of Damietta. In Belgium the educational question was burning, and in March 1843, when Archbishop Pecci presented himself to the Court of Brussels, the veteran diplomats smiled at the prospect of a struggle between the Papal Nuncio and that Leopold of Saxe-Coburg, who held the winning cards. The Queen's sympathies were with the Nuncio; she believed in religious education, but the feeling against the «Ultramontanes» ran high; notwithstanding, the Nuncio succeeded in gaining the good-will of all classes and gradually overcoming rancour. This made it all the more astonishing that he should have been recalled from Brussels in 1845. In 1846, he visited London and Paris. He was destined to be Bishop of Perugia; Gregory XVI. died shortly after his arrival in Rome. Pius VIII., the predecessor of Gregory, was followed by another Pius,— Cardinal Mastai Ferretti — who appreciated the value of Pecci so greatly that he felt that as Archbishop of Perugia the late

Nuncio to Brussels could be of more service in healing internal discord than in placating foreign kings and cabinets. He was really, in 1846, only Bishop of Perugia, but as he had been the Titular Archbishop of Damietta, he retained the higher title. He was preconized, — solemnly proclaimed in conclave,— the Bishop of Perugia, on 19 Jan. 1846, and on 26 July he made his solemn entry into the capital of the country of St. Francis d'Assisi. From 1846 to 1878, he ruled in Perugia. He was, in the language of the Psalmist, both a ruler and a shepherd. In the Consistory of 18 Dec. 1853, he was created Cardinal. During his long episcopate, he found the world in miniature in Perugia. The growing antagonism against the church haunted him. He was all for the things of the spirit,— the things of the mind, postulating the truth of the divinity of Christ and the reality of his birth, death and resurrection. In this line, he refutes the claims of Renan, in his 'Life of Jesus,' as eagerly as he refutes false Socialism later, in a Papal Letter.

On 7 Feb. 1878 Pius IX. died. On Monday, 18 February, the Cardinals met in conclave. Pecci, as Cardinal Camerlengo, walked last in the procession. On Wednesday, 20 February, by a vote of forty-five out of sixty-one, Cardinal Pecci became Pope. From 20 Feb. 1878 to 20 July 1903, Leo XIII. was constantly active. He restored the Catholic hierarchy to Scotland, early in 1878, and issued his first Encyclical, *Inscrutabile,* against the forces at work for the disintegration of society — putting strong accent on the disregard of the sacramental character of marriage.

In 1878–9 Leo XIII. was in a most difficult position with the Government of Germany. This later year marks the beginning of the decay of the Kulturkampf which strengthened the Centre party in Germany and which made the name of Bismarck detested by German Catholics at home and abroad. In 1879 came the Encyclical, *Quot Apostolici,* followed by the *Æterni Patris* — all encyclicals taking their names from the opening words. The first was aimed at that Socialism «which attacks all that has been wisely decreed by human and divine laws for the protection and ornament of life»; the second is an exposition of the claims of St. Thomas Aquinas as a philosopher.

Another important encyclical,— it is not possible to name them all,— appeared on 12 Feb. 1880. It was the *Arcanum,* on Christian marriage. Another, 29 June 1881, was the encyclical *Diuturnum* in favor of rightful authority. «The Church,» he said, «was everywhere the friend of honest liberty; she detested tyranny.» In 1882 he strove to keep the Irish movement within legal bounds. The encyclical *Etsi Nos,* of February 1882, gave rise to the rumor that he would leave Rome, so «intolerable» had the situation become. In 1890, the world gradually learned that for six years every historical document in the Vatican had been at the service of scholars. He omitted nothing that could add to the progress of historical science. The encyclical, *Humanus Genus,* was aimed at Freemasonry, which assumes an atheistical and antireligious aspect in Latin countries.

Leo XIII. was aroused to intense enthusiasm for the work of Cardinal Lavigerie in breaking down the slave-trade in Africa, and his encyclical, *In Plurimis,* 5 May 1888, is evidence of his detestation of slavery. It is addressed to the bishops of Brazil. The prudence with which Leo XIII. handled the question of the Knights of Labor was due to the tact he possessed of discovering the best advisers. There were forces at work urging the condemnation of this society; but, owing to the sanity and energy of Cardinal Gibbons, Cardinal Manning and Mgr. O'Connell, now rector of the Catholic University (1903), a disaster by which suspicion and dislike to the Church might have been excited was avoided.

The relations between the late Pope and the United States of America were very close. He appreciated the messages of President Cleveland; and he frequently expressed himslf touched by the respect with which President Roosevelt, representing the American people, treated him. He established the Catholic University at Washington, and constantly expressed interest in it. Leo's interest in the Columbian Exposition at Chicago surprised Europe. His solicitude for the Church in America was profoundly shown in the Apostolical letter, *Testem Benevolentiæ,* on «Americanism,» in which he paternally determines and settles a point for some time in controversy among American Catholics. In the beginning of the year 1893, Mgr. Satolli, afterward Cardinal, became the first Apostolic Delegate to the United States. This is not a diplomatic but a purely ecclesiastical office. Cardinal Satolli was succeeded by Mgr., now Cardinal, Martinelli, and (1903) by Mgr. Falconio, late delegate to Canada.

The efforts of Leo XIII. to direct attention to the study of the Scriptures are historic. Perhaps of all his letters which have a diplomatic character, that written to the French in 1892 caused the greatest discussion. It was received by French Royalists with ill-concealed disgust. There is no question that the pontificate of Leo XIII. was of vital value in the history of the last quarter of a century.

As a poet, Leo XIII. wrote exquisite Latin verse, a translation of which has been made by the Jesuit fathers at Woodstock, Md., and a later and fuller one by Dr. Hugh Henry, of Overbrook Seminary, in Pennsylvania.

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Leo («the lion»), in astronomy, the name given to one of 12 zodiacal constellations. It contains about 100 stars visible to the naked eye, the chief star being Regulus. The sun enters the sign Leo about 21 July. Leo Minor, the Lesser Lion, is a constellation found by Hevelius about 1691. None of its stars reach the fourth magnitude. Leonides are meteors radiating from the vicinity of Leo, usually seen about 14 November.

Leo Minor. See LEO.

Leochares, lē-ŏk'a-rēz, Greek sculptor of the 4th century B.C. He was a pupil of Scopas, and Pliny ascribes to him the sculptures on the west side of the Mausoleum at Halicarnassus. He was one of the artists privileged to make portraits of Alexander the Great. Three statues of Zeus are known to have been executed by him, and his 'Ganymede carried off by an Eagle' was famed throughout the ancient

POPE LEO XIII.

world. With Lysippus he produced a colossal bronze group representing Alexander at a lion-hunt. The works of Leochares are all lost, but there is a copy of the Ganymede in the Vatican; and a bust of Alexander may be a copy of one of his.

Leominster, lĕm'ĭn-ster, Mass., a town of Worcester County, 40 miles west-northwest of Boston, on the Nashua River, and on the New York, N. H. & H., and the Boston & M. R. R's. The town is well laid out, has handsome residential sections, six churches, twenty schools, a public library of over 18,000 volumes, and a fine park. Leominster is well lighted with gas and electricity and has a good water supply and abundance of water power, the waterworks being municipalized. It is a busy industrial centre, the home of the comb-manufacture of the State, of piano cases and pianofortes, has large cabinet works, paper mills, tanneries, and extensive manufactures of cement, bricks, yarn, jewelry, toys, buttons, and hairpins. The town is surrounded by some of the most fertile farm land in the county, and horticulture and floriculture are growing industries. Leominster, settled in 1725, was part of Lancaster until 1740 when it received a charter of incorporation. Pop. (1900) 12,392.

Leon, lā-ōn', **Antonio,** Mexican soldier: b. 1794; d. 1847. Having abandoned the side of the royalists for that of the insurgents under Iturbide, he distinguished himself in 1821 by the capture of Tehuantepec, for which he was made lieutenant-colonel. When, however, Iturbide proclaimed himself emperor, the support of Leon was given to Gen. Bravo, the republican leader. In 1824, as deputy from Oajaca, he served in the Constituent Congress, and later he aided in quelling insurrection against the authority of the republic. He was killed at the battle of Molina del Rey in the war with the United States.

Leon, lā-ōn', city in Nicaragua, on a large and fertile plain 13 miles from the Pacific coast. It is laid out on a regular plan, in spacious streets, with intervening squares. The public buildings are considered among the finest in Central America, and include a large and massive cathedral, crowned by a lofty central dome, and flanked by two towers. Other buildings are the old Episcopal palace (built 1678), surrounded by fine gardens; the new Episcopal palace (1873), the churches of La Merced, Recoleccion, and Calvario, remarkable for their size and fine facades, and various other churches; the Tridentine College of St. Ramon, once a flourishing establishment, with professorships of law and medicine, and numerous students, but now possessed only of a nominal existence; the government-house, Cuartel General or head barracks, and the hospital, occupying the old convent of San Juan de Dios. The manufactures of Leon are confined chiefly to articles in dressed leather and cutlery; and the trade, owing to its inland situation, does little more than supply its local wants, but the railway between Leon and Corinto on the coast has somewhat improved it. The markets display fruits and vegetables in great variety and almost boundless profusion. Pop. (1900) 32,000.

Leon, Mexico, State of Guanajuato, the first city in population and second in commercial importance in the state. The distance from Leon to the United States border at El Paso, Texas, is 966 miles, to Guanajuato, 34 miles and to Mexico city 258 miles by the Mexican Central railway. The altitude of the city is 5,864 feet above sea level. The situation, in the midst of a fertile and highly cultivated agricultural district, is most favorable to the industries to which the city is devoted. It was founded in 1576 and has always maintained a condition of even and locally satisfactory prosperity. While there are no great manufactories in the place, it is emphatically one of the most important manufacturing cities in the republic, a considerable proportion of its simple homes being given over to the making of rebosos, zerapes, leather clothing embroidered in gold and silver, saddles, harness, bridles and numerous other articles of necessity, in which labor practically all the members of the family take part. There are also numerous other and more pretentious industrial establishments, including cotton and woolen mills, but the greater part of the manufacturing is in the modest homes of the working people. Here are located the headquarters of the northern military zone of the republic. A cathedral, a public library containing over 2,000 volumes, a church library with 9,000 volumes, a number of imposing church edifices, numerous creditable business blocks, well paved streets and several attractive parks add to the advantages of the community as a place of residence. The banking facilities are provided by branches of the National Bank and the Bank of San Luis Potosi and an agency of the Bank of Zacatecas. Pop. (1906) 64,000.

Leon, Ponce de. See PONCE DE LEON.

Leonard, lĕn'erd, **Abiel,** American Protestant Episcopal bishop: b. Fayette, Mo., 26 June 1848. He was graduated at Dartmouth College in 1870 and at the General Theological Seminary, New York city, in 1873. Entering the ministry of the Protestant Episcopal Church, he served in Missouri and Kansas until 1888, when he was consecrated bishop of Salt Lake. That bishopric he continues to retain.

Leonard, Daniel, American jurist: b. Norton, Mass., 29 May 1740; d. London, England, 27 June 1829. He was graduated from Harvard in 1760 and after studying law became a Whig member of the General Court. Disapproving of the extreme measures of the Whigs, his sympathies were with the Loyalists and his papers signed ‹Massachusettensis› and published in a Boston newspaper in 1774–5, were replied to by John Adams over the signature ‹Novanglus› Leonard's articles ably defended the position of the English government and they constituted the strongest statement of that position put forth in the colonies. In 1776 he went with the English army to Halifax, N. S., and was among those named in the banishment act of 1778, while his property was confiscated by the act of 1779. He went to England from Halifax and was subsequently for many years chief justice of the supreme court of Bermuda. In 1819 John Adams published the ‹Novanglus and Massachusettensis› with a preface. Consult Tyler, ‹Literary History of the American Revolution.›

Leonard, James Francis, American telegrapher: b. Kentucky 1804; d. 1862. He was practically the earliest telegrapher to read messages by sound and for his time was the swiftest telegraph operator in the world. In the summer of 1848 he began to receive messages by sound and soon afterward received and wrote out 55 words a minute for Professor Morse, as a test of the invention. He is buried in Frankfort, Ky., where his grave is marked by a monument erected by telegraphers.

Leonard, William Andrew, American Protestant Episcopal bishop: b. Southport, Conn., 15 July 1848. He was educated at Phillips Academy, Andover, Mass., and St. Stephen's College, Annandale, N. Y., and was graduated at the Berkeley Divinity School, Middletown, Conn. In 1873 he was ordained a priest; became assistant at Holy Trinity Church, Brooklyn, N. Y., rector of the Church of the Redeemer there, then rector of Saint John's Church, Washington, D. C., and was chaplain of the 23d regiment of the National Guard of New York and of the Ohio Society in that city. He is now (1904) bishop of Ohio, having been consecrated 12 Oct. 1889. His writings include ‹Via Sacra, or Footprints of Christ›; ‹History of the Christian Church›; ‹New York Church Club Lectures›; ‹A Faithful Life›; ‹Witness of the American Church to Christianity› (Bedell Lectures, 1894); etc.

Leonardo da Vinci, lā-ō-när'dō dä vēn'chē. See VINCI.

Leoncavallo, Ruggiero, rụd-jā'rō lā-ōn-kä-väl'lō, Italian composer: b. Naples, Italy, 8 March 1858. He was educated at the Naples Conservatory of Music and for many years resided as a teacher in Paris, where he composed songs and fugitive pieces. Under the influence and encouragement of Wagner he wrote his trilogy ‹Crepusculum,› a drama of Italian history, of which ‹Medici› is the first part. He is best known by his operas ‹I Pagliacci› (1892); and ‹La Bohème› (1897). Other works by him are ‹Tomaso Chatterton› (1896), a popular opera; and ‹Serafitus-Serafita,› a symphonic poem.

Leonidas (lē-ŏn'ĭ-dạs) **I.,** king of Sparta: d. 480 B.C. He was a son of King Anaxandrides, and ascended the throne 491 B.C. When Xerxes invaded Greece, the Greek Congress assigned to Leonidas the defense of the pass of Thermopylæ. His force, according to Herodotus, amounted to over 5,000 men, of whom 300 were Spartans. After the Persians had made several vain attempts to force the pass, a Greek named Ephialtes betrayed to them a mountain path, by which Hydarnes led a body of Persians to attack Leonidas in the rear. Before this maneuver could be completed, Leonidas, dismissing all his allies except the Thespians and Thebans, advanced from the pass and threw himself upon the main body of Xerxes' army. He fell early in the action, and a desperate struggle afterward took place over his body, which was rescued by the Greeks.

Leonides, or **Leonids.** See LEO.

Le'onine Verses, a kind of Latin verse, in vogue during the Middle Ages, consisting of hexameters and pentameters of which the final and middle syllables rhyme. They are so called from Leonius, a poet of the 12th century.

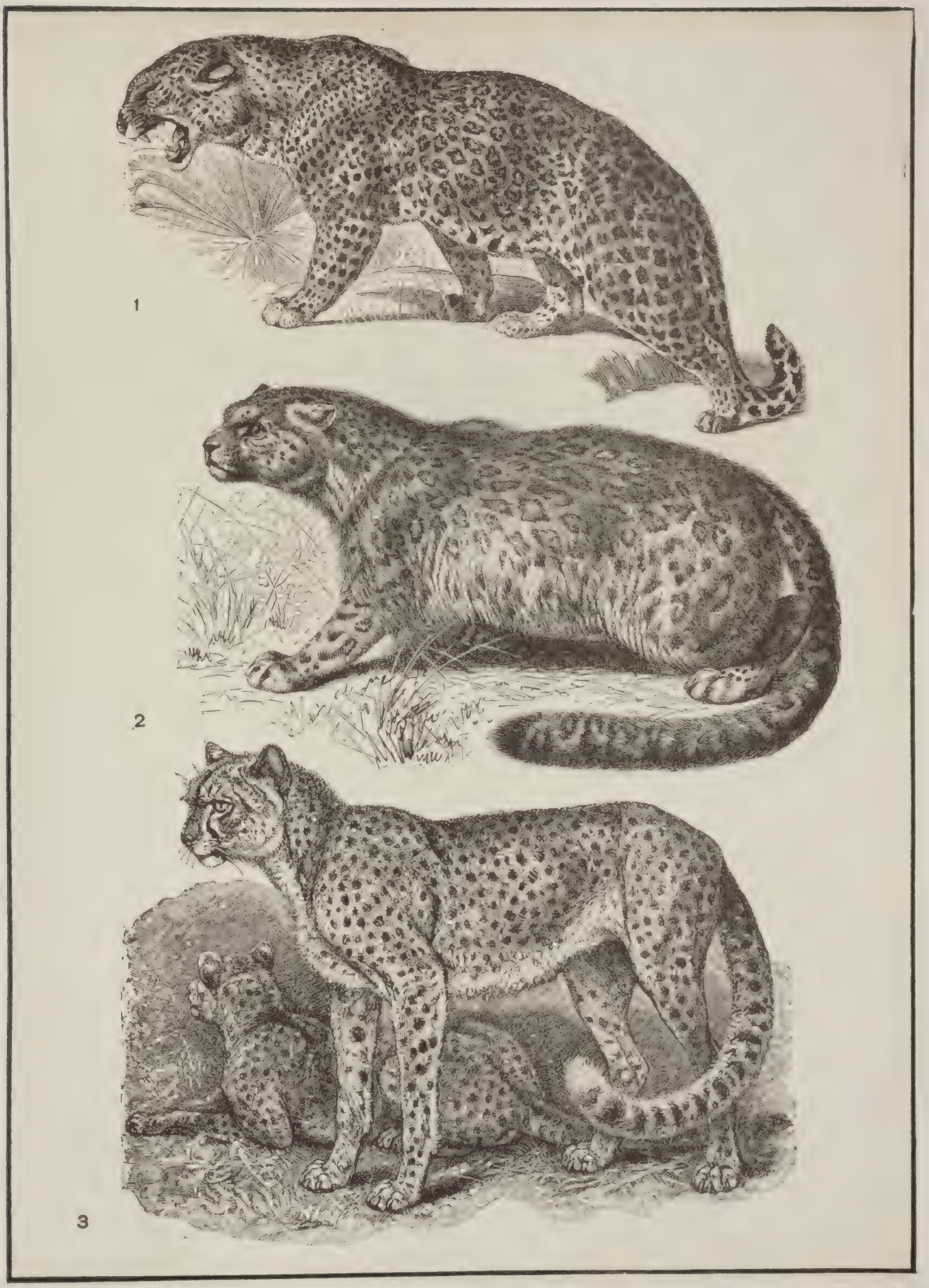
Leon'todon. See HAWKBIT.

Leopard, lĕp'ạrd, or **Panther,** one of the great cats widely distributed over Africa and Asia, and prehistorically prevalent in southern Europe. The general color is yellowish fawn, which becomes white on the under aspect of the body, marked with black spots of various sizes, irregularly dispersed; these spots are often rosette-like, but do not enclose a central spot as is the case with its American analogue, the jaguar (q.v.). Black examples often occur. In general appearance and conformation the leopard is tiger-like, but is considerably the inferior of the tiger in size and weight, measuring on the average about three feet and ten inches from the nose to the root of the tail, which is almost as long as the body. This beautiful cat is, however, the peer of the tiger, making up in agility, quickness and wit for its defects in weight and power. Its prey consists of any animal it is able to pounce upon or overcome, and among the native villages and herdsmen of both India and Africa it is dreaded as a destroyer of cattle and sheep, since, like the American puma, when it invades a cattle-pen or sheep-fold it kills many times more animals that it can eat or carry away,— a hundred sheep in a night. Nevertheless, leopards have always been among the partly tamed and trained animals of shows, and they thrive well and breed in captivity.

The leopard — which is more commonly called «panther» in India — frequents mainly wooded and rocky regions, where it can take refuge in trees, or seek among their limbs the birds, monkeys and other arboreal creatures that form a fair share of its food. It does not hesitate to attack large prey, but can rarely overcome a buffalo or one of the larger African antelopes unless the animal is taken at a great disadvantage. Not more than one pair is usually found in a given district; and they make their lair in some rocky jungle, where once a year two to four kittens are born to them, which remain with their mother until they are well grown. One hears less of man-eating leopards than of lions and tigers with the habit of attacking human beings; but the leopard is more widespread, numerous and subtle than either of the others and doubtless is the real perpetrator of many homicides attributed to the larger cats. At any rate the leopard is regarded by those familiar with him as quite as formidable a beast to encounter, and sportsmen adopt the same methods and use the same precautions as when they are pursuing the tiger. A most excellent summary of leopard-hunting experiences may be read in Porter's ‹Wild Beasts› (New York, 1894). For the leopard in India consult Sanderson, ‹Thirteen Years among Wild Beasts in India› (1893); Forsyth, ‹Highlands of Central India› (1889); Hornaday, ‹Two Years in the Jungle,› and similar writers. The Persian leopard is described at length in Blanford's ‹Zoology of Persia› (1876); and the African by Baker, ‹Wild Beasts and their Ways› (1890); Drummond, ‹Large Game and Natural History of South-east Africa› (1875); and many other sportsmen-travelers in that continent. See CHEETA; SNOW-LEOPARD.

Leopard-cat, a highly variable, tawny, much-spotted cat about two feet long in body, and with a long tail, which dwells in northern

LEOPARDS.



1. The Leopard or Panther. 2. Snow Leopard or Ounce. 3. Hunting Leopard or Cheetah.

India but is not well known. It is called *Felis bengalensis* by Elliot and also by Mivart, but its identity is doubtful.

Leopard-flower. See BLACKBERRY LILY.

Leopard-frog. See FROG.

Leopard-moth, a large European tussock-moth (*Zeuzera pyrina*), white spotted with black, whose caterpillars bore into the limbs of forest and shade trees, and so weaken them that they die or are easily broken by the wind. This moth has been introduced to America in the neighborhood of New York where it is one of the pests in the parks.

Leopard-shark, a handsomely variegated small shark (*Triakis semifasciatum*), often seen along the coast of southern California.

Leopardi, Giacomo, jä'kō-mō lā-ō-pär'dē, COUNT, Italian scholar and poet: b. Recanati, in the marshes of Ancona, 29 June 1798; d. Naples 14 June 1837. He devoted himself from an early age to study in th fine library of his father, and when he reached his 15th year was master of Latin and Greek, and had soon read most of the literary masterpieces of antiquity. In 1815 his translation of Porphyry's ‹Life of Plotinus› was followed by his ‹Saggio sopra gli Errori degli Antichi.› He was of profound poetic genius and mourned over the degraded political condition of his native land, a feeling which found utterance in his magnificent ‹Ode to Italy› a poem which proclaimed him the first of modern Italian singers. In 1822 he went to Rome and attracted the attention of Niebuhr by his criticism of a new edition of the ‹Chronicon of Eusebius›; and the great historian attempted in vain to settle him as professor in the University of Berlin. Leopardi was broken in health, as well as in spirit, and his unhappiness was intensified by an unhappy love affair. Bunsen offered him such a professorship and it was declined. He left Rome to travel in Italy, his tour embracing many of the great northern cities, and ending with Naples. He developed the most absolute skepticism, and the unhappiness of his lot made him a pessimist. His sight failed and he was forbidden to take up a book, and though he was a linguist of rare accomplishments, wrote in Greek and Latin with equal ease, had mastered French, Spanish, and English, he could apply his attainments to no practical end. His classic training had, however, given him a power and precision in the use of his native tongue, which was unprecedented in his day. His early lyrics were written between 1816 and 1824, and are distinguished for lucidity, genuine feeling and brilliant command of metre and rhyme. His most famous poem, however, is ‹La Ginestra› (1836), in which he gives full expression to his hopeless creed, and his poetic productions, some 39 remain to this day the finest and most imperishable utterances of the Italian lyre. His other works include translations, and critical treatises, and after his death were published his prose works, a miscellany of peculiar interest. His ‹Epistolario,› a collection of his letters, illustrates his personal life. Consult: Autard, ‹Essay sur les Idees philosophiques et l'Inspiration poetique de Giacomo Leopardi› (1877); Ranieri, ‹Sette Anni di Sodalizio con Giacomo Leopardi› (1880); Cappalletti, ‹Bibliographia Leopardiana› (1882); Cesareo, ‹Nuove Ricerche su Giacomo Leopardi› (1893).

Leopold (lē'ō-pōld) **I.** (GEORGE CHRISTIAN FREDERICK), king of the Belgians: b. Coburg 16 Dec. 1790; d. Laeken 10 Dec. 1865. He was the son of Francis, duke of Saxe-Coburg, and after receiving careful literary and scientific education became a general in the Russian army and was present at the battles of Lützen, Bautzen, and Leipsic. While in England after the peace of 1815 he married Princess Charlotte, heiress of the throne, and was naturalized by act of Parliament in 1816. The princess died in 1817; and Leopold 12 years later married morganatically Caroline Bauer. In February 1830, he was offered the crown of Greece, but declined it. In June 1831, he was elected by a national congress king of the Belgians, and was crowned at Brussels in the following July. He ruled with great prudence, having continual regard to the principles of the Belgian constitution. His daughter, Carlotta, was the wife of Maximilian, emperor of Mexico. Consult Juste, ‹Les Fondateurs de la Monarchie belge, Leopold Ier Roi des Belges› (1868) an English translation of which appeared, entitled ‹Memoirs of Leopold I.› (1868); Taillandier, ‹Le roi Leopold et la reine Victoria› (1878).

Leopold II., LOUIS PHILIPPE MARIE VICTOR, king of the Belgians: b. Brussels 9 April 1835. He is a son of Leopold I. and was married in 1853 to Marie Henriette, Archduchess of Austria (b. 1836; d. 19 Sept. 1902), daughter of Archduke Joseph of Austria. He early manifested an interest in Africa and in 1876 organized at Brussels the African International Association, the aim of which was to utilize African discoveries. He assisted Stanley in the latter's explorations of the Kongo. The Berlin Conference of 1885 established the Kongo Free State and conferred its sovereignty upon King Leopold.

Leopold I., emperor of Germany: b. Vienna 9 June 1640; d. there 5 May 1705. He was the 4th son of the emperor Ferdinand III. of the house of Hapsburg, and of Maria Anna of Spain, and was educated for the church, when the death of his brothers made him heir to the throne of his father. Previous to the death of the latter in 1657, Leopold had been crowned king of Hungary; still mainly in Turkish hands. The war with the Turks having been renewed in 1660, Montecuculi won the battle of St. Gothard on the Raab (1 Aug. 1664), which was followed, however, by a peace which the Hungarian partisans of the emperor regarded as ignominious. In 1678 occurred the great insurrection under Tökölyi, and in 1683 the Turkish invasion of Austria under Kara Mustapha. Leopold fled from Vienna, but John Sobieski's great victory saved his capital and thrones. Buda was retaken after a memorable siege in 1686, and the victories at Zalánkemén (1691) and Zenta (1697) led to the peace of Carlovitz (1699), which also secured the possession of Transylvania. But neither the wholesale executions of Hungarian patriots at Eperies, nor the acquiescence of the diet of Presburg in the proposition to make the male line of the Hapsburgs hereditary in Hungary (1687), could make peace permanent in that long distracted country: and Leopold, who also had to wage three protracted wars against Louis XIV. In the German empire the long reign of Leopold witnessed the growing power of the house of Brandenburg under Frederick William, the great elector, whose son assumed the royal title under the name of Frederick I. in 1701.

Leopold II., emperor of Germany: b. Vienna 5 May 1747; d. there 1 March 1792. He was the 3d son of the emperor Francis I., and succeeded him in 1765 on the throne of Tuscany. The death of his brother Joseph II. in 1790 called him to the greater cares of the vast Austrian dominions and soon after of the German empire. He hastened to make terms with Frederick William II. at Reichenbach (27 July 1790), was unanimously elected German emperor, pacified Hungary by taking the royal oath to observe strictly the constitution and by various concessions, proclaimed a full amnesty and restored all their ancient privileges to the Belgians, gave Tuscany to his son Ferdinand, concluded a peace with Turkey at Sistova (4 Aug. 1791), concerted with Frederick William, Frederick Augustus of Saxony, and others, at Rilnitz, preliminary measures for meeting the aggressions of the French revolution, and finally made a formal defensive and offensive alliance with Prussia (February 1792). Of his 16 children his eldest son Francis succeeded him on the throne.

Lepanto, Battle of, a famous naval engagement fought near the town of Lepanto in Greece, on the Gulf of Corinth, 7 Oct. 1571, between the Ottoman and the combined Mediterranean fleets of the Christian allies, who under the command of Don John of Austria obtained an overwhelming victory. Cervantes (q.v.), the author of ‹Don Quixote,› distinguished himself in this battle, receiving three wounds.

Lepanto-Bontoc, lā-pän'tō-bōn-tôk', Philippines, a province of Luzon formed by the union of the three sub-provinces of Lepanto, Bontoc, and Amburayan, occupying the western central part of northern Luzon; area 1,232 square miles. The province mostly is rugged and mountainous; it is thinly settled and there are no roads, communication being by trails. The only industry of importance is copper mining. Civil government was established in May 1902. Pop. 60,000, mostly Iggorotes and Ifugaos.

Leper. See LEPROSY.

Lepid'olite, or **Lithia Mica**, an important member of the mica group of minerals, as it is now one of the chief sources of the lithia salts so valuable in medicine. Its name, derived from the Greek, lepis, a scale, alludes to its usual occurrence in fine, scaly-granular masses. It rarely occurs in distinct, monoclinic crystals. It has a pearly lustre and a gray, lilac, or peach-blossom pink color. It occurs in small quantities in many parts of Europe and Asia, but by far the most important locality is in San Diego County, California, where it is now extensively mined. It is also found in Maine and Massachusetts and has been mined near Haddam, Connecticut. It is very frequently associated with pink and green gem tourmalines.

Lepidoptera (Gr. λεπίς, scale; πτερόν, wing): An order of the class *Insecta*, comprising the butterflies and moths. The name was given to the order because the wings are covered with little scales, or flattened hairs. The *Lepidoptera* undergo in their development a complete metamorphosis, passing through the stages of the egg, larva, and pupa, before appearing as the perfect insect, or imago.

Eggs.— The eggs of the *Lepidoptera* are minute objects, though generally large enough to be seen with the naked eye. When examined under the microscope they are found to vary greatly in form according to the species. They may be spherical, hemispherical, oval, conic, cylindrical, spindle-shaped, or flattened. The eggs of the *Cochlidiidæ*, or slug-moths, are circular, or elliptical, and greatly flattened, resembling microscopic pancakes. The egg of the common cabbage-butterfly is spindle-shaped. The eggs of both butterflies and moths are generally beautifully fluted with raised lines, or ornamented with a net-work of sculpturings arranged in geometrical patterns. They are always provided with a minute opening in the shell known as the micropyle, permitting them to be fertilized. This is located at the apex in most forms, but in the case of those eggs which are flattened the micropyle is located on the side. The female deposits the eggs upon the plant on which the caterpillars feed, or in close proximity to the food which is to nourish them, in the case of those few species which do not subsist in the larval stage upon vegetable matter.

Larvæ.— When the eggs hatch the insects appear as larvæ, or caterpillars. These undergo successive molts as they increase in size, shedding their skins from time to time until they have attained the development at which the next transformation, known as pupation, occurs. The bodies of larvæ consist normally of thirteen segments, or somites, of which the first is the head. The forms of the larvæ are very various, though in the main they are vermiform and cylindrical. The larvæ of butterflies are for the most part smooth, though in some genera they are curiously ornamented with lateral or dorsal projections, which may be spinous, club-shaped, or filamentous. The larvæ of moths are often hairy, or spinose, and in some genera of the *Lasiocampidæ*, the *Cochlidiidæ*, and the *Saturniidæ*, these spines possess stinging, or poisonous properties. Lepidopterous larvæ possess three pairs of true feet located upon the three segments immediately following the head, and corresponding to the six thoracic feet which are found in the winged form of the insects. In addition to these true feet the bodies of these larvæ are supported by from two to eight pairs of abdominal prolegs, or false feet, which are fleshy and do not recur in the imago. The head is always more or less conspicuous in the larval stage, and is provided with eyes and mouth parts adapted to cutting and deglutition.

One of the most remarkable portions of the anatomy of lepidopterous larvæ are the two long glands located in the dorsal region, which secrete a milky fluid, which is vented through a nipple-shaped organ upon the lower lip known as the spinneret, and which upon exposure to the atmosphere is transformed into the substance known as silk.

Pupæ.— When the larva has attained maturity it is transformed into a pupa. Pupæ may be naked, or they may be enclosed in a structure of silk known as a cocoon. The pupæ of butterflies are usually attached by their anal extremities to twigs, the under side of rails, or stones. The attachment is effected by means of a button of silk into which the hook-like cremaster is thrust. In some families chrysalids are in addition held in place by a girdle of silk. The larvæ of moths usually undergo pupation in a cocoon which may be densely woven or very loosely constructed of a few strands of silk mingled with hairs from the body of the caterpillar, or loose particles of adherent earth or fragments of leaves. Many of the hawk-moths and almost all of the owlet-moths undergo transformation in underground cells which the caterpillars mold for themselves in the soil before changing into pupæ. The duration of the pupal stage varies in length according to the species, or the season. Many species in temperate climates pass the winter in the pupal form. Where there are two or more generations in a season the pupal period is short for the summer broods, and the fall brood hibernates in the pupal state. The pupæ of butterflies are often ornamented with silvery or golden spots, hence the name *chrysalis* has been applied to them, the word being derived from the Greek (χρυσός, gold). The pupæ of moths are generally some shade of brown or black. The pupa contains the imago and in almost all cases an examination will show in the pupa the location of the various organs of the perfect insect in a rudimentary form.

The Imago.— When the period of pupation is ended the butterfly or moth breaks through the pupal shell and emerges a four-winged, six-footed insect, known as the *imago.* The females of some species of moths are apterous, or provided with wings so poorly developed that they cannot be used in flight.

Classification.— The classification of the *Lepidoptera* has afforded opportunity for much divergence of opinion among naturalists, but the division into two great suborders, the *Rhopalocera,* or butterflies, and the *Heterocera,* or moths, is well established in usage.

The *Rhopalocera* contains six families:

I. *Nymphalidæ* («Brush-footed Butterflies»).—The front pair of legs greatly reduced in size, tarsi of the male with but one joint, of the female with five, but without claws, the pupa suspended by the cremaster. There are eight subfamilies in this group, more than 250 genera, and about 5,000 species known at the present time. Among these are some of the largest and most splendidly colored butterflies, which are known, as well as some of the smallest and most obscurely colored forms. The family is represented in all parts of the globe.

II. *Erycinidæ* («Metal-marks»).—The female has the first pair of legs weakly, though perfectly developed. The coxa of the foreleg of the males is spined, and the tarsi are unjointed and without claws. There are over 60 genera and fully 1,000 species in this group. The butterflies composing it are generally small, but gaily and curiously colored. The metropolis of the family is found in the hot lands of the New World, though it is also represented in the eastern hemisphere.

III. *Lycænidæ* («Blues,» «Coppers,» and «Hair-streaks»).—The fore legs of the male are aborted, the tarsus having but a single joint terminated by a single claw. There are over 2,000 species known. The butterflies are generally small. The upper sides of the wings are prevalently some shade of blue, bronzy green, or copper, though there are some species, especially in Africa, yellow, red, or white.

IV. *Pieridæ* («Whites,» «Sulphurs,» and «Orange-tips»).— The six legs are well developed in both sexes and the feet have two hooks or claws at the end. There are about 1,200 species known to science. The «cabbage butterfly» and the «common sulphur» of the clover fields are fair representatives.

V. *Papilionidæ* («Swallow-tailed butterflies»).—The six legs are well developed. The claws are simple. About 1,000 species belong to this family, among them some of the largest and most splendid tropical insects.

VI. *Hesperiidæ* («Skippers»).— The six legs are perfect. The claws are short and thick. The bodies are relatively robust. In flight the insects are very quick and powerful, hence the common name. The butterflies are generally small, though there are some quite large species.

There are about 13,000 species of butterflies which have been named and described. It is probable that when we shall have explored the entire earth the total number of existing species may be found to be 18,000.

The *Heterocera,* or moths, may be divided into about 60 families, of which 43 are represented in North America. The families which have the largest number of species in North America are the *Noctuidæ,* or «owlet-moths,» the *Geometridæ,* or «measuring-worm moths,» the *Saturniidæ,* or «wild silk-moths,» the *Arctiidæ,* or «tiger-moths,» the *Sphingidæ,* or «hawk-moths,» the *Tortricidæ,* or «leaf-rollers,» and the *Pyralidæ.* More than 7,000 species of moths are known to occur in the United States and Canada, and probably more than 100,000 species at present exist upon the globe.

The most important of all the *Lepidoptera* from a commercial standpoint is the silk-moth (*Bombyx mori*), which was introduced into Europe from China by way of India, and at an early date was brought to the New World.

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Lep″idosi′ren, the American genus of *Dipnoi* (q.v.) or lung-fishes, closely resembling the African genus *Protopterus,* but having a more eel-like form, smaller scales and the paired limbs reduced to mere filaments of no use in locomotion. The single species *Lepidosiren paradoxa* was discovered by the Austrian naturalist Natterer in the tributaries of the upper Amazon in 1837. For fifty years the species was known from only two or three museum specimens, but in 1887 was re-discovered in abundance in Paraguay by an Italian zoologist, and since then has been the object of several expeditions which have made it well known. It lives in the sluggish, vegetation-choked streams and lakes of that region, the natives of which spear it in large numbers for food. Its large eggs, more than a quarter of an inch in diameter, are deposited in underground nests where they are guarded by the males, whose ventral fins become densely villous and serve as accessory respiratory organs at this time. On the approach of the dry season the muscles of the tail undergo fatty degeneration and the fish retires to a mucus-lined «cocoon» in the mud at the bottom of a burrow sealed at intervals of 3 or 4 inches by plates of mud perforated by two or three small openings. In these retreats the «lolachs,» as they are called by the Indians, remain until the rains again convert the baked earth into mud. The lepidosiren feeds on large aquatic snails, confervæ, and roots.

Lepidos'trobus (Gr. «whirling scale»), a cone from the coal measures, usually found in seams or nodules of clay-ironstone, and often compressed. They consist of a central axis surrounded by imbricated scales or bracts, each containing a sporangium (spore-case). They have been found united to the tip of the branches of *Lepidodendron,* and this shows that they were the fruit of that genus.

Lepidos'teus. See GAR.

Lep'idus, Marcus Æmilius, Roman triumvir: d. Circeii 13 B.C. He became prætor 49 B.C., consul with Julius Cæsar in 46, and in 44 was appointed by Cæsar to the government of Narbonese Gaul and Nearer Spain. He was in Rome at the time of Cæsar's death, and joined Mark Antony. In 43 he united with Antony and Octavianus to form the triumvirate, obtaining Spain and Narbonese Gaul in the division of the empire. After the battle of Philippi (42) a re-division took place, in which Lepidus received Africa, where he remained till 36, when he was summoned by Augustus to assist him against Sextus Pompey. He then tried to seize Sicily, but was overcome by Augustus, who deprived him of his triumvirate, and banished him to Circeii, where he lived under strict surveillance.

Lepor'idæ, a family of rodents comprising the rabbits and hares (q.v.). With the *Lagomyidæ* it constitutes the suborder *Duplicidentata,* distinguished from all other rodents by having two pairs of upper incisors, of which the second is much reduced in size and placed immediately behind the first or larger pair. The hind-legs are much longer than the fore-legs and are well adapted by their structure for the leaping mode of locomotion affected by these animals; the tibia and fibula are completely ankylosed and articulate with the calcaneum by a pulley-like surface, thus combining great strength with great freedom of movement in one plane. The family is now cosmopolitan, but no species is indigenous to Australia. The genus Lepus is practically co-extensive with the family.

Leprosy, a term very vaguely used by medical and other writers to denote a disease, *Lepra tuberculosa,* which appears to have prevailed from the earliest time down to the present. The affection is identical with the *elephantiasis* of the Greeks and the *lepra* of the Arabians, which is altogether different from the *elephantiasis* of the Arabians and the *lebra* of the Greeks. The most prominent symptoms of the disease are as follows: dusky red or livid tubercles of various sizes on the face, ears and extremities; thickened state of the skin with diminution of its sensibility; falling off of the hair, except that of the scalp; hoarse, nasal or lost voice; ozæna; ulcerations of the surface and extreme fetor. The tubercles vary in size from that of a pea to an olive. Hands, feet and face are generally first affected.

In modern times three kinds of leprosy are recognized. In the first variety the whole body becomes white and scaly, without much interference with the general health. This is the true Biblical leprosy, and it is rare nowadays. The second variety makes the victim insensible to pain in the hands and feet in its earlier stages, and later on in the arms and legs. It is known as anæsthetic leprosy. The sufferer from this form of the disease is much troubled with dysentery, and when the disease is advanced his hands and feet are liable to slough off. The third variety of leprosy is known as the tubercular form. It is distinguished by horrible swellings of loose skin, which becomes discolored. This is the commonest modern variety of the disease and the one most repulsive.

In Palestine and the countries immediately east of it leprosy existed until the dispersion of the Jews in the 1st century of the Christian Era. As the power of the Roman Empire declined in the west of Europe a strong tide of emigration from the Levant set in. The plague of leprosy spread with the teaching of Christianity until no country in Europe was free from it. Between the 6th and the 15th centuries leprosy was by far the most dangerous and infectious disease of which any account has come down to us.

To be a leper was to be an outcast beyond hope of any solace but the grave. All the larger towns in Europe had a place specially set apart for its lepers. This reservation was shunned as if it were the mouth of a burning hell. A boundary line was made, beyond which no leper could venture, except at the risk of instant death. If a healthy stranger unwittingly wandered too near the leper's camp he was remorselessly thrust into it and made to share the lot of those previously afflicted. Food was furnished to these leper camps by the town authorities. The provisions intended for the use of the lepers were left on some exposed hill, selected for that purpose, during the daytime, and removed by the inmates of the camp at night. No office, no matter how exalted, served to keep a sufferer from leprosy from universal ostracism.

In the sparsely settled country districts, solitary lepers abounded. Each one wandered about by himself in the unfrequented woods and uninhabited waste places. The rigorous compulsion of the villagers compelled him to wrap himself in a sheet so that only his eyes were exposed. He must carry a bell in his hand and ring it in order to warn wayfarers of his approach. Whenever the dismal tinkling of the leper's bell was heard, the inhabitants fled in terror of their lives. The unfortunate victim supported life as best he might by roots and berries, and by the occasional offerings of charitable persons left where he could find them.

At an early period in the history of the Christian Church efforts were made to alleviate the sufferings of lepers. An order of Saint Lazarus was formed as early as 72 A.D., taking its name from Lazarus, the beggar who ate the crumbs which fell from the rich man's table. Later on, in the 12th century, a military order of Lazarus was founded by the Knights Hospitallers. When these knights were driven out of Palestine they made France and afterward Sicily their headquarters. Numerous lazarettos were established by them in the principal cities of Europe. For many years the grand master of this order was required to be a leper. In civil law the leper was treated as one dead. His property passed to his heirs, his wife was free to marry again, and on his departure for the lazaretto prayers for the dead were repeated over him, and a shovelful of earth was thrown after him to make the ceremony complete.

With the progress of civilization leprosy gradually disappeared from every part of Europe except Norway. Lazarettos gradually fell into disuse, and only the name of leper remained as a by-word to express social and moral contamination. Great Britain was one of the last countries to cut clean of leprosy. As late as the 15th century, 250 leper hospitals were in existence there. The government, as well as other European governments, has practically banished the disease, by careful surveillance. In British America the disease still lingers in New Brunswick. In the hospital for lepers at Tracadie there have been a score of cases regularly for many years.

In the United States leprosy has existed since the Revolution and probably will continue to exist. Leprosy hospitals in secluded spots are maintained in San Francisco, New Orleans, and New York, and cases are always found here in numbers from two or three to a score. In the Philippines at the time of the American occupation there were 15,000 cases in the islands, but by the census of 1902, only about 5,000 cases were reported. The disease was brought to Manila originally from Japan about 200 years ago.

The most celebrated leper colony or settlement in the world is that on the island of Molokai in Hawaii; but the conditions there have been much exaggerated. Molokai lies about 25 miles from the island of Oahu, and about 56 miles from Honolulu. Its native name is Ka-ania-pali, a land of precipices. It is 40 miles long, seven miles broad, and has an area of a little more than 200,000 acres The leper settlement on the elevated, grassy plain of Kalaupapa has an area of 8,000 acres. This plain is bounded on three sides by the ocean, and on the landward side by perpendicular cliffs. There is always a delicious blending of warmth and coolness in the air, which indisposes one for mental and physical effort and soothingly induces a condition of blissful and tranquil repose.

The whole number of lepers at the Molokai settlement in 1902, was officially reported at 1,191, viz.: 741 males and 450 females. There would be, therefore, nearly seven acres of productive soil for every member of the settlement. There are hospitals, dispensaries, churches, and comfortable cottages for the accommodation of families; these cottages are well ventilated, abundantly supplied with fresh water and kept in good condition. Cottage residents requiring medical treatment are attended at their own homes by the resident physician. Every man, woman and child may draw 21 pounds of fresh beef every week, a liberal supply of taro, flour or bread, rice, tea, sugar, salt, tobacco, and matches, and as much good clothing as required. A sum of money is paid to those who do not draw the full ration, which enables them to purchase articles not included in the regular supply.

Whether leprosy can be cured is a question. The administration of tonics and astringents has appeared to give good results. The use of iodides and mercurial preparations have also been tested, as well as the tincture of cantharides; but all of these remedies produce more or less identical effects — that of a temporary amelioration of the condition of the patient, but without well-founded hopes of anything approaching a genuine cure. A well known specialist believes in the use of camphor, in the form of a syrup, as one of the best methods of combating the disease; and his enthusiasm leads him so far as to state that he is convinced that leprosy is curable, if not allowed to pass certain limits, and that even those in the worst stages will derive marked benefits from the camphor treatment. Temporary alleviation has frequently been obtained by various methods, as, in a disease like leprosy, any remedy which tends to improve the state of the blood and the general health will, no doubt, have its temporary ameliorating effect upon the malady itself. Many years of careful study and of patient and conscientious application of all methods of treatment have satisfactorily demonstrated the incurability of the disease, and the most that can be done is to alleviate, as far as possible, the physical suffering and mental distress.

WILL M. CLEMENS,
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Lepsius, lĕp'sē-oos, **Karl Richard,** German Egyptologist: b. Naumburg 23 Dec. 1810; d. Berlin 10 July 1884. After studying philology at Leipsic, Göttingen, and Berlin, he published his first work 'De Tabulis Eugubinis' (1833) and thereupon removed to Paris. In 1835 he visited Italy and took up his residence at Rome. He subsequently went to London and projected with Bunsen a large work on ancient Egypt. He started in 1842 on the first of his two visits to Egypt. His life henceforth was that of an ardent Egyptologist, and honors were showered upon him. He was professor in the Berlin University, director of the Egyptian section of the Royal Museum, director of the Royal Institute, head of the Royal Library, etc. He was author of a large number of important works on Egyptian antiquities.

Leptocar'dii. See ICHTHYOLOGY.

Le'pus («the hare»), in astronomy, one of the 48 constellations south of Orion, containing several bright stars, among them Alpha and Beta Leporis.

Le Queux, lĕ kū, **William,** English novelist: b. London, England, 2 July 1864. He studied art in Paris and was subsequently a journalist there, but presently returned to London and in 1888 was a parliamentary reporter for the ‹*Globe,*› and its sub-editor 1891–3. In 1900 he was appointed English consul to San Marino. Among his numerous fictions are: ‹Guilty Bonds› (1890); ‹Sinned Against› (1891); ‹The Great War in England› (1892); ‹Stolen Souls› (1894); ‹Whoso Findeth a Wife› (1897); ‹The Day of Temptation› (1897); ‹Scribes and Pharisees› (1898); ‹Wiles of the Wicked› (1900); ‹In White Raiment› (1900); ‹The Tickencote Treasure› (1902).

Leray, lĕ-rā′, **Francis Xavier,** American Roman Catholic bishop: b. Châteaugiron, France, 1825; d. France 1887. He was educated at Rennes, but in 1843 crossed the Atlantic and settled at Baltimore. He went through the ordinary theological course under the direction of the Sulpicians and was admitted to the priesthood 1852. He was a chaplain in the Confederate service during the war and afterward returned to Vicksburg, and while the plague of 1867 raged, was always at hand to comfort and assist the sufferers. In 1873 he was consecrated to the see of Natchitoches, La., and 10 years later promoted to the archiepiscopal chair of New Orleans.

Lerdo de Tejada, Sebastian, sā-bäs′tē-än lār′dō dā tā-hä′dä, Mexican statesman: b. Jalapa, Mexico, 25 April 1825; d. New York 21 April 1889. He was educated at the College of San Ildefonso, Mexico, was admitted to the bar in 1851 and was appointed a judge of the supreme court in June 1857. He was minister of foreign affairs in 1857; member of Congress in 1861–2 and in 1862–3; and accompanied President Juarez in 1863–7, during which time he was successively minister of justice and minister of foreign affairs. He was elected chief justice of the supreme court in December 1867, and on the death of Juarez, 18 July 1872, succeeded to the presidency, and in the following November was elected to that post. In 1876 he was again candidate to succeed himself, and after a doubtful election was declared re-elected by Congress. This action resulted in a revolution and Lerdo was forced to leave the country. He lived in retirement in New York city till his death.

Lermontoff, lĕr′mŏn-tŏf, **Mikhail Yuryevitch,** Russian poet: b. Moscow 3 Oct. 1814; d. 15 July 1841. He was educated at the University of Moscow, became a hussar of the imperial guard in 1834, and in 1837 wrote his lines ‹On the Death of a Poet,› in which he denounced the killing of Pushkin in so vigorous a fashion that he was sent to serve in the army of the Caucasus as an ensign. In 1838 he was pardoned and returned, but later was killed in a duel by one Martynoff, who imagined himself caricatured in Lermontoff's novel, ‹A Hero of Our Time.› Lermontoff was a Byronic figure, abounding in ridicule and satire. The Russians rate him as their greatest poet after Pushkin. Had he lived longer he would probably have produced more extended and even more valuable work. His chief poem is ‹The Demon,› which has been translated into English by Stephen (1875). ‹The Circassian Boy› and ‹A Hero of Our Time› also exist in English renderings, the former by Conant (1875), the latter by Pulski (1854) and Nestor-Schurmann (1899).

Lernæ′a. See Fish-lice.

Le Rossignol, lĕ rŏs′sēn-yōl, **James Edward,** American educator: b. Quebec, Canada, 24 Oct. 1866. He was graduated at McGill College and University, Montreal, in 1888; taught in the public schools of that city 1888–9; from 1889 to 1892 was a graduate student in Germany; in 1892–4 was professor of psychology and ethics in Ohio University; and since then has been professor of economics at the University of Denver. During 1900 he was special lecturer in economics at McGill College and University. He has written much on economical subjects, and has published ‹Monopolies, Past and Present› (1901).

Leroux, Charles Marie Guillaume, shärl mä-rē gē-yōm lẹ-roo, French painter: b. Nantes (Loire-Inférieure) 1814; d. 1895. He studied law and entered legal practice; but abandoned the bar for art, and after study with Corot, became a landscape artist. Among his canvases are: ‹Souvenir de Fontainebleau›; ‹Fête in Haut-Poiton›; ‹The Erdre in Winter›; ‹Dunes des Chênes Verts.›

Leroux, Frédéric Etienne, frā-dë-rĭk ā-tē-ĕn, French sculptor: b. Ecouché (Orne) 3 Aug. 1836. He studied with Jouffroy and at the Beaux-Arts, became an exhibitor at the Salon in 1863, obtained a medal of the second class at the Paris exposition of 1878, and a silver medal at that of 1889. Among his best known works are: ‹Demosthenes on the Shore›; ‹Joan of Arc›; ‹Marchand de Violettes›; ‹Bouquetière.›

Leroux, Hector, French painter: b. Verdun 27 Dec. 1829. He was a pupil of the Beaux-Arts and of Picot, in 1857 obtained by his ‹Lazarus› the second Prix de Rome, traveled in Greece and Asia Minor, and became known for his reposeful and dignified scenes from the ancient life of Greece and Rome. Among his works are: ‹A New Vestal› (1863); ‹Funeral in the Columbarium of the House of the Cæsars› (1864); ‹Messalina› (1868); ‹The Burial of Themistocles› (1876); ‹The Fall of Herculaneum› (1881).

Leroux, Louis Eugène, loo-ē ė-zhān, French painter: b. Paris 28 Sept. 1833. He studied with Picot, became known for his genre-scenes derived from Breton life, and painted, among his more important works: ‹Le Nouveau-Né› (in the Luxembourg Gallery); ‹Avant l'Ensevellisement›; ‹La Prière›; and ‹Avant la Confession.›

Leroux, Robert Henri, rō-bār ŏṅ-rē (called Hugues), French journalist and author: b. Havre 1860. He became a journalist at Paris, where he wrote for the *Temps, Matin, Figaro, Journal,* and other newspapers, and published two works on Russia, ‹La Russie Souterraine› (1885), and ‹L'Attentat Sloughine,› a story of the Nihilists. He has visited the United States as lecturer before the Cercle Français de l'Harvard. His further works include: ‘L’Autre France’ (1900), a drama, with Decourcelle; the works of fiction, ‘Un de Nous’ (1886); ‘Le Maitre de l’Heure’ (1897); ‘Le Fils à Papa’ (1900); and the studies and sketches, ‘Au Sahara’ (1891), ‘Portraits de Cire’ (1891), ‘En Yacht’ (1892), ‘Marins et Soldats’ (1892), ‘Notes sur la Norvège’ (1894), and ‘Nos Filles: Qu’en Ferons-Nous?’ (1898).

Le Row, lĕ rō, **Caroline Bigelow,** American educator: b. New Brighton, Staten Island, N. Y., 28 Dec. 1843. She was graduated at the Boston Normal School, and took courses in physical culture, voice culture and elocution under private instruction. In 1865 she entered the profession of teaching, which she has since followed, her present position (1904) being with the Girls’ High School, Brooklyn, N. Y. She has published: ‘Duxberry Doings’; ‘A Fortunate Failure’; ‘How to Teach Reading’; ‘A Practical Reader’; ‘Practical Recitations’; ‘Columbian Speaker’; ‘English as She is Taught’ (1902); ‘The Young Idea’ (1902).

Leroy, lĕ-roi′, **William Edgar,** American naval officer: b. New York 24 March 1818; d. there 10 Dec. 1888. In 1832 he entered the navy as a midshipman and served as a lieutenant on the Princeton during the Mexican War. He served in the United States navy during the Civil War also, doing good service on several important occasions, became a commodore in 1870 and a rear-admiral in 1874. He commanded the South Atlantic squadron 1876–9 and retired from active service in 1884. On account of his courtly manners and general fastidiousness he was often styled “the Chesterfield of the Navy.”

Leroy-Beaulieu, lė-rwä bō-lē-ė, **Henri Jean Baptiste Anatole,** French historical writer: b. Lisieux, Calvados, 1842. He is a brother of Pierre Paul Leroy-Beaulieu (q.v.). In 1881 he was appointed to the chair of modern history in the Ecole Libre des Sciences Politiques, and in 1887 was elected to the Academy of Moral and Political Sciences. He contributed extensively to the ‘Revue des Deux Mondes,’ and published in 1887–9 the important work, ‘L’Empire des Tsars et les Russes,’ a study of Russian history, politics, and civilization, based partly on direct observation. Others of his publications are: ‘La France, la Russie, et l’Europe’ (1888); ‘La Révolution et le Libéralisme’ (1890), ‘Israël chez les Nations’ (1893).

Leroy-Beaulieu, Pierre Paul, pē-ãr pōl, French economist: b. Saumur, Maine-et-Loire, 9 Dec. 1843. He was educated at the Lycée Bonaparte and the Ecole de Droit of Paris and the universities of Bonn and Berlin; became a journalist at Paris; wrote his ‘De l’Etat Moral et Intellectuel des Populations Ouvrières’ (1868), crowned by the Academy of Moral and Political Sciences; assisted in founding the Ecole Libre des Sciences Politiques; and was appointed professor of finance there in 1872. In 1880 he became professor of political economy in the Collège de France. He established in 1873 ‘L’Economiste Français,’ which he has continued to edit. In 1878 he was elected to the Academy of Moral and Political Sciences. Among his further writings are: ‘Les Guerres Contemporaines’ (1853–66; 1868–9); ‘Traité de la Science des Finances’ (1877; 5th ed. 1891); and ‘Précis d’Economie Politique’ (1888; 3d ed. 1891).

Léry, Jean de, zhŏṅ dė lā-rē, French Calvinist preacher: b. La Margelle, France, 1534; d. 1601. In 1556 he was sent from Geneva to preach at Rio Janeiro, Brazil, where French colonies had been established by the Huguenots, and was the first Protestant minister to preach on the American continent. He and the preachers who accompanied him were obliged to return to France, owing to a bitter misunderstanding which arose between them and those who employed them. Léry has left an account of his travels in the west under the title ‘Histoire d’un Voyage fait en la Terre du Brésil’ (1578).

Lesage, Alain René, ä-lăṅ rė-nā lė-säzh, French novelist and playwright: b. Sarzeau, near Vannes, 8 May 1668; d. Boulogne-sur-mer 17 Nov. 1747. He studied law in Paris and became an advocate, but soon afterward turned all his attention to literature. He made many fruitless efforts after recognition and success, principally by translating from the Greek and Spanish. At length two plays of his, ‘Crispin Rival de Son Maître’ (1707) (adapted from a Spanish piece of Mendoza’s), and ‘Tuscaret’ (1708), a satire on the financiers of his day, had a genuine success. But he gained even greater praise and reputation from his comic romance, ‘Le Diable Boiteux’ (1707). This was indeed merely an imitation of a Spanish tale of Guevara, which he completely Gallicized so as to direct its point against the pietism which characterized the last period of Louis XIV.’s reign. But his greatest work was ‘Gil Blas de Santillane’ (1715). To his eternal disgrace Voltaire as well as many Spaniards jealous for their country’s honor asserted that this novel was a bare-faced plagiarism from a Spanish original. In ‘Gil Blas’ the wit of the author is triumphant and the surprises and adventures of human life, with all the ups and downs of fortune, are made to rouse our sense of humor as well as our keenest interest, and to dazzle our fancy by the swiftness and variety of their changes. The work is, of course, destitute of high ideal and all moral aim, but it has been compared with those of Rabelais and La Fontaine, and its hero was certainly the precursor of Figaro. The most memorable of Lesage’s other romances are ‘Les Aventures de Guzman d’Alfarache’ (1732), an imitation of a Spanish romance of Mateo Aleman, and ‘Le Bachelier de Salamanque’ (1736), the latter the production of his declining years, and highly valued by him. But his most numerous works were vaudevilles, and comic operas (101 in all). The Academy revenged itself on him for the graceless levity and irreverence toward the learned professions which he exhibited in his works, by refusing to elect him to their number. But they failed to check the growth of his fame His influence was first spread in England through Smollet, and in France through Balzac. A full edition of his works was published in Paris in 1828. Consult: Claretie, ‘Le Roman en France an début du XVIII. Siècle. Lesage Romancier’ (1890); Barbaret, ‘Lesage et le Théâtre de la Foire’ (1887).

Lesbos, lĕz′bŏs. See MITYLENE.

Leschetizky, lĕsh-ē-tĭts'kĭ, **Theodore,** Austrian pianist: b. Lemberg, Austria, 1831. He received his musical education in Vienna, and after a successful concert tour in 1864 was made professor of the pianoforte at the conservatory of St. Petersburg, where he turned out many illustrious pupils. In 1878 he returned to Vienna with an ever-increasing reputation. As a pianist he is remarkable for delicacy of touch and a magic power of expression. As a composer he has published some very elaborate pieces for the piano, some songs, and an opera 'Die erste Falte' (1867). Perhaps the most famous of all his pupils is Paderewski (q.v.).

Lesghians, lĕs'gĭ-anz, a Tartar people professing Muradism, a form of Mohammedanism established by a native prophet about 1830. They inhabit the Eastern Caucasus, and form the chief portion of the inhabitants of western Daghestan. They were among the most stubborn of the Caucasian peoples in their resistance to the Russians.

Lesley, lĕs'lĭ, **J. Peter,** American geologist: b. Philadelphia 17 Sept. 1819; d. Milton, Mass., June 1903. He was graduated at the University of Pennsylvania in 1838, for the next three years was engaged as assistant in the first geological survey of Pennsylvania. In 1844 he was graduated at the Princeton Theological Seminary and licensed as a minister. Visiting Europe, he made foot-journeys through several countries, and for a while studied at the University of Halle. From 1845 to 1848 he labored for the American Tract Society among people in the mountain districts of Pennsylvania, and then served two years as minister of a Congregational church at Milton, Mass., resigning on account of a change in his religious views. Returning to Philadelphia, he resumed his geological researches, extending his investigations throughout the coal, oil, and iron regions of this country and Canada. In 1855 he became secretary of the American Iron Association; in 1858 secretary and librarian of the American Philosophical Society; and State geologist of Pennsylvania in 1874. He was also professor of geology at the University of Pennsylvania 1872–8, and there in 1886 was appointed emeritus professor. In 1863 he went to Europe to examine the Bessemer iron-works for the Pennsylvania Railroad Company, and in 1867 was appointed by the United States Senate a commissioner to the Paris Exposition. He edited many works, published numerous scientific papers in various journals and reports, and also wrote: 'A Manual of Coal and Its Topography' (1856); 'The Iron Manufacturer's Guide' (1858); 'Man's Origin and Destiny from the Platform of Sciences'; 'Historical Sketch of Geological Explorations in Pennsylvania' (1876); and 'Paul Dreifuss, His Holiday Abroad' (1882).

Lesley, John, Scottish prelate and historian: b. Scotland 29 Sept. 1527; d. near Brussels, Belgium, 31 May 1596. He was educated at King's College, Aberdeen, and in 1554 became professor of canon law there. A firm friend of Mary, Queen of Scots, and by her appointed bishop of Ross, he was concerned in the scheme for her marriage to the Duke of Norfolk, and in the consequent rebellion in the north of England, and was imprisoned in the Tower. While there he wrote 'Piæ Consolationes.' When released in 1573 he crossed to the Continent, and in 1593 became bishop of Coutances in Normandy. His chief production is a history of Scotland (1578), in 10 books, 7 in Latin and the last 3 Scottish dialect.

Leslie, Charles Robert, English painter: b. London, England, 19 Oct. 1794; d. there 5 May 1859. His parents were Americans, the father being a watchmaker of Philadelphia, and to that city they returned with the boy in 1800. There he attended school, and was afterward apprenticed to a bookseller; in 1811 went to England and studied with Allston, West, and others; was elected associate of the Royal Academy in 1821, and in 1826 to full membership. He first adopted a style in large historical subjects, but his genius led him into historical genre of a humorous character, in which he excelled alike in conception and execution, and in which his gentle humor was as pervasive as his finished manner. He was first brought into wide notice by his 'Sir Roger de Coverley Going to Church' (1819). To this period belong his portrait of Washington Irving and the illustrations which he designed for that author's 'Sketch-Book' and his 'Knickerbocker's History of New York.' Leslie's election as an associate of the Academy was secured by 'May-day Revels in the Time of Queen Elizabeth.' In 1824 he visited Sir Walter Scott at Abbotsford and painted his portrait. He was elected professor of drawing at the United States Military Academy, West Point, in 1833, accepted the position, but in a few months gave it up and returned to England. In 1838, at Windsor, he painted 'The Queen Receiving the Sacrament after the Coronation.' From 1848 to 1852 he was professor of painting at the Royal Academy. His principal pictures illustrate scenes from the works of great authors, among his strongest traits delicate perception of character and of womanly beauty being observable. His best known paintings include: 'Sancho Panza in the Apartments of the Duchess' (1828); 'Uncle Toby and the Widow Wadman' (1831); 'The Taming of the Shrew' (1832); and 'The Dinner at Mr. Page's House' (1838). He published a volume of lectures as a 'Handbook for Young Painters' (1855); 'The Memoirs of Constable' (1865); an unfinished 'Life of Reynolds' (1865); and 'Autobiographical Recollections' (1860).

Leslie, Eliza, American author: b. Philadelphia 18 Nov. 1787; d. Gloucester, N. J., 1858. Her girlhood was spent partly in London, England, where her brother, Charles Leslie (q.v.), afterward became distinguished as an English artist. She returned to the United States in 1799, and the rest of her life was nearly all passed in her native city. She first became famous by her 'Seventy-five Receipts for Pastry, etc.' (1827), followed by 'The Domestic Cookery Book' (1837), 40,000 copies of which were sold; 'The Home Book' (1840); and 'The Ladies' Receipt Book' (1846). She had, however, soon after the success of her first work, begun to write juvenile and other works, and for a generation was one of the most popular of American prose writers. Her books are mainly, though not invariably, written to enforce moral instruction, and among them are: 'The American Girls' Book' (1831); 'Stories for Helen';

‘Kitty's Relations’; ‘Leonilla Lynmore’; ‘The Maid of Canal Street’; ‘The Dennings and their Beaux’ (1851); ‘Mrs. Washington Potts’; and ‘The Behavior Book’ (1853). She edited for many years ‘The Gift,’ a popular annual for young women.

Leslie, Frank (assumed name of Henry Carter), American publisher and journalist: b. Ipswich, England, 1821; d. New York 10 Jan. 1880. He was educated at Ipswich; entered a mercantile house at 17; developed artistic abilities, and under the name of Frank Leslie contributed sketches to the ‘Illustrated London News.’ The success of these led to his giving up commercial pursuits to become superintendent of engraving for that paper. In this position he produced valuable inventions, and made himself master of technicalities. Coming to the United States in 1848, he followed his profession here, and in 1854 founded the ‘Gazette of Fashion’ and the ‘New York Journal.’ In 1855 he began the publication of ‘Frank Leslie's Illustrated Newspaper’ (now ‘Leslie's Weekly’), following these with the ‘Chimney Corner,’ the ‘Boys' and Girls' Weekly,’ the ‘Budget of Fun,’ and others. In 1867 he was appointed commissioner to the Paris Exposition, where he received a prize for his services to art. He married Miriam Florence Folline, of Louisiana, and she, having taken at his death, by legislative act, the name of Frank Leslie, successfully continued the business, from which she finally withdrew in 1900.

Les Misérables, lā mē-zā-rä-bl, a novel by Victor Hugo (q.v.), giving a comprehensive view of Parisian life, chiefly among the lower orders, during the 19th century. It was published 3 April 1860, having been translated previously into nine languages. It has been translated since into 12 other languages.

L'Espinasse, Julie Jeanne Eléonore de, zhü-lē zhän ĕl-ā-ō-nōr lā-pĭ-näs, French letter writer: b. Lyons November 1732; d. Paris 22 May 1776. She was an illegitimate daughter of Madame D'Albon, and on the death of her mother she went to live with the Marquise De Vichy, the legitimate daughter of Madame D'Albon, and in 1754 became the companion of Madame Du Deffand (who had already become blind), at the urgent request of the latter. This position she occupied for about 10 years; but the jealousy and selfishness of Madame Du Deffand rendered her situation very uncomfortable. She gained the friendship of all the *élite* of Madame Du Deffand's society, such as Marmontel, D'Alembert, and Turgot; and when the separation between the two ladies at last occurred her friends all adhered to her. Her earliest letters are addressed to a Spanish Marquis, Gonsalvo de More, and the later ones to Count de Guibert, a mediocre poet and essayist. They are infused with passionate devotion and were published by the widow of Guibert in 1800, and appeared in English in Boston in 1903. Consult: Asse, ‘Mlle. de Lespinasse et Mme. du Deffand’ (1877).

Lesquereux, lā-kë-rė, **Leo,** Swiss-American palæontologist: b. Fleurier, Neuchâtel, Switzerland, 18 Nov. 1806; d. Columbus, Ohio, 25 Oct. 1889. He was educated at the Academy of Neuchâtel, at Weimar, and at the University of Berlin; was principal of the College of Chaux-de-Fonds (Switzerland) in 1829–34; made a special study of peat; and was appointed by the Neuchâtel authorities to examine the peat bogs of that canton. In 1844 he received from the Neuchâtel government a gold medal for his treatise, ‘Directions for the Exploration of Peat Bogs.’ In 1848 he came to the United States; was for a short time assistant to Louis Agassiz at Cambridge; and later became assistant to W. S. Sullivant (q.v.), in the study of American bryology, at Columbus, Ohio, where he resided until his death. He made particular investigation of the coal formations of the United States, more especially of the Pennsylvania coal flora, and he became the chief American authority on fossil botany. He published with Sullivant: ‘Musci Americani Exsiccati’ (1856; 2d ed. 1865), and ‘Icones Muscarum’ (1864); and with T. P. James ‘Manual of the Mosses of North America’ (1884). He also contributed (1880–4) three volumes on the coal flora to the Pennsylvania geological survey, which has been considered one of the chief American works on carboniferous plants; and three reports to the volumes published by the Hayden survey. He wrote more than 50 memoirs on scientific subjects. In 1864 he became a member of the National Academy of Sciences, and in 1888 of the Geological Society of London.

Lesseps, lĕs'ĕps (Fr. lė-sĕps), **Ferdinand,** VICOMTE DE, French diplomat: b. Versailles 19 Nov. 1805; d. 7 Dec. 1894. He entered the diplomatic service in 1828, and after being consul at various places was ambassador to Madrid in 1848–9. In 1854 he went to Egypt at the invitation of the viceroy, Said Pasha; there sketched a plan for canalizing the Isthmus of Suez, and in 1856 published a report on the subject. This great work was at last begun in 1859, and was carried to completion under his supervision in 1869. (See SUEZ CANAL.) He also planned the unfortunate Panama Canal (q.v.), and after the company was dissolved in 1889, judicial proceedings were taken against Lesseps and other directors for maladministration of funds and bribery, and he was condemned to imprisonment. He was elected to the Academy of Sciences in 1875, and to the Académie Française in 1884. Among his writings are: ‘Mémoire à l'Académie des Sciences sur le Nile Blanc et le Soudan’; ‘Principaux Faits de l'Histoire d'Abyssinie’; ‘Lettres, Journal et Documents relatifs a l'Histoire du Canal de Suez’ (1875–81), crowned by the Academy; ‘Souvenirs de Quarante Ans’ (1887); and ‘Origines du Canal de Suez’ (1890). Consult biographies by Bertrand and Ferrier (1887) and by Smith (2d ed. 1895).

Les'sing, Gotthold Ephraim, German dramatist and critic: b. Kamenz, Upper Lusatia, Saxony, 22 Jan. 1729; d. Brunswick 15 Feb. 1781. He was a diligent student, who, according to his tutor, was a horse that needed double fodder. He went to Leipsic ostensibly for a theological training; but he gave his chief attention to general literature, and contributed some interesting articles to literary journals. His academic studies having been concluded at Wittenberg, he went to Berlin, where he was active as journalist and critic, and whither he returned (1758) after a two-years' sojourn at Leipsic. In 1760 he became secretary to General von Tauentzien, governor of Breslau; and in that post continued for more than four years. His independence and fine sincerity led him to reject several opportunities of material advancement; as when he refused the chair of eloquence at Königsberg, because the tenure of it involved an annual eulogy of the king. In 1767 he became critic and director of the theatre at Hamburg which an association of wealthy merchants purposed establishing for the promotion of the national drama. The scheme shortly failed, and from 1770 until his death Lessing was librarian to the Duke of Brunswick at Wolfenbüttel, where he was valued only for the prestige he lent the little state. Lessing was the one who reformed German literature and set it on the way of national growth and progress. He became the foremost German writer of his time, and one of the more remarkable writers of all time, through his ‹Minna von Barnhelm› (1767), the first national drama of Germany, and ‹Laokoön› (1766), the best work of German criticism. ‹Minna von Barnhelm› was an artistic presentation of contemporaneous life, and liberated the German drama from the slavish imitation of the French so exclusively preached by Gottsched. In it Lessing wished to rebuke not only the disposition toward aping the French, but also the indifference of the rulers to the soldiers that had won the Seven Years' war; and to eliminate the provincial hate which then so often existed in Germany, especially that between Prussia and Saxony. In ‹Laokoön› Lessing appears as one of the greatest of critics. His eagerness for truth is remarkable; his revelation of hypocrisies and falsehoods, fearless. His chief argument is that for the establishment of a clear distinction between the plastic arts and poetry, the basic difference being determined to be that while art presents objects in space, poetry presents actions in time. Not all its contentions may be admitted; but Herder, who published a criticism in disagreement with many of its points, yet read it through three times in an afternoon and following evening, and praised it in high terms. Macaulay said it made him wonder and despair; and Goethe, who was greatly indebted to its teachings, declared that by it «all previous criticism was thrown away like an outworn coat.» His ‹Nathan der Weise› (1778; in a good English rendering by E. Frothingham 1868) is the most celebrated of his dramas, and indeed perhaps the most generally familiar of all his writings. It was his ultimate answer to the theological controversialists who had begun their attacks with the publication by Lessing of an edition of portions of a manuscript work, obtained by him while in the ducal library, on the origins of Christianity and written by one Samuel Reimarus. To these ‹Wolfenbüttler Fragmente› (1774–8) Pastor Goeze of Hamburg made the chief objection, and to Goeze Lessing gave his most elaborate rejoinders, such as ‹Eine Parabel,› ‹Axiomata,› and ‹Anti-Goeze.› He does not defend Reimarus, but he does defend free inquiry, and opens up the field for later Biblical criticism and the study of the growth of Christian institutions. Lessing having been directed by the Brunswick government to discontinue the controversy, made a poetic statement of his views in ‹Nathan der Weise,› a remarkable plea for religious tolerance, and a declaration that true religion is one of character, not formula. The work has been criticised from the strictly dramatic viewpoint, but as a dramatic poem has been called one of the finest works of the 18th century. Others of Lessing's works are ‹Emilia Galotti› (1772), a skilful tragedy; ‹Briefe die Neueste Litteratur Betreffend› (1758), with Nicolai, which first directed German thought to the study of Shakespeare; ‹Ueber das Wesen der Fabel› (1760); and the ‹Hamburgische Dramaturgie,› dramatic reviews. «Lessing,» said Goethe, «wished to disclaim for himself the title of poet, but his immortal works testify against himself.» His battle against error in all domains had notable effect in Germany, and has not yet failed of an even wider stimulative interest. A collected edition of his works, prepared by various scholars, appeared in 1868–77. Consult the biographies by Sime (1877) and Zimmern (1878) in English, and by Stahr (1859) and Düntzer (1882) in German. See GERMAN LITERATURE.

Lessing, Karl Friedrich, kärl frēd′rĭʜ, German painter, grand-nephew of G. E. Lessing (q.v.): b. Wartenberg, Silesia, 15 Feb. 1808; d. Karlsruhe, Baden, 4 June 1880. He was sent about 1822 to the architectural school of Berlin, to fit himself for an architect. After a severe struggle between duty and inclination, he yielded to his artistic inclinations and by the production of his ‹Churchyard with Gravestones and Ruins› (1825) fixed his profession irrevocably. This picture produced a strong impression, and for a year or two the artist devoted himself to landscape; but coming under the influence of Schadow, established himself in Düsseldorf, and studied historical painting with enthusiasm and success. ‹The Court Yard of the Convent — a Snow Scene,› is perhaps the most striking of all his landscapes. ‹The Tyrant Ezzelin in Captivity refusing the Exhortations of the Monks› (1838), was his first important historical picture in the new style. It was followed by ‹Huss before the Council of Constance› (1842), the ‹Seizure of Pope Pascal II.,› the ‹Martyrdom of Huss› (1850), now in New York, and many others, under the influence of which the school of Düsseldorf divested itself of the strictly Catholic spirit by which it was previously characterized, and adopted a bolder and more dramatic manner, and a greater freedom in the choice of subjects. Lessing, however, is distinguished from his associates by depth of thought, energy of expression, and vivid dramatic conception, at the same time that his pictures exhibit the hardness of outline and defective coloring peculiar to the Düsseldorf school. Consult Jordan, ‹Ausstellung der Werke Karl Friedrich Lessings› (1880).

Lesson. See LECTIONARY.

Les′ter, Charles Edwards, American author: b. Griswold, Conn., 15 July 1815; d. Detroit, Mich., 29 Jan. 1890. He studied law in Mississippi, and was admitted to the bar, but afterward spent two years at the Auburn Theological Seminary, and was duly ordained. The pulpit, however, proved not more congenial to his tastes than the bar, and he employed his time chiefly with the pen. He was appointed United States consul at Genoa, 1842–7, and was afterward prominent as a journalist and political speaker. He published ‹Glory and Shame of England› (1841); ‹Condition and Fate of England› (1842); ‹The Artist, Merchant, and

Statesman› (1846); ‹Life and Voyages of Americus Vespucius› (1846); ‹Artists of America› (1846); ‹My Consulship› (1851); ‹Our First Hundred Years› (1874–5); and translations of Alfieri's ‹Autobiography› (1845); Massimo d'Azeglio's ‹Challenge of Barletta› (1845), and Macchiavelli's ‹Florentine Histories› (1846).

Lester, John Henry, American inventor: b. Montville, Conn., 27 Sept. 1815; d. Brooklyn, N. Y., 10 Jan. 1900. He was one of the earliest sewing-machine makers in the United States, and besides inventing a lock-stitch sewing-machine, he devised a wood-planing machine, and other labor-saving machines. In 1859–60 he established a wood-planing manufactory in Richmond, Va., and when the Civil War broke out was ordered by the Confederate government to alter arms for its army. Lester, being loyal to the North, withdrew from the firm and went to Washington, D. C., where he had an interview with President Lincoln. Nevertheless, his loyalty was suspected and he was sentenced to ten years' imprisonment by a military commission, but was freed after 20 months' confinement.

Lestocq, lĕs-tŏk, **Jean Hermann,** French physician and adventurer: b. Celle, Hanover, 29 April 1692; d. Livonia 12 June 1767. He was the son of a French Protestant surgeon who had left his native country on the revocation of the edict of Nantes, and when 21 went to Russia to seek his fortune. He was first employed by Peter the Great, but on account of his dissolute morals, was exiled to Kasan in 1718. Catharine I., on her accession in 1725, recalled him, and appointed him physician in the household of her second daughter Elizabeth. He soon gained an influence over the mind of this princess, and when the imperial title devolved upon Ivan VI., he persuaded her that the only way of saving her own life was to seize upon the crown. She yielded to his suggestions, made the young czar prisoner, and seated herself on his throne. Lestocq was then appointed privy councillor, which gave him the rank of general, physician in ordinary to her majesty, and president of the medical college. His prosperity lasted but a few years. Charged with treasonable projects, he was arrested, tortured, and exiled to Siberia. Peter III., on his accession, gave orders for his recall, and Catharine II. gave him an estate in Livonia.

Les′todon, a genus of fossil animals of Patagonia, allied to *Mylodon*, and distinguished by the possession of canine teeth. See GROUND-SLOTH.

Lestrange, lĕs-trānj, SIR **Roger,** English journalist and pamphleteer: b. Hunstanton, Norfolk, 17 Dec. 1616; d. London 11 Dec. 1704. He was probably educated at Cambridge. In 1629 he accompanied Charles I. in his expedition against Scotland. In 1644 he formed a plan for surprising Lynn Regis, but was seized and condemned as a spy. He was, however, respited from time to time until he had been in prison four years, when he escaped to the Continent. In 1653 he returned to England, was licenser of the press from the Restoration until the close of the reign of James II., and edited the ‹Public Intelligencer› in 1663, the London ‹Gazette› in 1665, and the ‹Observator› in 1681, the latter existing till 1687. He was author of a great number of coarse and virulent political pamphlets, and translated Josephus, Cicero's ‹Offices,› Seneca's ‹Morals,› Quevedo's ‹Visions,› and other works of ancient and modern writers.

Lesueur, Eustache, ės-tăsh lė-sü-ėr, French painter: b. Paris 19 Nov. 1617; d. there 30 April 1655. He was taught drawing by his father, a sculptor, and was afterward placed at the school of Vouet, where the Italian masters became his models. His masterpiece is the series of paintings executed for the Carthusian monastery in Paris in 1645–8. These pictures are now in the Louvre, and in twenty-two panels depict the principal scenes in the life of St. Bruno. In 1650 he painted for the corporation of goldsmiths the ‹Preaching of the Apostle Paul at Ephesus,› which was presented to the chapter of Notre-Dame, but has been now removed to the Louvre. He did much in decorating the old parish churches of Paris and among his later productions are some mythological scenes in the Hotel Lambert. His works are distinguished by purity of line, careful execution and are conceived in a mood of profound feeling.

Le Sueur, Jean François, zhŏṅ frăṅ-swä, French composer: b. Drucat-Plessiel, near Abbeville, 15 Jan. 1760; d. Paris 6 Oct. 1837. At six he was placed at the musical school of the cathedral of Amiens, and after completing his studies was made director of music in the cathedrals at Séez, Dijon, etc., and in 1784 in the Church of the Innocents, Paris. In 1786 he became master in the Church of Notre Dame. He was afterward induced to compose for the theatre, ‹Telemachus,› his first opera, being given with great success in the Théâtre Feydeau. From 1788 he devoted his time altogether to theatrical music. His opera ‹La Caverne› was produced in 1793; ‹Paul et Virginie› in 1794; ‹Télémaque› in 1796; ‹Les bardes› in 1804; and ‹La Mort d'Adam› in 1809. He was made professor of music in the National Institute. In 1813 he became a member of the fourth class of the Institute; in 1814 composer to the king; and in 1817 professor of composition to the Conservatoire. His sacred music consists of 33 masses, and of oratorios and motets. He also wrote several works on musical subjects.

Letcher, John, American politician: b. Lexington, Va., 29 March 1813; d. there 26 Jan. 1884. He entered the practice of law in 1839, in 1850 was a member of the State constitutional convention of Virginia, and was a member of Congress in the immediate ante-bellum days. In 1859 he was elected to the governorship of Virginia. Though opposed to secession, he yielded to public opinion, and delivered the State troops and munitions to the uses of the Confederacy.

Letch′worth, William Pryor, American writer and philanthropist: b. Brownville, N. Y., 26 May 1823. From 1848 to 1869 he was a manufacturer and merchant in Buffalo, and retired from business to devote himself to benevolent work. In 1873 he became a member of the State Board of Charities, was its vice-president and for ten years its president, resigning from the board in 1896. In 1883 he was president of the National Conference of Charities, and in 1900 president of the first New York State Conference of Charities and Correction. In 1893 the University of New York conferred on him the degree of LL.D. «for distinguished services to the State.» He secured the passage of the New York law for removal of children from almshouses, etc., and has done much for the insane and for other unfortunate classes. He has published: 'The Insane in Foreign Countries' (1889); 'Care and Treatment of Epileptics' (1900); and papers on social science.

Lethargy, lĕth'ạr-jĭ, an unnatural tendency to sleep, closely connected with languor and debility, and much resembling apoplexy in character. When awakened the person answers, but, ignorant or forgetful of what he said, immediately sinks into the same state of sleep. It may arise from a plethoric habit, from deficient circulation in the brain, or from nervous exhaustion of that organ. A poisoned state of the blood, or a suppression of urine, may induce the lethargic state.

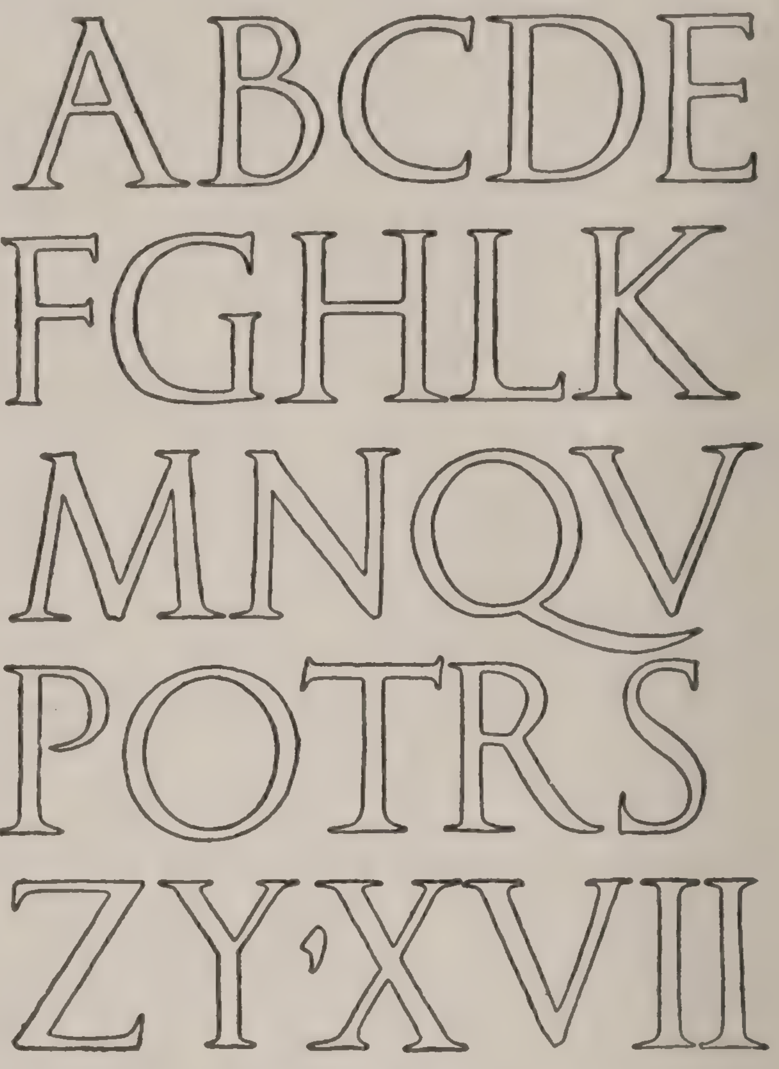
Lethbridge, Canada, a railway and mining town of Alberta, Northwest Territories; on the Belly River and on a branch of the Canadian Pacific railway, 100 miles west of Medicine Hat, 100 miles southeast of Calgary; the northern terminus of the Great Falls & Canada railway, running southward across the international boundary into the United States. It is in a picturesque region formerly given over to ranching, but now as the centre of a vast irrigation system rapidly developing dairying and mixed farming. A good quality of lignite coal is mined here, the seams easily workable estimated to contain more than 350,000,000 tons. The mines give employment to several hundred men, and supply the larger portion of southern Alberta and Assiniboia. It has good schools, churches, banks, and weekly newspapers. Pop. (1901) 2,279; (1904 est.) 2,500.

Lethe, lē'thē (Greek, *Lēthē,* forgetfulness), the mythological River of Oblivion in the lower regions. The water had the power of making those who drank it forget their former existence. Souls before passing into the Elysian fields drank that they might have no recollection of their earthly sorrows; those who were destined to return to the upper world in new bodies, that they might forget the pleasures enjoyed in Elysium.

Letter of Credit. See CREDIT, LETTER OF.

Letter of Marque. See MARQUE, LETTER OF.

Lettering, the art of designing the letters of the alphabet for various commercial, mechanical, and artistic purposes, largely used in architectural work, sign painting, advertisement designing, engraving, printing and book plate and book-cover making. It may be said that practically all the lettering now used in architectural offices in this country is derived from the old Roman capitals as developed and defined during the period of the Italian Renaissance. Composition in lettering is almost too intangible to define by any rule. All the suggestions that may be given are of necessity laid out on merely mathematical formulæ, and as such are incapable of equaling the result that may be obtained by spacing and producing the effect solely from artistic experience and intuition. The final result should always be judged by its effect upon the eye, which must be trained until it is susceptible to the slightest deviation from the perfect whole. It is more difficult to define what good composition is in lettering than in painting or any other of the more generally accepted arts. The eye must be trained by constant study of good and pleasing forms and proportions, until it appreciates instinctively almost intangible mistakes in spacing and arrangement. This point of «composition» is so important that a legend of most beautiful individual letter forms, badly placed, will not produce as pleasing an effect as an arrangement of more awkward letters when their composition is good.



Classic Roman Alphabet. From Marble Inscriptions in the Roman Forum.

Let'tern. See LECTERN.

Letters, papers of correspondence between friends. The first letters of any importance which belong to literature are those of Cicero, in which are described not only his relations with the literary men of his age, his domestic sentiments and the memoranda of his own doings, but also the great political movements of his day. These letters are the most valuable documents extant in relation to the civil war, by which Roman republicanism was abolished and Roman imperialism inaugurated. Nothing can over-estimate their value unless we come to consider the letters of Pliny. The letters of Pliny illustrate the age of Trajan and are principally remarkable as introducing us to the growing power of Christianity in the Roman empire. At the same time they give us the most complete description of the Roman house that is found in Latin literature. The description of the mansion, grounds and garden of the wealthy Romans which this writer gives us is unexampled elsewhere. Passing from the letters of the ancient Romans we come to those of a later age, and we have the letters of Basil, Jerome, and other Christian fathers. Among important relics of literature must be reckoned the letters of those who belong to the great period of the Renaissance. Memorable also are the letters of Erasmus, full of wit and humor, for in them the religiousness of the divine is blended with the genial epigram of the man of letters. The correspondence of great men is always one of those sources of historic information whose importance cannot be overestimated. In looking over the whole field of European literature we find no more illuminating or refreshing fountain of information than in the letters of great men and women. Among these may be mentioned the letters of Madame de Sevigny, the letters of Lord Chesterfield, of Pope, Cowper, those of Gray, Shelley, Keats and Byron, and in our own time those of Fitzgerald. It has been said that the art of letter writing is a lost art, but so long as we have such beautiful and suggestive examples of epistolary correspondence as are contained in the writings of Robert Louis Stevenson and Fitzgerald it is absurd to say that the art of letter writing is one of the forgotten arts.

Letters of Junius. See JUNIUS.

Letters Patent. See PATENTS.

Letters, Proportionate Use of. Among printers experience has taught the frequency of use of letters, so that the following tables have been compiled:

A	728	N	670
B	120	O	672
C	280	P	168
D	392	Q	50
E	1000	R	528
F	236	S	680
G	168	T	770
H	540	U	296
I	704	V	158
J	55	W	190
K	88	X	46
L	360	Y	184
M	272	Z	22

The following table shows the frequency of use of initial letters:

A	574	N	153
B	463	O	206
C	937	P	804
D	505	Q	58
E	340	R	291
F	388	S	1194
G	266	T	571
H	308	U	228
I	377	V	172
J	69	W	282
K	47	X	4
L	298	Y	23
M	430	Z	18

Lettres de Cachet, lĕt-r-dė-kä-shā, in France, a name given to the warrants of imprisonment issued by the kings before the Revolution. All royal letters (*lettres royaux*) were either *lettres patentes* or *lettres de cachet.* The former were open, signed by the king, and countersigned by a minister, and had the great seal of state appended. Of this kind were all ordinances, grants of privilege, etc. But these checks on arbitrary power did not exist with regard to *lettres de cachet,* also called *lettres closes,* or sealed letters, which were folded up and sealed with the king's little seal (*cachet*), and by which the royal pleasure was made known to individuals or to corporations and the administration of justice was often interfered with. It was not always for political reasons that *lettres de cachet* were obtained; sometimes private persons got troublesome members of their families brought to reason in this way. The lieutenant-general of the police kept forms of *lettres de cachet* ready, in which it was only necessary to insert the name of the individual to be arrested.

Letts, lĕts, a Slavonic people closely akin to the Lithuanians, inhabiting a portion of Russia. Their language, along with the Lithuanian and Old Prussian (extinct), forms the Lettic or Lithuanian branch of the Indo-European family of tongues. The Letts number about 1,000,000.

Lettuce, lĕt′ĭs, a genus (*Lactuca*) of hardy annual and perennial herbs of the order Compositæ. Less than ten of the one hundred recognized species, which are distributed mainly in the northern hemisphere, are in cultivation, and some botanists consider these to be merely forms of three or perhaps two species. They are characterized by opposite leaves of various forms, and white, yellow or blue flowers in heads which are arranged in small panicles. The only species used in America, the common garden lettuce (*L. sativa*) is an annual whose natural prototype is unknown, but is supposed to be *L. scariola,* an Asiatic species.

Lettuce is one of the oldest food-plants, having been used, it is said, by Persian royalty more than 2,000 years ago. To-day it is unquestionably the most widely used of all our salads, and has developed an innumerable host of varieties of great diversity of form. They are somewhat roughly divided into two general groups: heading, in which the leaves form a cabbage-like head; and cutting, in which the leaves are more loosely arranged. In each of these groups are forcing and out-door varieties. A third group, the cos or romaine varieties, which may be considered a subdivision of the cabbage group, consists of long, narrow-headed kinds, whose outer leaves must be tied above the head to properly blanch the inner ones. They are specially valued as summer lettuces, because of their ability to produce leaves of good flavor in spite of considerable heat.

Lettuce succeeds best in cool weather. It requires a rich open soil and clean cultivation; plenty of sunlight in the cool seasons and partial shade in the warm. The seed may be sowed in a hotbed where the plants may be either allowed to develop, or from which they may be transplanted to the garden, eight to twelve inches being allowed between them. Immense quantities of lettuce are forced in greenhouses during the winter, and from the trucking regions of the South, where the plants are grown with only sun heat in canvas-covered beds, the markets are supplied during the winter with thousands of carloads.

When grown under glass lettuce is sometimes attacked by so-called plant diseases — leaf-spot, rust, mildew, and drop or rot. These may be very largely if not wholly controlled by good management, especially with respect to ventilation, the temperature being kept lower than that which is favorable to the growth of the fungi. Sterilizing the soil with live steam at a temperature of about 200° F. for an hour or more is practised and believed by many large growers to destroy the spores. The operation is performed a day or so before planting.

Leucadia, lĕf-kä-dē′ä, or **Leukas.** See SANTA MAURA and CAPE DUCATO.

Leucæmia, a disease of unknown origin, characterized by certain changes in the blood, with enlargement of the spleen and lymphatic glands. The disease may come on rapidly, with anæmia and loss of flesh and strength; usually the onset is insidious, the deterioration of the general health or the swelling of the spleen or glands being first noticed. The changes in the blood consist in a decrease of the number of the red cells, diminution of the amount of hæmaglobin in each cell, and great increase in the number of the leucocytes or lymphocytes. The most common form is that showing enlargement of the spleen and glands and peculiar changes in the bone-marrow; next in frequency is the form in which only the spleen and marrow are changed; and the form in which the glands alone are changed (the lymphatic) is considerably less common. Besides the increase in the number of the leucocytes, a form of the cell only found in the bone-marrow appears in the blood. The symptoms are due to the loss of nutrition of the tissues, to the anæmia, to the pressure of the enlarged spleen on the vital structures in the abdomen, and to the pressure of the enlarged glands. The glands most commonly enlarged are the chains along the neck, those in the axilla, the abdominal glands, the glands of the groin, and those of the thorax. They may be barely large enough to be felt or may form bunches in these parts that are plainly visible. Hemorrhages into the skin, eye, or internal organs may occur. The disease progresses for months or years with intervals of considerable improvement. No treatment can cure the disease, but benefit may be obtained from arsenic in large doses.

Leucin (Greek, «white»), a white substance, resembling cholesterin, first discovered by Proust in putrefying cheese, and afterward shown by Braconnot to be formed (together with other products) by the action of sulphuric acid upon animal matters. It is best prepared by the prolonged boiling of horn shavings in sulphuric acid, neutralizing with lime, precipitating excess of lime with oxalic acid, and then evaporating to crystallization. Leucin and tyrosin are thrown down together, but they may be separated by re-dissolving in water, and recrystallizing, the tyrosin then coming down first. Leucin has the chemical formula $C_6H_{11}O_2.NH_2$, and is known to the chemist as «amidohexoic acid.» (See AMIDE and HEXOIC ACID.) It may be sublimed, but if it be heated to 338° F. it melts, becoming simultaneously converted into amylamine, carbon dioxid, and ammonia. It is insoluble in ether, but soluble to some extent both in water and in alcohol. Leucin is said to occur in healthy calf's liver, and in certain other healthy tissues, such as the brain of the ox. It ocurs also in certain of the products eliminated by the human skin, but its presence in the urine or in any of the internal organs of man is regarded as indicative of a serious pathological condition. Thus leucin is found in the liver in phosphorus poisoning and in acute yellow atrophy, and also in typhus fever and smallpox. In the healthy body leucin and tyrosin are probably converted into urea, and eliminated as such.

Leucippus, lū-sĭp'ŭs, Greek philosopher, flourished between the 4th and 5th centuries B.C. To him is attributed the first idea of the atomic system afterward perfected by his disciple Democritus. Kepler and Descartes were much indebted to the doctrines of these masters for the explanation of the planetary vortices.

Leucite, a native silicate of aluminum and potassium, having the formula $KAl(SiO_3)_2$, and crystallizing in forms that are isometric at 900° F., but pseudo-isometric at ordinary temperatures. Its anomalous double refraction has been the subject of much study and discussion. The mineral is white or gray in color, and has a hardness of from 5.5 to 6, and a specific gravity of 2.50. It occurs more particularly in recent volcanic rocks, and Vesuvius is the best known locality for it. It is also found in considerable quantity in the Green River basin, Wyoming. Leucite may be converted into the mineral analcite by the action of a soda solution, and the inverse transformation of analcite into leucite is also possible.

Leu'cocytes. See BLOOD.

Leucomaine. See METABOLISM.

Leuthen, loi'tĕn, or **Lissa,** Prussia, a village nine miles west of Breslau, which gives its name to the battle gained here by Frederick the Great, 5 Dec. 1757, over Prince Charles of Lorraine. The Austrians numbered about 90,000, and the Prussians 34,000. The Austrians lost 10,000 in killed and wounded, 12,000 were taken prisoners, besides considerable war munitions, and Silesia was regained. See SEVEN YEARS' WAR.

Leutze, loit'sĕ, **Emanuel,** American artist: b. Gmünd, Würtemberg, 24 May 1816; d. Washington, D. C., 18 July 1868. He was brought to the United States in infancy and early displayed a talent for portrait painting. He studied at Düsseldorf under Lessing and lived abroad for many years after 1841. Among his works, which are largely historical, are: ‹Columbus before the Council of Salamanca›; ‹Columbus in Chains›; ‹Columbus before the Queen›; ‹Landing of the Norsemen in America›; ‹Washington Crossing the Delaware,› perhaps his best known work; ‹Washington at Princeton›; ‹Lafayette in Prison at Olmütz Visited by his Relatives.› In 1860 he was employed by the United States government to make a large mural painting entitled ‹Westward the Star of Empire takes its Way› on one of the staircases in the National Capitol.

Levant, lẹ-vănt' («sunrise,» «orient»), in geology, a term applied by Henry Rogers to the fourth series of the Appalachian Palæozoic strata, called in New York the Medina group, and of equivalent age to the May Hill Sandstone or Upper Llandovery of England. The name is given to signify metaphorically the sunrise period of the Palæozoic day. Its maximum thickness is above 2,000 feet, and most mountains of the Appalachian series are outcroppings of the Levant. There are few organic remains, chiefly marine shells and fucoids.

Geographically the word is a name applied to designate the coast of the Mediterranean immediately east of Italy, including the islands of the Ægean, Egypt, Asia Minor, and Syria.

Levasseur, Pierre Emile, pē-ãr ā-mēl lė-vä-sėr, French political economist and geographer: b. Paris 8 Dec. 1828. He was educated at the Collège Bourbon and the Ecole Normale, and after holding several important educational posts became in 1876 professor of geography at the Ecole Libre des Sciences in Paris. He has been especially prominent in regard to geographical study in French school and in addition to a series of geographies is author of

‘Public Moneys among the Romans’ (1854); ‘The Gold Question’ (1858); ‘The Laboring Classes of France from Cæsar’s Time to the Revolution’ (1859); the same continued to 1867 (2 vols.); ‘The French Population’ (1889–91), an important work; ‘France and her Colonies.’

Levee, lĕ-vē′ or lĕv′ē (from the French word *lever,* to rise, and the time of rising). (1) In social usage, levee is a word used in high life or court language for the ceremonial visits which great personages receive in the morning, as it were at their rising. The levee is distinguished from the drawing-room, inasmuch as at the levee of a gentleman, gentlemen only appear, and at the levee of a lady, only ladies, while at the drawing-room, ladies and gentlemen both are admitted. The meaning is now more extended, and the term is applied chiefly to the stated occasions on which the king or queen of Great Britain publicly receives those subjects whom their rank entitles to the honor. On the first presentation of daughters of dukes, marquises, and earls, it is customary for the queen to kiss them on the cheek. The term is not used in the United States. (2) In hydraulic engineering, an embankment raised on the margin of a river to prevent inundation. That part of Louisiana which lies on the lower Mississippi was subject in a state of nature to the annual overflow of the river, by which immense damage was done to the land. To guard against these inundations, levees of earth have been thrown up for hundreds of miles along the river banks, to a height sometimes of 15 feet, with a breadth of 30 feet at the base. In front of New Orleans the levee is very broad, and serves as a wharf, steamboats and other vessels being moored to it. Breaches sometimes occur in the levees, when the water rushes through and does great mischief; these breaches are called crevasses. See Mississippi Levee System.

Level. (1) In mining, a horizontal gallery or passage. The workings at different depths are said to be at the different levels — the 50 or 60 fathoms level, and so on. A level which opens to the surface at the side of a valley is called a day level, and forms a means of natural drainage without pumping. A drowned or blind level is a drainage gallery which has the form of an inverted siphon. A dip-head level is the one which proceeds from the foot of the engine-shaft right and left, and from which the rooms diverge. (2) In surveying and engineering, an instrument for indicating a horizontal line or determining the position as to horizontality of an object or surface to which it is applied, and then determining the true level, or the difference of rise or fall between two or more places. There are numerous levels, varying in form, size, arrangement, or construction, according to the purpose for which each is intended; as, for instance, the carpenter’s, mason’s, gunner’s, or surveyor’s levels, the mercurial, water, and spirit levels, etc. All may be divided into three classes: (a) The simplest, such as the mason’s or carpenter’s level, in which the vertical line is determined by a plumb line, and the horizontal by a line perpendicular to it. (b) Those in which the horizontal line is determined by the surface of a fluid at rest; as in the water and mercurial levels. (c) Those in which the horizontal line is determined by a bubble of air floating in a fluid contained in a glass tube; as a spirit level.

Lev′elers, the name of an ultra-reform party in Great Britain, which arose in the army of the Long Parliament about the year 1647, and was put down by Fairfax. They aimed at the establishment of an equality in titles and estates throughout the kingdom.

Lev′eling. See Surveying.

Leven, Loch, lŏн lē′vn or lĕv′n, Scotland, a lake in the county of Kinross, of oval shape, four miles long, two miles broad; greatest depth, 90 feet. It contains several islands, on one of which are the remains of the historic castle of Loch Leven, in which Mary Queen of Scots was confined after her separation from Bothwell and where she escaped shortly before the battle of Langside. The trout fishing of the lake is famous.

Lever, lē′vėr, **Charles James,** Irish novelist: b. Dublin 31 Aug. 1806; d. Trieste, Austria, 1 June 1872. He was educated at Trinity College, Dublin, and after studying medicine, partly at Göttingen, he obtained the degree of Bachelor of Medicine from Trinity College in 1831. During the prevalence of cholera in 1832 he gained considerable reputation for his skill and devotion in the treatment of that disease. In March 1834 he contributed his first paper to the new ‘Dublin University Magazine,’ of which he was editor 1842–5. The first chapter of ‘Harry Lorrequer,’ a designation which he afterward made famous as his nom de plume, appeared in the February number for 1837. He removed to Florence in 1847, where he held a diplomatic position, was English consul at Spezzia in 1858 and at Trieste 1867–72. He published: ‘Harry Lorrequer’ (1837); ‘Charles O’Malley’ (1840); ‘Tom Burke of Ours’ (1844); ‘Jack Hinton’; ‘Arthur O’Leary’ (1844); ‘Roland Cashel’ (1850); ‘The Bramleights of Bishops Folly’ (1868); ‘Lord Kilgobbin’ (1872); etc. The rollicking character of the earlier of these was intensely national, and his later novels were more thoughtful and artistic.

Lever, lĕv′ėr or lē′vėr, one of the mechanical powers, a rod or beam of wood or metal by means of which a small force is enabled to balance or overcome a large one. The lever is supported at some point called the *fulcrum,* and it is movable about this point; the resistance to be overcome (called the *weight*), and the force which overcomes it (called the *power*), are applied at other parts of the lever. In order that the power and weight may balance each other, and so produce equilibrium, two conditions must be satisfied. In the first place, they must tend to rotate the lever round the fulcrum in opposite directions, that is, their moments or rotatory effects round the fulcrum must be of opposite sign; and secondly, the product of the number of units of force in the power into the number of units of length in the perpendicular from the fulcrum on its line of action must be equal to the corresponding product for the weight, or, in other words, the moments of the power and the weight about the fulcrum must be of equal magnitude. In the case of a straight lever with parallel forces, to which all other cases of the straight lever may be readily reduced, the equality of the moments may be tested by substituting the distance from the fulcrum along the lever to the point of application of the forces for the perpendicular distance above referred to. Levers are usually divided into three classes. The first includes those in which the fulcrum is between the power and the weight, the second those in which the weight is between the power and the fulcrum, and the third those in which the power is between the weight and the fulcrum.

Leverett, lĕv'ėr-ĕt, **Frank,** American geologist: b. Denmark, Iowa, 10 March 1859. He was educated at Denmark Academy and the Iowa Agricultural College. In 1886 he entered the United States Geological Survey; was assistant geologist 1890–1900; and since 1901 has been geologist. His special lines of investigation are glacial geology and water resources. He is a member of many scientific societies, and has published: ‘Water Resources of Illinois’ (1896); ‘Water Resources of Indiana and Ohio’ (1897); ‘The Illinois Glacial Lobe’ (1899); ‘Glacial Deposits of the Erie and Ohio Basins’ (1901); and various reports.

Leverett, Sir **John,** American colonial governor: b. England 1616; d. Boston, Mass., 16 March 1679. At 17 he emigrated to America with his father, and settled in Boston. He returned to England in 1644 to take part in the struggle between the parliament and the king, and as commander of a company of foot soldiers gained military distinction and the friendship of Cromwell. He subsequently resided some years at the court of the Protector, as agent of Massachusetts. On his return to America he held successively some of the most important civil and military offices in the gift of the colony, and finally in 1673 was elected governor. His administration is important in colonial history as the era of the war with King Philip, which his skill and energy were instrumental in conducting to a fortunate issue. Two years previous to his death he was knighted by Charles II. in acknowledgment of his services to the New England colonies during this contest.

Leverett, John, grandson of Sir John Leverett (q.v.): b. Boston 25 Aug. 1662; d. Cambridge 3 May 1724. He was an eminent lawyer and judge, speaker of the colonial legislature, and president of Harvard College from January 1707 until his death. He was a man of unusual attainments, and received the honor, then rarely bestowed upon colonial subjects, of membership in the Royal Society.

Leverrier, Urban Jean Joseph, ür-bäṅ zhŏṅ zhō-zĕf lė-vā-rē-ā, French astronomer: b. Saint-Lô 11 March 1811; d. Paris 23 Sept. 1877. He was educated at the Collège Louis Le Grand and the Ecole Polytechnique, and devoting himself to astronomy, made observations which procured him admission to the Academy of Sciences in 1846. About this time he began investigating the perturbations of Uranus. He made calculations with the view of determining the mass and orbital elements of an unknown planet supposed to cause the disturbances, and was able to assign approximately the region where it might be looked for. John Couch Adams (q.v.), then a student at Cambridge, had been making investigations in the same track, and the honor of discovering Neptune (q.v.) is regarded as belonging equally to both. In 1854 Leverrier succeeded Arago as director of the Observatory of Paris, in which post, except an interval from 1870 to 1873, he remained until the end of his life.

Levi, lē'vī, one of the twelve patriarchs, a son of Jacob and Leah. The prince of the Shechemites having wronged his sister Dinah, he, with his brother Simeon, attacked their city and murdered all the males. Jacob reproaches them on his death-bed for this act of cruelty and foretells the dispersion of their descendants: «I will divide them in Jacob, and scatter them in Israel» (Gen. xlix. 7). Three sons went down with Levi to Egypt — Gershon, Kohath, and Merari (Gen. xlvi. 2). Moses and Aaron were of this tribe. See Levites.

Levi'athan (Hebrew) is compounded of two words meaning a *great fish* and *fastened;* hence it probably means a huge fish covered with close scales. The Septuagint renders it *drakōn* (a dragon), and *kētos* (a whale). From the description of it given in the book of Job (xli.) it is usually, and probably correctly, considered to mean the crocodile, though in some places it has been interpreted the whale. See Tristram's ‘Natural History of the Bible.’

Leviathan, The, a treatise on psychology, ethics and politics, by Thomas Hobbes, published in English in 1651, and in Latin in 1668.

Lev'in, Lewis Charles, American politician: b. Charleston, S. C., 10 Nov. 1808; d. Philadelphia 14 March 1860. Removing to Woodville, Miss., he became a school teacher and subsequently followed the practice of law in various States, settling permanently in Philadelphia in 1838. The temperance cause attracted him and he edited a temperance organ. Becoming known as speaker and writer, he formed the Native-American Party in 1843 and published *The Sun,* a daily paper, in its interests. As a representative of the party he was sent to Congress and served three terms (1845–51).

Lev'irate Marriage, among the Jews, the custom of a man's marrying the widow of a brother who died without issue. The same custom or law prevails in some parts of India.

Lévis, François Gaston, frän-swä gäs-tôṅ lā-vē, Duc de, French soldier in America: b. Château d'Anjac, Languedoc, 23 Aug. 1720; d. Languedoc 1787. He served in the French army in various campaigns, and in 1756 was ordered to Canada, where he became second in command to General Montcalm. For his services at the defense of Carillon in 1758 he was promoted major-general; and at Montmorenci in 1759 he repulsed the English under Wolfe. After Montcalm's death on the Plains of Abraham, Lévis took command of the French army, and during the winter of 1759–60 he maintained a vigorous struggle against great odds. He was victor at Sainte Foye in 1760, and might have gained Quebec if the French vessels had arrived at the opening of navigation in that spring. Lévis returned to France, where he continued in the service; he was made a marshal in 1783.

Levis, lā'vē or lĕv'ĭs, **Levis Town** or **Port Levi,** lē'vī, Canada, the chief town of Levis County, Quebec; on the Saint Lawrence River, opposite Quebec city, with which it has ferry communication. It is an important port with government docks; is the landing place for transatlantic travelers; and has a large export trade. Most of the square timber brought down the Saint Lawrence in rafts is here loaded into sailing ships for Europe. It is on the Intercolonial railway, and a terminus of the Quebec Central and of branches of the Grand Trunk railways. It is fortified, has a convent, a board of trade, factories, stores, and lumber-mills. Pop. 7,783.

Levites, lē'vīts, those of the tribe of Levi who were not priests. They were the ministers specially singled out for the service of the sanctuary, and, with the priests, formed the sacerdotal tribe. After the idolatry of the golden calf the Levites were the first to rally round Moses, and then the idea of a special consecration of «an Israel within an Israel» developed itself, and the Levites thenceforth occupied a distinct position. They became guardians of the tabernacle, and no others approached it under penalty of death. From the first the Kohathites, as nearest of kin to the priests, had the highest offices assigned them. They bore the vessels of the sanctuary and the ark itself. A permanent arrangement was made for their maintenance. They were to receive the tithes of the produce of the land, and in their turn to offer a tithe to the priests. When the tabernacle should have a permanent place, the whole tribe was to be assigned 48 cities, 6 of which were to be cities of refuge. The Levites were moreover to preserve, transcribe, and interpret the law, and to read it every seventh year at the Feast of Tabernacles. They were not included in the general census of the people, but in a separate census (I. Chron. xxiii. 3); their number is given at 38,000. Their position was much changed by the revolt of the ten tribes, and after the captivity, in the movement under Ezra, not more than 38 could be brought together. The purity of their blood was stringently guarded both by Ezra and Nehemiah. After the destruction of the temple in the dispersion, they disappeared from history, being merged in the crowd of captives scattered over the Roman world.

Levit'icus, the third book of the Pentateuch, or five books of Moses. By the later Jews it was called the ‹Law of the Priests,› and sometimes the ‹Law of Offerings.› It consists of seven sections, but it may be generally described as containing the laws and ordinances relating to Levites, priests and sacrifices. The regulations respecting the sacrifices are classed in three groups, each consisting of 10 directions. After this section comes a historical section, giving particulars of the consecration of Aaron and his sons, his offering for himself and the people, and the episode of Nadab and Abihu. Then follow laws concerning purity and impurity; laws relating to the position of Israel as markedly distinct from the nations around; a section of laws concerning the priests, holidays, festivals, etc.; a section of promises and threats; and a final section or appendix on vows. Some critics regard Leviticus as forming part of the Priestly Code, and assert that it was post-exilic and belongs to the latest portions of the Pentateuch.

Lev'ulose, a sugar isomeric with dextrose (q.v.) and always occurring with it in honey, in many fruits, and in other sacchariferous vegetable organs, but distinguished by turning the plane of polarization to the left. See also SUGAR.

Lévy, Emile, ā-mēl lā-vē, French painter: b. Paris 20 Aug. 1826; d. Paris 4 April 1900. He studied at the Ecole des Beaux Arts and was also a pupil of Picot and De Pujol; he won the Grand Prix de Rome in 1854. In 1878 he was awarded a first class medal for a picture he exhibited in the Salon. He had received the cross of the Legion of Honor in 1868, and was much valued as a portrait painter. He was also successful in pastel. Among his works are: ‹The Death of Orpheus› (1866), now in the Luxembourg; ‹Supper of the Martyrs› (1859); ‹The Elements› in the Louvre; ‹Presentation of the Virgin› in the Church de la Trinité, etc.

Levy, lē'vĭ, **Louis Edward,** American photo-chemist and inventor: b. at Stenowitz, Bohemia, 12 Oct. 1846. Coming to the United States in boyhood he received his early education at the Detroit public schools. He gave special attention to mathematics and astronomy at the University of Michigan (1866) and to practical optics in Detroit (1861–70). He was connected with the U. S. Lake Survey (1866), made researches in microscopic photography (1867–70) and invented a process in photo-chemical engraving (1875) called the «Levytype.» He received (1896) with his brother Max, a medal for invention of «Levy line screen,» and (1900) a gold medal for Levy «acid blast,» both from Franklin Institute, Philadelphia, and a medal and diploma from the World's Columbian Exposition (1893) for original discoveries. He has published and edited in Philadelphia *The Evening Herald* (1887–90); ‹The Mercury› (1887–91); and has edited ‹The Jewish Year› (1895); ‹Tha Russian Jewish Refugees in America› (1895); ‹Business, Money, and Credit› (1896). He was elected vice-president of Inventors' Association at Paris in September 1900.

Levy, Uriah Phillips, American naval officer: b. Philadelphia 22 April 1792; d. New York 22 March 1862. Sailing as a cabin boy before his 11th year, he was apprenticed as a sailor in 1804, and before he was 20 had passed through every grade and become master. On 23 Oct. 1812, he was commissioned sailing-master in the navy, serving until June 1813 on the ship Alert and then on the brig Argus. He was placed in command of one of the prizes which the Argus secured, but it was subsequently recaptured and he, with his crew, was imprisoned in England for 16 months. In March 1817, he was appointed lieutenant. Personal antagonism, in which religious prejudice played an important part, subjected him to nearly forty years' struggle, in the course of which he fought a duel, killed his opponent, was court-martialed six times, and finally dropped from the list as captain. He was finally restored to that rank in 1855, and later became commodore.

Levy, lev'ĭ, (1) a term used in Europe for the compulsory raising of a body of troops from any specified class in the community for purposes of general defense or offense when the existing military forces are insufficient to meet the necessities of the case. When a country is in danger of instant invasion a *levée en masse* is sometimes made — that is, every man capable of bearing arms is required to contribute in person toward the common defense. On less urgent occasions the levy may be restricted to a class, as to men between 18 and 40 years of age. (2) In law, the seizure of property under a writ or other process; usually the taking by a sheriff or marshal of the property of a judgment debtor under an execution. See also ATTACHMENT; EXECUTION.

Lewes, lū'ěs, **George Henry,** English philosophical writer: b. London 18 April 1817; d. there 30 Nov. 1878. He was in turn clerk, medical student, and student of philosophy in Germany, whence he returned to England in 1840 to devote himself to general literature. His first important work was his ‘Biographical History of Philosophy from Thales to Comte’ (1845), of which a second edition appeared, much extended and altered. This work, written largely from a Positivist point of view, sufficiently proved his ability as a thinker and writer. He was literary editor of the ‘Leader’ 1849–54, during that time publishing his ‘Life of Robespierre’ (1850) and a compendium of Comte's ‘Philosophy of the Sciences’ (1853). His ‘Life of Goethe’ (1855) won him a European reputation. From 1854 he was largely engaged in physiological investigations with special reference to philosophical problems. To this period belong his ‘Seaside Studies’ (1858), ‘Physiology of Common Life’ (1860), and ‘Studies in Animal Life’ (1862), besides papers on the spinal cord, and on the nervous system, contributed to the British Association. ‘Aristotle, a Chapter from the History of Science’ (1864), was his last book before he founded the ‘Fortnightly Review’ (1865), from which, a year later, ill health compelled him to retire. His chief work, aiming at the systematic development of his philosophical views, is ‘Problems of Life and Mind’ (1873–7). Besides the works already mentioned he wrote ‘The Spanish Drama: Lope de Vega and Calderon’ (1846); two novels, ‘Ranthorpe’ (1847) and ‘Rose, Blanche, and Violet’ (1848); and prepared various plays for the stage under the pseudonym of «Slingsby Laurence.» Few writers have done as uniformly good work in so many fields and over so wide an area. The personal and literary association of Lewes and Mary Ann Evans (see ELIOT, GEORGE), who, for some years, continuing till the death of Lewes, lived together, is believed to have had a strong reciprocal influence on their lives and writings.

Lewes, lū'ĭs, Del., town, in Sussex County; on Delaware Bay and on the Philadelphia, W. & B. railroad; about 40 miles southeast of Dover. The excellent harbor has been improved by an artificial breakwater. It is the shipping point for much of the farm and garden products of the southern part of Delaware. Large quantities of fruit and vegetables are among the products shipped to northern markets. Lewes is the headquarters of the Delaware Bay pilots. Pop. (1900) 2,259.

Lewis, lū'ĭs, **Agnes Smith,** English scholar and palæographist. She was educated at the Irvine Academy, Ayrshire, in her childhood, and subsequently received her tuition from university men of learning. She was married to Rev. S. S. Lewis. Her remarkable services to palæographical science have been recognized by the bestowal upon her of honorary degrees from Halle, Wittenberg, and St. Andrews. In company with her sister, Mrs. Margaret Dunlap Gibson, she visited Sinai four times, and in 1892 discovered and photographed the Syro-Antiochene, or Sinaitic Palimpsest, the most ancient one of the four Gospels known. She has written also: ‘Introduction to the Four Gospels from the Sinaitic Palimpsest’; ‘Some Pages of the Sinaitic Palimpsest Retranscribed’; ‘A Translation of the Syriac Gospels’; ‘The Palestinian Syriac Lectionary of the Gospels’; and other learned works on Scripture antiquities.

Lewis, Alfred Henry, American journalist and author. He was formerly Washington correspondent of the Chicago *Times* (*nom de plume* «Dan Quinn,» and later had charge of the Washington bureau of the New York *Journal.* In 1898 he established in New York ‘The Verdict,’ a humorous weekly. He has written: ‘Wolfville’; ‘Episodes of Cowboy Life’; ‘Sandburrs’ (1900); ‘Wolfville Days’ (1902); Wolfville Nights’ (1902); ‘Black Lion Inn’ (1903); and ‘Peggy O'Neal’ (1903).

Lewis, Alonzo, American poet: once known as the «Lynn bard»; b. Lynn, Mass., 28 Aug. 1794; d. there 21 Jan. 1861. He was the author of ‘Forest Flowers and Sea Shells,’ which reached 10 editions, and ‘History of Lynn.’

Lewis, Andrew, American soldier: b. Donegal, Ireland, about 1720; d. Bedford County, Virginia, 26 Sept. 1781. He resided in Augusta County, Virginia, where he was prominent in border conflicts; and in 1754 entered as a volunteer the expedition for taking possession of the Ohio region. Later he became a major in Washington's regiment of Virginians, and was at the surrender of Fort Necessity. In 1756 he was in command of the Sandy Hook expedition; in 1758 participated in that of Major Grant to Fort Duquesne, on which occasion he was taken prisoner and carried to Montreal. He was a commissioner of Virginia in 1768 to arrange a treaty with the Iroquois, in 1774 was appointed a brigadier-general during hostilities with the Indians on the western Virginia border, and 10 Oct. 1774 gained an important victory over the Shawnee confederacy at the battle of Point Pleasant (at the mouth of the Great Kanawha). He was a brigadier-general in the Continental army from 1 March 1776 to 15 April 1777, and then entered the Virginia civil service. He drove Lord Dunmore from Gwynn's Island 9 July 1776. For several years he sat in the Virginia house of burgesses, and in the Virginia conventions of May and June 1775 was a delegate from Botetourt. As a soldier he was highly regarded by Washington. See COLONIAL WARS IN AMERICA.

Lewis, Charles Bertrand («M. QUAD»), American journalist: b. Liverpool, O., 15 Feb. 1842. He was educated at the Michigan Agricultural College, and served in the Union army during the Civil War. His journalistic work began on the staff of the Detroit *Free Press*, and he soon became known as a descriptive and humorous writer under the name of «M. Quad.» In addition to his work in this field, in connection with various publications, he has also written: ‘Field, Fort and Fleet; A Sketch-Book of the Civil War’; ‘The Lime-Kiln Club’;

‹Sawed-off Sketches›; ‹Mr. and Mrs. Bowser›; ‹Quad's Odds›; and several plays.

Lewis, Charlton Thomas, American lawyer and author: b. West Chester, Pa., 25 Feb. 1834; d. Morristown, N. J., 26 May 1904. He was graduated at Yale in 1853, and after studying with a view to entering the ministry, served as professor at the State Normal University at Bloomington, Ill., 1856–7, and from 1858 to 1861 was professor in Troy University. In 1863–4 he was a United States deputy commissioner of internal revenue. He entered upon the practice of law in New York city in 1865; was associated with William Cullen Bryant in editing the *Evening Post;* and returned to law practice in 1871. At Harvard, Columbia, and Cornell universities, during 1898–9, he was a lecturer on insurance. He was also president of the Prison Association of New York and of the State Charities Aid Association of New Jersey. Among his published works are: ‹Gnomon of the New Testament,› translated from the German of Bengel (1861); ‹History of Germany› (1870); ‹Harper's Latin Dictionary,› in collaboration with Charles Short (1879); ‹Latin Dictionary for Schools› (1889); ‹Elementary Latin Dictionary› (1890); etc.

Lewis, Dio, American physician and author: b. Auburn, N. Y., 3 March 1823; d. Yonkers, N. Y., 21 May 1886. He studied at the Harvard Medical School, and practised for a time at Port Byron and at Buffalo, N. Y., publishing at Buffalo a monthly periodical with hygienic aims. He became widely known by his writing in advocacy of a system of higher gymnastics, and finally established a school in Boston in which teachers were trained in his new exercises; and a school for young ladies was also founded at Lexington, Mass., which was destroyed by fire in 1868. About 1883 he removed to New York. He wrote many articles for magazines, and his more extended works include ‹The New Gymnastics› (1862); ‹Weak Lungs and How to Make them Strong› (1863); ‹Talks About People's Stomachs› (1870); ‹Our Girls› (1871); ‹Chats with Young Women› (1871); ‹Chastity› (1872); ‹Gypsies› (1881); and ‹In a Nutshell› (1883).

Lewis, Edmonia, American sculptor: b. New York 4 July 1845. She was of negro and Indian parentage. With slight instruction in sculpture she developed a talent for that art, and came into notice in 1865 through the exhibition of her first known work, a bust of Colonel Robert Gould Shaw, in Boston. That year she went to Rome to study, and there she soon afterward established permanent residence. Her works include ‹The Freedwoman›; ‹The Death of Cleopatra› (1876); ‹The Marriage of Hiawatha›; ‹The Old Arrow-Maker and his Daughter›; ‹Asleep›; ‹Madonna with the Infant Christ›; and many portrait busts, among them those of Lincoln, Sumner, and John Brown.

Lewis, Estelle Anna Blanche (Robinson), American dramatist: b. near Baltimore, Md., April 1824; d. London 24 Nov. 1880. While a schoolgirl she made a verse-rendering of the ‹Æneid› into English; wrote ‹Forsaken› and published ‹Records of the Heart› (1844). Her best dramatic work, ‹Sappho of Lesbos› (1868), a tragedy, ran through seven editions, was translated into modern Greek, and played at Athens. Edgar A. Poe spoke of her as the rival of Sappho; Lamartine called her the «female Petrarch.» Others of her works are: ‹The Child of the Sea, and Other Poems› (1848); ‹The Myths of the Minstrel› (1852); ‹Poems› (1866); and ‹The King's Stratagem› (1869), a tragedy.

Lewis, Francis, American patriot: b. Llandaff, Wales, March 1713; d. New York 30 Dec. 1802. He entered commerce in London, but later came to America, and established a mercantile business in New York and Philadelphia. He made numerous successful business voyages to Europe, and in 1752 obtained the contract for clothing the British army in America. In the same year he was aide-de-camp to Gen. Hugh Mercer at Oswego, N. Y., when Montcalm advanced against it. After the capitulation, he was sent to France, and subsequently exchanged. For his services the government presented to him 5,000 acres of land. From 1765 he took part in public affairs. He was one of the New York committee in the 1st Colonial Congress (1765), in 1775 was elected to the 1st Continental Congress, in 1776 signed the Declaration of Independence, in 1777 was again elected to Congress, and in 1779 became commissioner of the board of admiralty. He expended his wealth most freely in the patriot cause, to which his commercial knowledge also was very useful.

Lewis, Henry Carvill, American geologist: b. Philadelphia 16 Nov. 1853; d. Manchester, England, 21 July 1888. He was graduated from the University of Pennsylvania in 1873, served as a volunteer in the State Geological Survey of Pennsylvania in 1879–84, was professor of mineralogy in the Academy of Natural Sciences of Philadelphia in 1880–8, and of geology at Haverford College in 1883–8. In 1886–7 he studied at Heidelberg, and in 1887–8 made special investigations regarding the origin of the diamond. He prepared a chart of the various ancient ice-sheets and glaciers of England, Ireland, and Wales, for some time edited the mineralogical department of the ‹American Naturalist,› and wrote extensively on geological subjects, including: ‹The Antiquity of Man in Eastern America, Geologically Considered› (1880). ‹The Geology of Philadelphia› (1883). ‹Comparative Studies upon the Glaciation of North America› (1886), and ‹The Terminal Moraines of the Great Glaciers of England› (1887).

Lewis, James, American actor: b. Troy, N. Y., about 1840; d. West Hampton, Long Island, N. Y., 10 Sept. 1896. He first appeared in 1858 at the Troy Museum as Farmer Gammon in ‹The Writing on the Wall›, played second comedy parts for a time at the Greene street theatre of Albany, was later with a traveling company on the Georgia circuit, and was at Birmingham, Ala., when the Confederacy was proclaimed. Having escaped to the North, he afterward (1866) appeared at the Olympic, New York, as low comedian in ‹Your Life's in Danger›, and from 1869 until his death he was leading comedian in Augustin Daly's company. He took numerous parts with excellent versatility.

Lewis, John Francis, American politician: b. near Port Republic, Rockingham County, Va., 1 March 1818; d. Harrisonburg, Va., 2. Sept. 1895. He was a planter, was a member of the Virginia State convention of 1861, refused to sign the ordinance of secession, and in 1869 was elected lieutenant-governor of the State on the ticket with G. C. Walker. In 1869 he was also elected as a Republican to the United States Senate, where he served from 24 Jan. 1870 to 3 March 1875. He was appointed (1877) by President Hayes United States marshal for the western district of Virginia, but afterward resigned the post.

Lewis, Matthew Gregory, called «MONK» LEWIS, English author: b. London 9 July 1775; d. at sea on the way from Jamaica to England 14 May 1818. He was educated at Oxford, in 1794 became a member of the British embassy at The Hague, and in 1795 published ‹Ambrosia, or the Monk› (whence his sobriquet), which had a great success at the time. In 1796–1802 he represented Hindon, Wiltshire, in the Commons. Of his various dramatic works the best-known is ‹The Castle Spectre›, first presented in 1798, and abounding in storms and other melodrama. He visited, in 1815–6 and 1817–8, his property in the West Indies, to provide for the suitable treatment of his negro slaves; and published the ‹Journal of a West Indian Proprietor›, which is interesting as a description of the condition of the negro in Jamaica of that time. His writings had considerable influence on the early poetry of Walter Scott, for whose translation of ‹Götz von Berlichingen› he obtained the publication in 1799.

Lewis, Meriwether, American explorer: b. near Charlottesville, Va., 18 Aug. 1774; d. near Nashville, Tenn., 8 Oct. 1809. He enlisted in the troops called out for suppression of the «Whiskey Rebellion» in western Pennsylvania in 1794, entered the regular service in 1795 as lieutenant of the line, in 1797 was promoted captain, in 1801–3 was private secretary to Jefferson, and in the latter year was appointed commander of an expedition to cross the continent, with Capt. William Clark (q.v.) as second in command. On 5 July 1803 he left Washington for Pittsburg, Pa., where the expedition was equipped; but he did not begin to ascend the Missouri until the ice had broken in the spring of 1804. Then he proceeded up the river to its sources, crossed to the Rocky Mountains, reached the headwaters of the Columbia River, floated down that river to the Pacific, and explored a large part of the Oregon region. He had covered in all more than 4,000 miles from the junction of the Missouri with the Mississippi. Having wintered in an intrenched camp on the south bank of the Columbia, he started eastward 23 March 1806, and arrived at Washington 14 Feb. 1807. He received a grant of land and was appointed governor of Louisiana, where he found much confusion, and where he was successful in restoring order. He was a bold explorer, and familiar with Indian matters. Consult memoir by Biddle and Allen (new ed. 1843), and Lighton, ‹Lewis and Clark› (1901; Riverside biography series). See also LEWIS AND CLARK EXPEDITION.

Lewis, Morgan, American statesman: b. New York 16 Oct. 1754; d. there 7 April 1844. He was graduated from the College of New Jersey in 1773, studied law, in 1774 entered the Continental army, was commissioned major in the 2d New York, later became chief-of-staff to Gates with colonel's rank, and quartermaster-general of the northern army. He commanded at Crown Point; and after the war entered legal practice in New York. Elected to the assembly, he also became judge of the court of common pleas, attorney-general of New York (1791), judge of the supreme court (1792), chief justice of the court (1793), and governor (1804–7). In 1810 he was elected to the State senate, in 1812 became quartermaster-general of the armies of the United States, in 1813 was promoted major-general, and was in command at Sackett's Harbor and French Creek. He was president of the New York Historical Society, and president-general of the Cincinnati.

Lewis, Tayler, American author and educator; b. Northumberland, N. Y., 27 March 1802; d. Schenectady, N. Y., 11 May 1877. He was graduated at Union College in 1820; studied law in Albany, and practised at Fort Miller, but soon gave nearly all his time to the study of classical literature. In 1838 he was appointed professor of Greek at the University of New York, and in 1849 accepted the same professorship at Union College. He attained distinction as a philologist and in Christian apologetics. Besides contributing largely to periodicals, he published the following works: ‹The Nature and Ground of Punishment› (1844); ‹Plato contra Atheos› (1845); ‹The Six Days of Creation› (1855); ‹The Bible and Science› (1856); ‹The Divine Human in the Scriptures› (1860); ‹State Rights, a Photograph from the Ruins of Ancient Greece› (1864); and ‹The People of Africa, Their Character, Condition, and Future Prospects›, with E. W. Blyden and Timothy Dwight (1871). He was a member of the Bible Revision Committee.

Lewis, William Draper, American lawyer: b. Philadelphia 27 April 1867. He was graduated at Haverford College in 1888, and at the University of Pennsylvania in 1891. In the latter year he was instructor in legal historical institutions in the Wharton School, University of Pennsylvania; from 1890 to 1896 was lecturer on economics at Haverford, and has edited the ‹American Law Register.› He has written: ‹Federal Power over Commerce and Its Effect on State Action› (1891); ‹Our Sheep and the Tariff› (1891); and many periodical articles on legal, historical, and economical subjects. Among the works which he has edited are ‹Wharton's Criminal Law› (1895); ‹Lewis' Edition of Greenleaf's Evidence› (1896); ‹Lewis' Edition of Blackstone's Commentaries› (1897); ‹Digest of Decisions and Encyclopedia of Pennsylvania Laws›; etc.

Lewis, or **Lewis-with-Harris,** Scotland, the largest of the Hebrides, separated from the mainland by the Minch, a sea 30 to 35 miles wide. The northern larger portion, Lewis, is in Ross-shire, and is separated by a narrow neck from the southern portion, Harris, which belongs to Inverness-shire. The island is 52 miles long, varies in breadth from 5 to 30 miles, and has a diversified surface, which attains an elevation of over 2,700 feet. Capital, Stornoway. Pop. of island (1901) 32,160.

Lewis and Clark Expedition, The, in American history, a celebrated expedition to the northwestern part of the United States in 1803, under the command of Captain Meriwether Lewis of Virginia, and Captain William Clark, the results of which gave a more definite idea of our natural resources in this hitherto unexplored region than had ever been known. Recognizing the importance of a thorough and accurate knowledge of the vast extent of country acquired by the United States with their independence, Thomas Jefferson, while minister to France suggested to the traveler, Ledyard, an exploration of western America. Nothing came of it, however. In 1792 he made a similar proposition to the American Philosophical Society (q.v.), and Michaux, the celebrated traveler and botanist, proceeded as far as Kentucky, when he was recalled by the French minister. In January 1803, in a confidential message to the Congress, President Jefferson recommended an appropriation for this purpose. It was granted and he appointed Lewis, who had been his private secretary nearly two years, to the command of the expedition along with Clark. Lewis, while nominally in command of the expedition, always regarded Clark as his official equal, and during the three years of trying experience the two men worked hand in hand toward their great object with increased friendship and respect for each other. Lewis left Washington on 5 July 1803 and was joined by Clark at the Ohio. The expedition was delayed at Pittsburg till 31 August, then proceeded on its way toward the Mississippi, Lewis choosing volunteers from the military posts along the way. The intention had been to winter at La Charette, a French settlement on the Missouri, but owing to the advanced season the first winter camp was pitched at River Dubois, on the Mississippi, about opposite the mouth of the Missouri. On 9 March 1804 Lewis was one of the witnesses to the transfer of Upper Louisiana at St. Louis; on 14 May 1804 he set out from River Dubois on the long journey up the Missouri. The party comprised in addition to Lewis and Clark, three sergeants, twenty-three soldiers, three interpreters, and Clark's negro slave York. Toward the end of October they reached the Mandan country and put up for winter quarters near the site of the present city of Bismarck, N. D., after a troublesome journey of 1,600 miles, battling against the swift current, the snags of the river, and its falling banks. Much of this distance Lewis traveled on foot, hunting, collecting specimens, and making notes upon the country. The journey was resumed 7 April 1805, and on the twenty-sixth the party reached the mouth of the Yellowstone, one or the other of the captains, usually Lewis, pushing ahead with hunters on foot to provide game for the camps and to examine the country. On 3 June they passed and named Maria's River, and on the thirteenth came to Great Falls. Nearly a month was spent in making the portage, and on 25 July the party came to the triple fork of the Missouri. Naming the three branches Jefferson, Madison, and Gallatin, they proceeded up the Jefferson River, and on August 12 reached the head of navigation. Then marching across the Nez Percé trail, along the Bitter Root Mountains, came to the headwaters of the Clearwater branch of the Columbia. On 7 October they launched their canoes for the descent of this great river to the Pacific, which they reached 15 November. A fortified camp, called by the explorers Fort Clatsop, was pitched on the shore of Young's bay, and here with much hardship the winter was spent. The return journey was begun 23 March 1806, and on 8 May the headwaters of the Clear water were reached. On the return journey the party divided and explored a large part of the present state of Montana, uniting again below the mouth of the Yellowstone. Rapidly descending the Missouri they arrived at St. Louis, 23 September 1806. Both Lewis and Clark kept elaborate and valuable journals. Unfortunately they were never to edit them. A paraphrase by Nicholas Biddle, a friend of Jefferson, appeared in 1814, and has run through many editions. Not until 1903 were these priceless papers published in their complete form, presenting the first authentic record of this extraordinary expedition.

Lewisburg, lū'ĭs-bėrg, Pa., borough, county-seat of Union County; on the Susquehanna River, and on the Philadelphia & R. and the Pennsylvania R.R.'s; about 50 miles north of Harrisburg. It is on the border of the great anthracite coal fields, and in a fertile agricultural valley. Its chief manufactures are flour, lumber, furniture, shirts, woolen goods, machine shop products, and acetylene gas. Its trade is chiefly in its manufactured products and in grain and vegetables. It is the seat of Bucknell University, opened in 1846 under the auspices of the Baptists. Pop. (1900) 3,457.

Lewisburg, Battle of. On 21 May 1862 Gen. Heth, with a Confederate force of three regiments of infantry, a battalion of dismounted men, a regiment of cavalry and three batteries, aggregating about 2,200 men, marched from Salt Sulphur Springs, Va., on Lewisburg, 24 miles distant, to surprise Col. Geo. Crook who was encamped at that place with about 1,500 men. Heth marched through Union, crossed Greenbrier River, driving in Crook's pickets, and at 5 A.M. of the 23d formed line on a hill east of the town, Crook's camp being on the west side. Crook threw out a well supported skirmish line, which soon engaged Heth's advance; Heth at first had some success, but was gradually forced back; Crook charged his main line; a panic seized Heth's troops, and they fled from the field in disorder, retreating across the Greenbrier and burning the bridge behind them. Heth left on the field 38 dead and 66 wounded, four guns, and over 200 stand of small arms. Over 100 of his unwounded men were captured. Crook's loss was 13 killed, 53 wounded, and 7 missing. Consult: 'Official Records,' Vol. XII.; The Century Company's 'Battles and Leaders of the Civil War,' Vol. II.

E. A. Carman.

Lewiston, Maine, the second city in size in the State, 35 miles north of Portland, on the east bank of the Androscoggin River, and on the line of the Maine Central and Grank Trunk Railways; incorporated a town 18 Feb. 1795, with a population of 600; incorporated as a city 15 March 1861, with a population of 7,500 and organized 16 March 1863. This city is located in the heart of the Androscoggin Valley, a fertile and prosperous agricultural district. The city of Auburn, with a population of about 13,000, is located immediately opposite on the westerly bank of the river and the two cities are connected by four beautiful and commodious iron bridges, making them practically one community, with a combined population of 37,000. The railroad connections and facilities are of the best. Three great lines of steam railways converge here,— the Maine Central, Grand Trunk and the Portland and Rumford Falls. The Maine Central runs west to Portland and the seaboard, there connecting by water routes with Boston, New York and all Southern ports and by rail over the Boston & Maine with Boston, New York and all points south and west, and running east to Bangor, St. John and the Maritime Provinces. The same road has local branches extending to Franklin and Somerset counties on the north, Augusta, the capital of the State, and the Kennebec Valley on the east, and again connecting with the seaboard on the south at Bath and Rockland. The Grand Trunk also extends from here westerly to Portland and northerly to Montreal, thence to Chicago and the far West. The Portland and Rumford Falls road runs northerly through the beautiful Oxford region to Rumford Falls, thence into the heart of the celebrated Rangley Lakes District, one of the finest fishing and game preserves in the country. The Lewiston, Brunswick and Bath Street Railway, the largest electric street railway system in the State, is principally located here. It includes 57 miles of electric railway extending to the sea coast at Bath and connecting at Brunswick with the Portland and Brunswick Electric road to Portland and west.

Manufactures.— Although located in a fertile agricultural district, Lewiston is distinctly a manufacturing city. The Androscoggin River here has a fall of fifty feet and furnishes one of the most extensive water powers in the country. This power is utilized by means of an immense system of distributing dams and canals. The amount of power at the falls is 13,000 horse-power. About two and one half miles up river an immense dam has recently been constructed which adds 10,000 horse-power, making in all 23,000 horse-power available for use, the latter 10,000 horse-power is made available for use by electricity and is so distributed. The city's largest single industry is the manufacture of cotton cloth. Some of the largest manufacturing plants in the country are located here, and their various products are found in nearly all the markets of the world. Among them are the Bates Manufacturing Company, capital $1,200,000, operating 2,033 looms and 73,780 spindles; the Hill Manufacturing Company, capital, $1,000,000, operating 1,415 looms and 57,792 spindles; the Androscoggin Mills, capital $1,000,000, operating 70,000 spindles and 2,111 looms; the Continental Mills, with 2,360 looms and 90,000 spindles; the Avon Mill with 138 looms; the Libby and Dingley Company, capital $300,000, with 18,000 spindles. Their products are ginghams, bed spreads, fine dress goods, seersuckers, fancy shirtings and colored cottons, sheetings, twills, jeans, grain bags, drills, momie cloths, fine and coarse yarns, quilts, linen and cotton towelings, scarfs and table covers. There are three woolen mills located here — the Columbia Mills, operating 6 sets of machinery, 53 looms and a dye house; the Cowan Woolen Company, 8 sets of machinery, 46 looms and does its own dyeing; the Cumberland Mill with 6 sets of machinery, 40 looms and a dye house. The products of the woolen mills are blanket wrappers, cheviots, cassimeres, repellants and meltonettes. One of the largest and most noted bleacheries and dye works in the United States, the Lewiston Bleachery and Dye Works, is located here. Its capital is $300,000; its business, bleaching and dyeing cotton cloth.

In addition to the textile manufacturing industries there is one large boot and shoe factory and other small industries, the products of which are machinery and mill supplies for cotton and woolen mills, engines, boilers, brick, lumber, carriages, clothing, foundry products and agricultural implements.

Banks.— There are two national banks, two savings banks and one trust and safe deposit company. The capital stock of the two national banks and the trust company is $675,000, surplus $286,830.46. The deposits in the savings banks and the trust company are $4,805,805.

Government and Finances.— The government is vested by charter in a Mayor, Board of Aldermen and Common Council. The Mayor is elected by the entire vote of the city, while one Alderman and three Councilmen are elected from each of the seven wards into which the city is divided. All are elected annually on the first Monday of March and hold their offices for the term of one year. The administrative offices are partly appointed by the Mayor subject to confirmation by the Board of Aldermen and partly elected by the City Council, the latter body being composed of the Board of Aldermen and Common Councilmen. The schools are under the jurisdiction of a superintending School Committee of fourteen members,— two elected by the voters of each ward and holding their offices for the term of two years. The public waterworks are under a Board of Water Commissioners consisting of seven members, one elected annually in March by the City Council under authority of a State law, and holding office for a term of six years. The Mayor is ex-officio a member of the board. The Fire Department is under the control of a Board of Commissioners consisting of five members, the Mayor being a member ex-officio. The Board is created by a State law and one member is elected annually in March by the City Council and holds office for a term of four years. The highways, bridges, and sewers are under the control of a Board of Public Works created by State law and consisting of seven members, of which the Mayor is a member ex-officio. One member is elected by the City Council annually in February and the term of office is six years. The city owns its own waterworks. The supply is abundant, unusually pure and healthful and is taken from Lake Auburn, a beautiful and picturesque pond fed by springs and located in the city of Auburn, about four and one half miles from Lewiston. This city was the first in the United States to own and operate its own street lighting plant. The undertaking has proved a great success and many other cities in the country have since adopted the plan. The total assessed valuation of real and personal property in 1903 was $13,354,526; rate of taxation 20 mills; total municipal bonded debt $990,500; floating debt, $327,421.07.

Churches and Charitable Institutions.— There are 12 churches in the city, some of which are imposing edifices. Three are Roman Catholic, one Episcopal, one Baptist, one Friends, one Congregational, two Free Baptist, two Methodist and one Universalist. There is also a Jewish Synagogue. Two of the Catholic churches, Saint Joseph's and Saint Patrick's, are supported principally by Irish-American Catholics, while the third, Saint Peter's, is composed in membership of French Canadian citizens who number about 11,000 people in this city. In connection with the Catholic churches are maintained four large Catholic Parochial Schools, with a total membership of 1,400 scholars. These schools are under the superintendence of the Parish priests and are taught by the Sisters of Charity. Of the charitable institutions the more notable are the Sisters' Orphanage, the Healy Asylum, the Young Women's Home, the Home for Aged Women. There are two hospitals in this city,— the Central Maine General Hospital and the Hospital of the Sisters of Charity. Both receive substantial aid from the State. The Central Maine General Hospital is located in the heart of the city at the corner of Main and Hammond streets. The Hospital of the Sisters of Charity is on Sabattus Street, just at the edge of the thickly settled part of the city. Both hospitals are in elegant locations, and occupy imposing brick structures, commodious, well lighted and ventilated, with all modern appointments and improvements and high grade medical staff. The Sisters' Hospital is in charge of the Sisters of Charity, but is absolutely non-sectarian, its doors being open to all alike.

Education.— The public school system of the city is of the best and a source of pride to its citizens. The city gives an absolutely free education to its pupils from the kindergarten to the completion of the high school course. Its school buildings are numerous, conveniently located, with all the usual modern appointments,— some of the more recently constructed being among the best in the State. A new high school building was recently erected at a cost of $75,000. The total value of the school property owned by the city is over $300,000. The corps of teachers is selected with great care and a high standard of efficiency is required by the Superintending School Board. The results are highly satisfactory. In addition to the public schools are the Catholic parochial schools, where a high standard of thoroughness in instruction is maintained. Bates College is also located here. It is a co-educational institution and was the first college in New England to open its doors to women. The college is in a flourishing condition. It has nine excellent buildings, a faculty of 20 professors and a student body of nearly 300.

Miscellaneous.— The city has five excellent hotels, commodious, comfortable and well appointed; two fine theatres, a splendid public library, a beautiful City Hall, a new U. S. post-office building and a handsome public park, two live and ably conducted daily newspapers and one weekly, a progressive Board of Trade, and a population of thrifty, industrious, law-abiding and order-loving people. Pop. (1900) 23,761.

D. J. McGillicuddy.

Lewiston, N. Y., village, in Niagara County; on the Niagara River, and on the New York Central & H. R. railroad; seven miles north of Niagara Falls, and about 25 miles north of Buffalo. It has communication by steamer with a large number of lake ports, and is the terminus of a line connecting with Toronto. The famous Gorge Route from Niagara Falls, traversed by an electric trolley-line, connects at Lewiston by a suspension bridge with Queenstown, Canada, and other points of interest in the vicinity are the Devil's Hole and Bloody Run, Rumsay Park, and the Tuscarora Indian Reservation. The place where Lewiston now stands was the site of an Indian village. In 1720 the French took possession of the place, and built a blockhouse, but abandoned it in a few years, when it was again occupied by the Indians. Joseph Brant's home was in this vicinity. On 14 Sept. 1763 occurred the Indian massacre at Bloody Run, a place near Lewiston. The first white settlement was made about 1800, and in 1818 the town was incorporated, and in 1843 the village. On 19 Dec. 1813, Lewiston was one of the towns burned by the English and Indians, in retaliation for the burning of Newark (now Niagara), Canada West, by the Irish-American General McClure; numbers of innocent persons perished on both sides. The place is now a favorite summer resort. Pop. (1900) 697. Consult Pool, 'Landmarks of Niagara County.'

Lewistown, Ill., city, county-seat of Fulton County; on the Chicago, B. & Q. and the Fulton County Narrow Gauge R.R.'s; about 50 miles southwest of Peoria, and 60 miles north-northwest of Springfield, the State capital. It is situated in an agricultural region and is the trade centre of a large part of the county. Its chief manufactures are carriages and wagons, flour, lumber, brick, tile, furniture, and dairy products. Live-stock and farm products are shipped from Lewistown to the large markets. Pop. (1900) 2,504.

Lewistown, Md., a town of Frederick County, near the foothills of the South Mountains, 10 miles north of Frederick. Farming and dairy pastures are the chief industries. Pop. 270.

Lewistown, Mo., a town of Lewis County, on the Quincy, Omaha & Kansas City railroad, 26 miles northwest of Quincy, Ill. It is in a farming and stock-raising district. Pop. 358.

Lewistown, Mont., the county-seat of Fergus County, on the Missouri railroad, 100 miles southeast of Great Falls. Mining, farming, and stock-raising are extensively carried on in the neighborhood. Pop. 1,096.

Lewistown, Ohio, a town in Logan County, on a branch of the Detroit Southern railroad, 7 miles northwest of Bellefontaine. Pop. 200.

Lewistown, Pa., borough, county-seat of Mifflin County; on the Juniata River, and on the Pennsylvania railroad and on the Pennsylvania Canal, about 60 miles northwest of Harrisburg, the State capital. It is situated in a fertile agricultural region in which are valuable mineral deposits, especially of iron and glass sand. Lewistown is a trade centre for an extensive farming section; but it is also a manufacturing borough. The chief manufactures are steel, iron, flour, leather, lumber, foundry and machine-shop products, hydrants, and pumps. Lewistown and vicinity are now favorite summer resorts. Pop. (1900) 4,451.

Lexicog'raphy. See DICTIONARY.

Lexington, lĕk'sĭng-tŏn, Ky., city, county-seat of Fayette County; on the Lexington & E., the Southern, the Chesapeake & O., the Kentucky & I. B., and the Louisville & N. R.R.'s; about 82 miles south of Cincinnati, and about 22 miles southeast of Frankfort, the capital of the State. The first settlement was claimed by a party of hunters, who, in 1775, camped at this place and named it Lexington in honor of the battle of Lexington. They built a log cabin on the site so as to leave a proof of their ownership. Four years later Robert Patterson, one of the hunting party, made here a permanent settlement. Three years afterward the town was incorporated by the legislature of Virginia, as this section was then a part of Virginia. In 1792, when Kentucky became independent of Virginia, Lexington was made the capital of Kentucky, and the first Kentucky legislature met in this city. The city was granted a charter in 1832. Lexington is located in a fertile agricultural country, the famous «blue-grass» region. Its chief manufactures are Bourbon whiskey, harnesses, saddlery, flour, canned goods, lumber, carriages and wagons. Some of the important institutions are Kentucky University (Christian), Sayre Female Institute, Hamilton and McClelland Female Colleges, Saint Catharine's Academy (Roman Catholic), State Agricultural and Mechanical College, and the Kentucky Reform School. It has the State Asylum for the Insane, Saint Joseph's Hospital (Roman Catholic), Colored Industrial Home, and a Protestant infirmary. It has an excellent public library. The race tracks, the stock farms in the vicinity, the parks, all have made Lexington well known in connection with industries and amusements. Henry Clay made this city his home from 1797 until his death. Pop. (1890) 21,567; (1900) 26,369.

Lexington, Mass., town, in Middlesex County; on the Boston & M. railroad; about 12 miles northwest of Boston. The town contains the villages of Lexington, East Lexington, and North Lexington. Lexington was settled in 1642, was long known as «Cambridge Farms,» and was incorporated as a town in 1713. It was the scene of the first conflict between the colonists and the British troops in the Revolutionary War, on 18 April 1775. The British obtained the advantage and destroyed the stores of the colonists, but lost in the action 273 men killed and wounded. Lexington is situated in an agricultural region, and its industries are connected chiefly with the products of the farms and the trade necessary for supplying local wants. It has important leather-binding works. It contains many points of interest, some of which are the first battleground of the Revolutionary War, the monument commemorative of this battle; the Monroe Tavern, built in 1695, which was Earl Percy's headquarters; the old Belfry clubhouse; and the Hancock-Clarke house (1698), where Samuel Adams and Hancock lodged the night before the battle. The last mentioned building is now used as a museum for Revolutionary and early settlement relics. A number of monuments in honor of the men and events which made Lexington famous adorn the city. It contains the Cary Library with nearly 25,000 volumes; a fine high school, the Hancock and Adams grammar schools, a town hall, and a number of fine churches and elegant residences. The old burying ground, visited annually by hundreds of people, is mute witness of the noble people who have lived in this town. Pop. (1900) 3,831.

Lexington, Mo., city, county-seat of Lafayette County; on the Missouri River, and on the Missouri P. and the Atchison, T. & S. Fe R.R.'s; about 63 miles southeast of Saint Joseph and 39 miles east of Kansas City. The first permanent settlement was in 1825, and it was incorporated in 1830. Lexington was the scene of a siege in 1861, when a Confederate force of 18,000 under Gen. Sterling Price, attacked the city, which was defended by a Federal force of 3,000 men under Col. James Mulligan. The Federals surrendered on 20 Sept. 1861, but Price left the place a few days later, and put on guard a small force. On 16 October, a Federal force of 230 men under Major J. White entered the city, released the Union prisoners and took the Confederates captive. The city is in the midst of a fertile agricultural region, in which hemp is cultivated extensively. Coal is mined in the vicinity of the city. Lexington is the seat of the Central Female College, the Baptist Female College, and the Wentworth Military Academy. Pop. (1900) 4,190.

Lexington, Va., town, county-seat of Rockbridge County; on the north fork of the James River, and on the Baltimore & O. and the Chesapeake & O. R.R.'s; about 110 miles west by north from Richmond, and 44 miles northwest of Lynchburg. It is in a rich farming valley west of the Blue Ridge. Valuable deposits of sulphur ore are in the vicinity. The chief manufactures are dairy products, agricultural implements, flour, and lumber. The city owns and operates the waterworks. The water is brought some distance from springs in the mountains.. Lexington is the seat of the Virginia Military Institute, opened in 1839, and the Washington and Lee University (q.v.). Generals Jackson and Lee are buried here, and statues have been erected in their memory. The mineral springs in the vicinity are becoming popular resorts; the Natural Bridge (q.v) one of the natural curiosities of America, is about 15 miles south, separated from Lexington by low mountains or hills. Pop. (1900) 3,203.

Lexington, Siege of. After the battle of Wilson's Creek (q.v.), Mo., 10 Aug. 1861, Gen. Sterling Price, abandoned by McCulloch and his troops, appealed to the secessionists of Missouri to fill his depleted ranks; and about the middle of August he moved northward toward the Missouri River, skirmished with a force under Gen. J. H. Lane, 7 September, at Dry Wood Creek, drove Lane out of the State, and followed as far as Fort Scott, which had been abandoned. On the 10th he was at Rose Hill, from where he marched for Warrensburg, which was reached on the 11th, Peabody's 13th Missouri at that place retreating to Lexington. When Fremont, at St. Louis, heard of Price's northward movement, he ordered to Lexington a force which, when Price arrived at Warrensburg, numbered 2,800 men, with seven 6-pounder guns, under command of Col. James A. Mulligan, 23d Illinois. Mulligan took position and threw up intrenchments on College Hill, a bluff 200 feet above low-water mark, northeast of the city, overlooking it and the Missouri, and on which was a substantial brick building erected for a college. Immediately in front of the college was the first line of works, outside of which was a broad ditch, and beyond were «confusion» pits. On the morning of the 11th Price marched from Warrensburg toward Lexington, and that night, after a march of 30 miles, halted three miles from the city, where he rested until dawn, when he drove in Mulligan's pickets, and from four different points opened a cannonade upon the hastily constructed works around the college. After several sharp encounters the Confederates captured some outworks and drove Mulligan's men behind the main line. At the end of the day Price withdrew to the fair ground, two miles away, to await reinforcements and ammunition. Mulligan, looking for reinforcements, strengthened his position and prepared for a siege. Price was anxious because he knew of the approach of Union troops to relieve Lexington; but being reinforced to 25,000 men, and his ammunition coming up, he again moved on the city on the 18th, took possession, closed in upon Mulligan, and began a siege. Rains' and Parsons' divisions occupied strong positions on the east, northeast, and southwest of the works; Rives' division, supported by McBride's command and a part of Harris', moved along the river bank to a point immediately beneath Mulligan's works; fire was opened upon the Confederates from a dwelling on the bluff, 125 yards from the works; upon which the Confederates charged and took the house, and also the bluff immediately north of it. A gallant counter-charge by Capt. Gleason, with 80 men of the 23d Illinois, retook the house, but it was soon regained, and the adjoining heights fortified. Firing continued all day of the 19th; water gave out, but Mulligan encouraged his men to hold on until help arrived. On the morning of the 20th Price caused to be taken to the river heights a number of hemp-bales, with which movable breastworks were constructed. These were rolled forward; under cover of them the Confederates moved to within ten rods of the works; and at 2 P.M., after over two days' continuous fighting, Mulligan's men being without water or rations, and short of ammunition, a white flag was displayed, and Price ordered a cessation of firing. Mulligan had lost 42 killed and 108 wounded, and surrendered 1,624 men, 7 guns, many horses, and a large amount of stores. Price reported a loss of 25 killed and 72 wounded. Price remained at Lexington until 30 September, when, pressed by the Union advance from Jefferson City, he abandoned the place and retreated toward Arkansas, leaving a guard of 500 men with the prisoners taken. On 16 October a squadron of cavalry under Maj. F. J. White surprised the party, captured 70, and released the prisoners. Consult: ‹Official Records,› Vol. III.; The Century Company's ‹Battles and Leaders of the Civil War,› Vol. I.

E. A. CARMAN.

Lexow, lĕk'sow, **Clarence,** American lawyer and politician: b. Brooklyn, N. Y., 16 Sept. 1852. He studied abroad and at the Columbia Law School, graduating from the latter in 1872. He was admitted to the bar and established practice in New York city, receiving a large German-American patronage, and engaging in many important litigations. In 1882 he became a resident of Nyack, and was active in the Republican party there. In 1890 he was an unsuccessful nominee for Congress, but lowered the usual Democratic majority. In 1893 he was elected to the State Senate where he served till 1898. Here he at once became a leader, was chairman of the committee on internal affairs, and introduced the bi-partisan police bill calling for an investigation of the New York city police. This led to the appointment of the so-called «Lexow Committee», of which he was head; the investigations of this committee brought to light the system of protection of vice by the police in New York, and were the direct cause of the reform campaign and the election of Mayor Strong. Lexow was also the introducer of the bill creating the city of Greater New York, was chairman of the joint legislative committee for the investigation of trusts and unlawful combinations, of the committee on primary elections reform and of the judiciary committee. In 1896 he was chairman of the committee on resolutions at the Republican State convention, and introduced the gold standard plank in the platform; in 1900 he was a presidential elector. He is author of reports on ‹Municipal Government› and on ‹Trusts and Unlawful Combinations›.

Leyden, lī'dĕn, or **Leiden,** Netherlands, an important town in the province of South Holland, 22 miles by rail southwest of Amsterdam, on both sides of the Old Rhine, which flows through the town by several branches. The neighborhood is marked by wind-mills, country-seats, pleasure-grounds, gardens, and fertile meadows, and street railroads connect with the bathing resort of Katwyk, 5 miles to the northwest on the North Sea. The streets are straight, broad, and clean; Broad Street (*Breede-straat*) being esteemed one of the finest in Europe. In it is situated the town-hall (*Stadhuis*), originally founded toward the end of the 16th century, a picturesque building, with 30 windows in a line in front, a tall spire, and three highly ornamented projecting gables. In the council-chamber are the painting of the ‹Last Judgment,› by Lucas van Leyden, and several good historical portraits; in part of the lower floor is situated the meat-market. None of the churches are remarkable; the Reformed Church of St. Peter contains monuments to Boerhaave, Spanheim, Scaliger, etc. The most important educational institution is the university, formerly one of the most famed in Europe, and still in excellent repute. It is attended on the average by about 800 students, nearly one half studying law. Connected with the university are a well-laid-out botanic garden, an observatory, a library, with numerous manuscripts, an anatomical theatre and museum of comparative anatomy, one of the richest collections of natural history in existence, cabinet of coins, museum of antiquities, and a rich Japanese museum. Leyden was noted for its cloth manufactures, which after 1670 declined, but have revived in recent years, now employing about 1,500 operatives. There are also various other branches of manufacture, and the former great trade in books, carried on in the latter part of the 17th and during the greater part of the 18th century, and rendered world-renowned by the Elzevirs, is represented by several printing offices. There is an extensive trade in agricultural produce, especially cheese and butter.

The most memorable event in the history of Leyden is the successful siege it maintained against the Spaniards in 1573–4 until relieved by the action of the Prince of Orange in breaking down the dikes. Leyden is the birthplace of John of Leyden, the founder of the Anabaptists; Camper, Muschenbroek, the brothers Gerard and Isaac Vossius, Gronovius, Rembrandt, Luke of Leyden, the brothers Van der Velde, Gerard Douw, etc. Pop. (1900) 54,421.

Leyden Jar. See ELECTRICITY.

Leys, Henri Jean Auguste, ŏṅ-rē zhŏṅ ō-güst līs, or lā, Belgian painter: b. Antwerp 18 Feb. 1815; d. there 25 Aug. 1869. He worked from 1829 to 1832 in the studio of his brother-in-law, Ferdinand de Braekeleer, and in 1833 exhibited in Brussels, ‘Fight Between a French Grenadier and a Cossack.’ He attracted still further attention by his picture ‘Fight of Burgundian and Flemish Soldiers.’ His style changed after his visit to Paris 1835; during which he confined himself to a study of the French Romantic school. Yet while the modern manner is discernible in his works, he shows himself also under the influence of Van Dyck and Rembrandt in such pictures as: ‘Flemish Wedding’; ‘A Painter's Studio’; ‘A Family Party in Brittany’; ‘Burgomaster Six at Rubens' House’; etc. In 1839 he still further modified his manner after traveling in Holland and familiarizing himself with the Dutch genre painters. It was certainly under their inspiration that he painted such pictures as ‘A Family Party’ (1845); ‘Divine Services in Holland’ (1850); etc. After completing his travels in Holland he still further changed his style and painted in the bizarre style of Quentin Matsys, whose naïveté and uncouthness he also reproduced. In 1863 he received a commission to decorate with frescoes the town hall of Antwerp, and this he fulfilled by producing a fine series of scenes from the history of the city. He was also an etcher, lithographer and wood engraver of acknowledged skill.

Leyte, lā′tā, Philippines, a province consisting of the island of Leyte and 40 dependent islands; area of Leyte 3,872 square miles; area dependent islands 342 square miles; total 4,214 square miles. Leyte lies southeast of Luzon, southwest of Samar, from which it is separated by the narrow strait of San Juanico, and northwest of Mindanao; its extreme length from northwest to southeast is 121 miles. The two most important dependent islands are Biliran, area 144 square miles; and Panaón, area 76 square miles. They are both mountainous; Biliran is noted for its sulphur springs; Panaón is well populated and has some gold deposits. The interior of the island of Leyte is mountainous, there being a number of extinct volcanoes, and the island is crossed by a number of large rivers; the coast line is irregular, indented by a number of bays, some of which afford excellent harbors, among the best in the Philippines. There are numerous roads on the east coast, and the west coast is also paralleled by roads and trails for almost its entire length; the rivers furnish good inland transportation. The province is one of the best cultivated in the archipelago; the most important product is hemp and many of the plantations being under cultivation for almost 50 years require little work, the crop being abundant and of excellent quality; other products are rice for home use, chocolate, sugar, coffee, and corn. The mineral products include sulphur, gold, iron, lead, and silver; of these the most important is sulphur, which supplied the gunpowder works at Manila under Spanish rule. There are also valuable forests; the yield of dammar, the brea or pitch of the Spaniards, is the most important in the Philippines. The largest industries are the manufacture of abaca and the cabonegro or black boat cables from the hemp, and the extracting of cocoanut oil. There are also ship-building yards at Tacloban, at which good sized schooners are often built, and weaving of fine fabrics by the women. Civil government was established in April 1901; the people proved generally favorably inclined to the new regime, and there was renewed activity in every line of industry; before December of that year the United States troops were withdrawn from a number of the towns, which had been garrisoned, and they were protected entirely by the native police. Pop. 270,500, mostly Visayan.

Lhasa, lhä′sä or **Lassa,** lä̆s′sä, Tibet, the capital of the country, and the «Rome» or «Mecca» of Buddhism, its name signifying the «Place of God,» is picturesquely situated in a valley plain surrounded by mountains rising from the Ki-chu, a left affluent of the Sanpo or Upper Brahmaputra, about 280 miles in a direct line northeast of Darjiling. Access being exclusively forbidden to Europeans, three only having visited it during the 19th century, the place had a mysterious celebrity, until the British expedition under Col. G. J. Younghusband (q.v.) reached the city in 1904. The accounts since published corroborate the information previously obtained from Asiatic pilgrims and explorers. Broad roads lined by luxurious gardens lead past the well-built houses of the suburbs to the closely guarded gates of the walled city, which is dominated by the imposing Potala hill-palace, and other hill-top edifices. The principal streets of the city are wide, regular, and clean, lined with well-stocked stores and houses of two and three stories; but the side streets and lower parts of the town are very dirty and daily crowded by importunate beggars. The houses are built of stone, brick, or earth, terraced at the summit, and uniformly whitened externally, the windows and door-frames being painted with the sacred or *lamanesque* colors, red and yellow. Internally, however, they are exceedingly dirty and comfortless. The public edifices worthy of notice are connected with Buddhist monasteries. In the heart of the city is the convent of Moru, with a large printing establishment, from which numerous religious works are issued; and on the outskirts, toward the cardinal points, are four other large monasteries — Praebung on the west, Sera on the north, Khaldan on the east, and Samie on the south or southeast side. All these have several thouand inmates, being greatly resorted to from China, Turkestan, Nepal, etc., as schools of philosophy and Buddhism. About 1½ miles northwest from the city, and connected with it by two avenues of trees, is the Potala, Bottala, or Buddha-la, the residence of the Dalai or Talé (Grand) Lama, the ecclesiastical sovereign of Tibet, and supreme pontiff of the vast regions forming central, eastern, and southeastern Asia. A triple-peaked hill here rises abruptly out of the plain to the height of 367 feet; it is covered with convents and cells of monks, and in the centre is the palace of the Dalai Lama, a fine edifice, four stories in height, with a vast number of apartments and a large dome, which, like the columns of the peristyle surrounding the structure, is covered with gilding. The interior is full of idols, treasure, and works of art. Lhasa is the principal emporium of Tibet, and a rendezvous of people from all parts of Asia; silk stuffs, tea and other articles being here exchanged for Tibetan, Indian, and European goods. British troops under Col. Younghusband occupied Lhasa in 1904, and after great difficulties, concluded a treaty with the authorities in behalf of British interests. Pop. of city estimated at 15,000, exclusive of the great number of Buddhist lamas or priests and students in the monasteries. (See Tibet.) Consult Candler, 'The Unveiling of Lhasa' (1905).

L'Hôpital, Guillaume François Antoine, gē-yōm fräṅ-swä äṅ-twän lō-pē-täl, Marquis de St. Mesme, French mathematician: b. Paris 1661; d. 2 Feb. 1704. He devoted himself exclusively to the study of mathematics, having had Jean Bernouilli for a short time to give him instructions in the differential and integral calculus, and at the age of 32 distinguished himself by solving problems proposed to the lovers of mathematics by Jacques Bernouilli; and 1693 was admitted an honorary member of the Academy of Sciences at Paris. From that period he published, in the French and foreign journals, solutions of difficult questions, and other mathematical communications. Such was his reputation that Huygens, profound as was his acquaintance with science, applied to L'Hôpital for information relative to the nature of the differential calculus. This led to the publication of his 'Analyse des Infiniment Petits' (1696), the first French work on the subject, of which a new edition was published by Lefevre (1781). Besides the work mentioned he was the author of 'Les Sections Coniques, les Lieux Géométriques, la Construction des Equations' (1707); and 'Une Théorie des Courbes Mécaniques.'

L'Hôpital, Michel de, mē-shĕl dė, French statesman: b. Aigueperse, Puy de Dôme, France, about 1504; d. Chateau Bellebat, near Etampes, France, 15 March 1573. He studied law in Italy, and returning to France was president of the court of accounts in 1554, and chancellor of France in 1560. To his moderate policy were due the edict of Romorantin, 1560, which prevented the introduction of the Inquisition in France; the edict of pacification, 1562, authorizing the free exercise of Protestant worship; and the ordinance of Moulines, 1566, which aimed at reform in the administration of justice. Distinguished for his integrity and moral courage, L'Hôpital stood far in advance of his time in his support of toleration and civil liberty. He gave up his office in 1568.

Li, lē, or **Cash,** a copper coin of China, with a square hole in the middle, and an inscription on one side. The value of a li in American money is about ⅛ of one cent. Li is also a Chinese measure of length equal to about one third of an English mile.

Li Hung Chang, lē hoong chăng, Chinese statesman and diplomatist: b. Lu-chow, province of Ngan-hwei, 16 Feb. 1823 (or perhaps 1819); d. Peking 7 Nov. 1901. He received a thorough education, passing through the successive grades of scholarship, with the severe examinations which in China must be undergone before admission to the literary caste, «ahead of 15,000 competitors». In 1847 he received the third degree, and entered the Hanlin College in 1849. In 1850, when the Tai-ping rebels invaded Ngan-hwei, he joined Tseng Kuo Fan's army as secretary. He was appointed judge of Chekiang province, and in 1861 governor of Kiang-su. In 1863, in conjunction with Colonel (afterward General) Charles George Gordon (q.v.), known as «Chinese Gordon», he retook Su-chow, and drove the rebels entirely out of Kiang-su. Gordon's force, the «Ever-victorious Army», had previously been commanded by Frederick T. Ward, an American soldier of fortune, and was largely composed of foreigners. From them Li Hung Chang derived much information concerning Europeans, and also acquired increased military knowledge and ideas of western political ethics. For his services in suppressing the Tai-ping rebellion Li was made commander of the imperial forces, head of the navy, a hereditary noble, and received the highest decorations in the gift of the emperor. In 1864 he was appointed governor of the Kiang provinces. During the Nien-fei rebellion (1868) he was degraded for apathy in the face of the enemy, but was soon restored to favor. In 1872, after the massacres at Tien-tsin, followed by his stern measures of redress, he was appointed viceroy of Chi-li, the metropolitan province. During his long service in that office he resided at Tien-tsin, where he displayed his progressive designs by many improvements, among which were a great canal and the forming of the Chinese Merchants' Steam Navigation Company. Here for 24 years (1870–95) he exercised a power in reality second only to the emperor's, controlling the foreign policy of the empire, and introducing modern tendencies from western civilization. He negotiated important treaties with Japan, Peru, and other countries, increased the military strength of China in view of foreign encroachments, and may be said to have created the Chinese navy. He was imperial commissioner of trade for the northern ports; the emperor entrusted to him supreme charge of the military and naval forces sent to Korea in the Chino-Japanese war; and though several times distrusted and disgraced, he bore nearly the whole burden of the war, marine, and financial departments of the Chinese government. During the war with Japan the disasters to the Chinese armies and navy were laid to his charge, and he was degraded and punished, but still retained his office of prime minister. He was sent to Japan in 1895 to negotiate the peace treaty, and barely escaped assassination. Having represented China at the coronation of Nicholas II. of Russia in 1896, he made a tour of the world, and was everywhere received as a highly distinguished guest. After the suppression of the uprisings of 1900–1 he played a prominent part in adjusting the relations of China with foreign powers.

The official integrity of Li Hung Chang has not gone unchallenged, although specific acts of corruption were never proved against him. Craftiness was conspicuous in his character and political acts; but however his conduct may have been inspired at different times, there is no question in regard to the great services which, through his extraordinary abilities and opportunities, he rendered to China and to the world. The extent of his immense private fortune has never been exactly known. His shrewdness and thrift were shown in the curious fact that while acting so great a part in China for so many years he also held control of all the pawnshops in the empire. If he were «the buffer between China and the rest of the world» on the side of practical usefulness to his own country the scope of his work is seen in the influence which he exerted in behalf of modern progress; in the machine-shops which he established; the cotton-mills, fitted with foreign machinery; the bicycle factory that he built; the telegraph lines he constructed; the coal mines he opened; the arsenals he erected; the fortifications which he equipped with foreign guns; the modern firearms and military organization and instruction which he introduced; his gunboats and ironclads of foreign construction; railroads built under his direction; above all in the establishment of schools for the introduction of modern improvements and appliances; in the founding and endowment of a hospital, etc. These things showed in him a spirit and a purpose new to the official world in China, and from whose initiative still greater results may be expected. Consult Douglas, ‘Li Hung Chang’ (1895).

Liability Insurance. See INSURANCE, CASUALTY.

Lia-fail, or **Stone of Destiny,** a broad gray stone on which the kings of Scotland were crowned in the Abbey Church of Scone. In 1296 Edward I. carried it to England and it still remains under the coronation chair in Westminster Abbey. Tradition says it is the stone which the patriarch Jacob used as a pillow.

Liakhof Islands. See NEW SIBERIA.

Lian'as, climbing and twining plants found in profusion in tropical climates, where they form thick, woody stems. In many instances they overtop the heads of the tallest trees, when they descend and intertwine the entire forest by their cable-like shoots, frequently forming an impenetrable network or matting, which it is necessary to break through with the hatchet. The thickness of the stems of some of the species of lianas becomes so great that their constriction kills the tree to which they originally adhered, and when this has fallen the magnificent confusion of leaves and flowers presents one of the most striking features of those forest scenes. Vanilla, sarsaparilla, and other medicinal plants are true lianas.

Li'as, in geology, a formation consisting of thick argillaceous and calcareous deposits, which constitute the base on which the oölitic series reposes. It is generally regarded as the lowest division of the Jurassic system, and it rests on the Triassic series. The upper portion of these deposits, including about two thirds of their total depth, consists of beds of a deep blue marl, containing only a few irregular limestone beds. In the lower portion the limestone beds increase in frequency, and assume the peculiar aspect which characterizes the lias, presenting a series of thin stony beds, separated by narrow argillaceous partings, so that the quarries of this rock at a distance assume a striped and ribbon-like appearance. The lias is remarkable for the number and variety of its organic remains, among which are belemnites, ammonites, gryphites, and other shells, together with the remains of saurian or lizard-like animals, of which the ichthyosaurus and pleiosaurus are familiar examples. In the United States the lias is found in Oregon and California. The lias crosses England from near Whitby, in Yorkshire, to Lyme, in Dorsetshire. See GEOLOGY.

Li'atris, or **Lacinaria,** a genus of plants of the thistle family containing about 16 species of tall perennial herbs growing in dry soil throughout the eastern and central United States and known as blazing-stars and button-snake roots, in reference to their globular tubers. They bear late in the season dense spikes of purplish flowers, often in the south a foot in length and of a delicate lavender tint very effective when seen in a mass of goldenrod or autumnal grasses. Gray-feather is another name indicating the conspicuous beauty of such fine species as the blue *L. scariosa* or *L. squarrosa.* The latter is known as colic-root, and all are in repute among the southern country folk, not only as good family medicine in the form of a decoction made from the root, but as a specific against rattlesnake venom.

Libanius, lĭ-bā'nĭ-ŭs, Greek sophist and rhetorician: b. Antioch 314 A.D.; d. there 395. He taught rhetoric at Constantinople, where his school drew such vast numbers of students that his rivals caused him to be expelled from the city as a sorcerer. He subsequently returned to Antioch, and there passed his latter days. He was highly esteemed by the emperors Julian, Valens, and Theodosius. He was a pagan, but maintained friendly relations with many Christians, including St. Basil and St. Chrysostom, who were his pupils. He was a voluminous author, and several of his works are extant, but there is no complete edition of them. Consult Sievers, ‘Das Leben des Libanius’ (1868).

Liba'nus, Mount. See LEBANON.

Liba'tion. Among the ancients libation was properly a drink-offering; but was used also for other offerings to the gods, as a meal-cake, or something similar placed on the altar, and a part of which was burned. Libations were also made at domestic meals, some of the food being thrown into the fire on the hearth in honor of the Lares. A libation always accompanied the sacrifice offered in concluding a treaty with a foreign nation. The libations to the dead were not performed till the ninth day after the burning or interment, and consisted of milk, wine, or blood, and generally concluded the funeral solemnities.

Libau, lē'bow, Russia, an important seaport in the government of Courland, on the Baltic, on a narrow strip of land between the sea and a small lagoon. It has rapidly increased in recent years and become an important centre of industry as well as of trade. A great naval harbor has been constructed, and ship-building, especially of ocean-steamers is carried on. It exports grain, linseed, flax, hemp, timber; and

LI HUNG CHANG.

imports colonial produce, manufactured goods, coals, etc. Pop. (1897) 64,505.

Lib'bey, William, American scientist: b. Jersey City, N. J., 27 March 1855. He was graduated from Princeton in 1877 and since 1880 has been professor of physical geography there. He is a fellow of the geographical and geological societies of London and Paris.

Lib'by, Laura Jean, American novelist: b. New York 22 March 1862. She was married to Van Mater Stilwell in 1898. Her earliest writings were contributed to the New York Ledger and other story papers. Among her many fictions are: ‹Lovers Once but Strangers Now›; ‹When His Love Grew Cold.› The literary merit of her work is very slight.

Libby Prison, a famous prison at Richmond, Va., during the Civil War. It was a large brick structure named for its owner who used the building as a ship chandlery before the War. The Confederate government early secured it as a military prison for Federal soldiers, and many thousands were confined here. In 1863 and 1864 there were many deaths from disease and lack of food. In 1892, the building was torn down and removed, brick by brick, to Chicago, and set up there as a museum, but the enterprise proved a failure.

Libel, (1) a defamation of a person, with malice expressed or implied, made public by means of writing, printing or pictures, calculated to provoke him to anger, or expose him to hatred, ridicule or contempt. Spoken words, however opprobrious or injurious, do not amount to libel but are classed as slander; and, being more limited in their publicity, the offense is not so great as in a case of libel. There may be a libel by traducing the memory of one who is dead, as well as one which attacks the reputation of one who is living. Any publication which has a tendency to disturb the public peace or good order of society, is actionable as a libel, and may usually be prosecuted by either a civil action for damages or by a criminal proceeding, and both remedies are often pursued at the same time. In the absence of some statutory provision on the subject, proof of the truth of the matter contained in the libel does not ordinarily furnish a good defense to the offending party. The publication may be very limited and yet amount to the offense. The malicious reading of a libel to one or more persons has been held sufficient and the sale of each copy of a book containing a libel has been pronounced by a court as sufficient to furnish a distinct offense. Libels against the government consist of calumnious publications in denunciation or unwarrantable criticism of the established governmental system or in censure of methods of administration, provided the allegations are of such a nature that their natural tendency or evident purpose is to promote disaffection among the citizens or to excite a spirit of revolution. But indictments for libels of this character are very rare, and would not be resorted to except in extreme and very plain cases. Many of the States have enacted statutes upon the subject of libels, declaratory of the old common law rules, with ancillary provisions, relating principally to forms of administration, with provisions as to punishment. A libel may be a misdemeanor only, or a felony, according to the character of the offense.

(2) Libel in admiralty practice denotes the complaint or pleadings by which an action is commenced, to enforce some claim or right in a marine matter, and contains a circumstantial statement of the claim. The general scope of the jurisdiction of admiralty embraces all marine contracts and maritime torts, including captures in time of war, and seizures for revenue forfeitures, and all duties appertaining to marine commerce and general navigation. The test of jurisdiction in torts is determined by the place where the same were committed. Such a libel is not required to be drawn with any degree of technicality, the substance being more important than the form. In the United States substantially all admiralty matters are transacted in the Federal courts. The plaintiff, or moving party in an admiralty proceeding, is called the libellant, and the defendant, or party against whom the proceeding is brought, is termed the libelee or respondent. Sometimes a libel is directed *in rem* or against property only, without naming a respondent.

HENRY HARDWICKE.

Liberal Party, in politics, the party which claims to be distinctively that of reform and progress with a view to vast increased political power in the people, and to extend privileges to the masses. Most European countries have a liberal party, but in several of them, such as Germany, Belgium, and France, liberalism has lost heavily owing to the rapid spread of socialist doctrines, which involve economic and industrial rather than political reform. In Great Britain, Liberal and Conservative ministries follow each other at irregular intervals, and on the whole the system has worked well. The greatest of modern Liberal leaders was Gladstone, but his introduction, in 1886, of the Irish Home Rule and Land Purchase Bills alienated many of his supporters, and led to the formation of the Liberal Unionist Party. On the question of the war policy in South Africa in 1899–1901 the Liberal opposition was split into several groups, such as the Liberal Imperialists, who supported the government; the so-called «pro-Boer» Liberals, who opposed the war throughout; and those who, like Sir Henry Campbell-Bannerman, tried to combine both policies.

Liberal Republican Party, in American politics, a party organized in 1872 by Republicans, who were dissatisfied with General Grant's first administration as President. At a convention held by them in Cincinnati, in that year, Carl Schurz was elected its president, and a platform adopted demanding civil service reform, local self-government, and universal amnesty, recognizing the equality of all men, recommending the resumption of specie payment, etc. Horace Greeley and B. Gratz Brown were named for President and Vice-President. This platform and these nominations were adopted by the regular Democratic convention of that year, but dissensions arose, and other candidates were nominated, the result being that the Republican nominee, General Grant, was elected by an overwhelming majority and the Liberal Republican party was thereafter practically dead. The real strength of the party lay in its presidential candidate, Horace Greeley, who had a large following, particularly of the farming element throughout the country, which was secured through the large and widespread circulation of the New York 'Weekly Tribune,' of which Greeley was the editor. See also GREELEY, HORACE.

Liberal Unionist Party, in British politics, a party formed in 1886 by the Liberals under the leadership of the Marquis of Hartington who objected to Gladstone's Irish Government and Land Purchase bills, as being dangerous to the empire. They gained their immediate object by coalescing with the Conservatives, and in the election which followed the defeat of the Gladstonian ministry they succeeded in returning some 80 members to parliament. They have since acted with the Conservatives.

Liberator, The. See GARRISON, WILLIAM LLOYD.

Liberia, lī-bē′rĭ-ạ, Africa, a negro republic on the west coast between Sierra Leone and the Ivory Coast. A convention with France in 1892 fixed the Cavally River as the southeastern boundary, and restricted the inland territories of the republic. The area is estimated at 35,000 square miles. It was founded as a colony of free blacks by the American Colonization Society in 1820, under the philanthropic idea that many, if not all, of the liberated slaves would prefer returning to Africa to staying in America, where, at that time, they were denied political rights. Liberia was declared an independent state in July 1847, and in the following year was recognized as such by Great Britain and France, when a treaty of trade and commerce with the state was concluded. A large proportion of the inhabitants speak English. The government of the country is on the model of that of the United States, consisting of a president, a vice-president, a senate, and a house of representatives. It is provided that on the increase of the population each additional 10,000 shall have a representative. For political and judicial purposes the republic is divided into counties and townships. The counties are four in number, and called Montserrado, Grand Bassa, Sinoe, and Maryland. Each town is a corporation, with elected municipal officers. Monrovia (pop. 13,000), the capital and port of the colony, is situated on Cape Mesurado. There are besides a number of towns or villages in the territory.

The general line of the coast (about 500 miles) is from northwest to southeast. There are several inlets and harbors at Cape Mount, Cape Mesurado, Cape Palmas, and Basa Cove. There are many rivers, of which the principal is the St. Paul, which enters the ocean at Cape Mesurado. It is about half a mile wide, and at low tide has seven feet of water on the bar at its mouth. It is navigable only about 18 miles from the sea. The other largest rivers are the St. John, which empties at Bassa Cove; the Junk River, which runs between the St. Paul and the St. John; Cape Mount River, which flows into the sea at Cape Mount; and the Grand Sesters, east of the St. John, which has 14 feet of water over the bar at its mouth. The land on the coast is generally low and sandy, except near the capes, which are elevated, and in the southeast, where the shore is bold and rocky. From the coast the land gradually rises, until at the distance of 30 miles inland it swells into forest-covered hills, and in the remoter interior into mountain ridges divided by fertile valleys. The soil is generally good, though there is some poor land. It is of a yellowish color, and tinges the rivers which flow through it. There is little swamp land, the country being almost universally broken and rocky or gravelly. The climate is that common to regions near the equator. There are two seasons, the wet and the dry. The former begins with June and ends with October. Rain falls during the greater part of this season, though not without intervals of clear skies and successive days of fine weather, especially in July and August. In the dry season rain is rare, though there are occasional showers. The average heat of the year in Monrovia is 80° F., that of the rainy season being 76° and of the dry 84°. The mercury seldom rises above 90° in the shade and never falls below 60°; the daily variation seldom exceeds 10°. June is the coolest month, and January the hottest. During the hottest months, January, February, and March, the heat is mitigated by the constant winds, the land breeze blowing from midnight until near midday, and the sea breeze from midday until near midnight. The climate both on the coast and in the interior is deadly to the white man, and though less fatal is still formidable to the black man born and reared in temperate regions. To the white man there is no acclimation in Liberia; the first attack of fever does not secure him from subsequent attacks. To the natives the climate is not unfavorable; they are robust and have few diseases, and many of them live to a great age. Iron ore abounds in Liberia, and copper and other metals exist in the interior of the country. The vegetables are almost endless in their variety. The most important of the native trees are rosewood, teak, mahogany, hickory, poplar, brimstone wood (so called from its yellow color), sassa wood, and many others valuable in ship-building and cabinet work. Camwood and other dyewoods, ebony, the acacia which yields gum-arabic, and the copal trees are found. There are several varieties of palm, all highly useful, especially the nut-bearing palm from which palm oil is made. Medicinal plants abound; among them are the copaiba tree, the *Croton tiglium,* which yields the croton oil, the castor oil plant, and the *Ricinus major,* whose seeds produce a highly purgative oil, and whose wood is much used for hedges and fences. Several varieties of maize and rice of excellent quality are cultivated, and on the highlands of the interior good crops of wheat, barley, and oats have been raised. Cotton flourishes, and sugar-cane and excellent coffee are easily produced. The esculent and farinaceous roots chiefly cultivated are the sweet potato, the cassava, the yam the tenia, which in flavor resembles the potato, and the arrowroot. Cabbages, beans, peas, tomatoes, beets, cucumbers, and almost all the common garden vegetables known in America, thrive when planted in the proper season. The fruits are numerous and fine. Among them are the mango, lemon, lime, orange, guava, tamarind, pomegranate, cocoanut, plantain, banana, rose apple, African cherry, pineapple, avocado pear and the African peach. Wild animals are scarce, the elephant, hippopotamus leopard, crocodile, boa constrictor, and deer, formerly abundant, being now rarely met with. Monkeys, guanas, chameleons, lizards, and ants in great variety, abound in the forests. The driver ants, which travel from place to place in countless multitudes, are welcomed by the people, for when they enter a house they soon clear it of every other species of insect and vermin. The Liberians build coasting-vessels, and possess a number of large vessels trading with Great Britain and the United States. An export and import trade is carried on, and a large number of the inhabitants of the interior depend upon Liberia for their supplies of European goods. The more important articles of export are coffee, sugar, palm-oil and palm kernels, cocoa, arrowroot, caoutchouc, ivory, kola nuts etc. The total value of the trade, however, does not probably exceed $2,500,000.

The population amounts to 2,060,000 of whom 60,000 are liberated American slaves and their descendants, the remainder indigenous negroes, including the Kroomen (q.v.). No white man is allowed to acquire citizen's rights or to hold property. There is no standing army, but all citizens capable of bearing arms are enrolled in the militia. Slavery is declared illegal. Complete religious toleration exists, the Methodist forms prevailing. English money is current, though accounts are kept in dollars and cents; and English weights and measures prevail. The financial condition of the republic has been deplorable; latterly there has been a change for the better. In 1893 the revenue derived chiefly from customs duties was $185,345 while the expenditure mainly for administrative purposes was $188,187, in 1900 the revenue was $218,804, and expenditure $207,935. The state debt contracted in 1871 amounted to $500,000 at 7 per cent on which the unpaid interest alone in 1899 amounted to $892,500. In that year an agreement was effected for the reduction of the rate of interest, the amortisation of the principal, and the payment of arrears; duties on rubber and other articles being assigned as security. In 1902, by this arrangement the debt amounted to $391,250 and the arrears of interest to $93,735. The arrears of interest on the internal debt, however, exceed the principal. The republic unfortunately is not in great favor with the native negroes, nor with those of the United States, although a few immigrants still arrive annually. Not only have the Liberians failed to make any impression on the aboriginal inhabitants, whom they were supposed to civilize, but, notwithstanding many honorable exceptions, they are lazy and quarrelsome, and unfortunately there is a general tendency in many respects to relapse into barbarism. About six square miles only of the territory is effectively administered. Consult, Blyden, ‘A Chapter in the History of Liberia’ (1892); Bourzeix, ‘La République de Libéria’ (1887); Büttikofer, ‘Reisebilder aus Liberia’ (1890); Delafosse, ‘La République de Libéria’ (1900); Durham, ‘The Lone Star of Liberia’ (1893).

Liberius, pope: b. Rome; d. there 24 Sept. 366. He was pope from 352 to 366; is one of the pontiffs that have incurred the accusation of heresy. It is conceded that he suffered an exile of two years by order of the Emperor Constantius for refusing to subscribe to a condemnation, by the Council of Arles (354), of the great champion of the Niceno-Constantinopolitan creed of the homoousion, St. Athanasius. But it is alleged that he obtained his recall by subscribing to a heretical, formally Arian confession of faith drawn up by an assembly of bishops at Sirmium. As there were three councils of Sirmium and three Sirmian confessions, the question arises, what was the tenor of each, and which one was subscribed by Liberius. The first council was held in 351; its confession is orthodox in its terms, but it does not employ the orthodox shibboleth homoousion. The second was held in 257: its confession is emphatically Arian. The third confession is Semi-Arian and heretical: but as it was formulated in 358, after Liberius' return from exile, that could not be the confession signed by him. Did he sign the second? No; for St. Hilary (300–368) a principal authority for these transactions, states that the confession signed by Liberius was drawn up by 22 bishops, among them Demophilus; and Liberius himself says that it was formulated by eastern bishops and presented to him by Demophilus, one of them: the confession signed by Liberius must have been this first (and orthodox) Sirmian confession; for the second was the work of western bishops or approved by them — Valens, Ursacius, Hosius, Germinius and Potamius.

Libertad, lē-bĕr-täd', Peru, a department bordering on the Pacific Ocean, with the departments of Lambayeque, and Cajamarca on the north, Loreto on the east, and Ancachs on the south. It is mountainous, with a narrow strip of level land along the coast. The Marañon, the head stream of the Amazon, waters its eastern slopes. Area, 10,206 square miles; pop. (1896) 250,931. Capital, Trujillo.

Lib'ertas, the goddess of freedom. By the Greeks she was invoked by the synonymous title Eleutheria. At Rome, her most famous temple was situated on the Aventine Mount. She was represented under the figure of a woman holding in one hand a cap, the symbol of liberty, and two poniards in the other. In ancient times Roman manumitted slaves put on what was termed the Phrygian cap, in token of their freedom. In modern times, a cap is also used as a symbol of liberty; thus, in France, a red cap formed the badge of the Jacobin Club. In England, a blue cap with a white border is used as a symbol of the constitutional freedom of the nation.

Lib'ertines, or **Liberti'ni,** a sect of fanatics in the 16th century in the Netherlands and Belgium, who maintained that nothing is sinful but to those who think it sinful, and that perfect innocence is to live without doubt. They advocated community of goods and gave themselves the name of “Spirituals.” The name was also applied in England to the early Anabaptists about the middle of the 16th century.

Lib'erty, Mo., city, county-seat of Clay County; on the Hannibal & St. J. and the Chicago, M. & St. P. R.R.'s; about 15 miles, by rail, northeast of Kansas City. It is situated in an agricultural region, and its chief manufactures are flour and dairy products. Its trade is principally in grain, vegetables, fruit, and live-stock. It is the seat of the William Jewell College, opened in 1849 under the auspices of the Baptists, and of the Liberty Ladies' College opened in 1890. Pop. (1900) 2,407.

Liberty Bell, the bell which formerly hung in the dome of the old State House (Independence Hall), Philadelphia, and was rung to announce the signing of the Declaration of Independence, 4 July 1776. It was cast in England especially for the State House, and was brought from there in 1752; in being taken from the ship it met with an accident which spoiled its tone, and it was recast in Philadelphia in 1753, when the words «Proclaim liberty throughout all the land unto all the inhabitants thereof» were inscribed on it. When the British occupied Philadelphia, the bell was taken down and hidden in the Delaware River near Trenton, but was afterward hung in its old position, and for several years rung every Fourth. In 1835 it was broken while tolling for the death of Chief Justice Marshall. In 1854 it was placed in the hall of the old State House on a pedestal with 13 sides representing the number of original States. In 1893 it was carried to Chicago for the World's Fair, and in many cities through which it was carried was greeted with special demonstrations; and has since been specially exhibited in other cities. Consult: Belisle, ‘History of Independence Hall.’

Liberty Boys, a popular name given the Sons of Liberty during the American Revolution.

Liberty College, a coeducational institution, founded at Glasgow, Ky., in 1875, under the auspices of the Baptist Church. In 1902, the number of instructors connected with the school was 11 and the number of pupils 250. The grounds and buildings were valued at $25,000. The amounts received from tuitions and other fees were $6,500.

Liberty, Equality, Fraternity, a well-known motto of the French Republic, dating from the time of the first revolution. Equality, in this connection, means equality before the law and the absence of class privileges. The motto gives title to a work by Sir J. F. Stephens (1873).

Liberty Party, the first political organization of the American Abolitionists (q.v.). The Anti-Slavery Society was composed of two wings steadily and at last decisively diverging: the politicals, who wished the work to be carried on as other reform measures are, by massing its supporters, and either winning a decisive victory or extorting gradual compromises from its opponents: and the Garrison wing, who refused to vote, hold office, or in any way recognize a government which legitimated slavery, denounced the Constitution, and denounced the churches and ministers for refusal to join the movement. The violence of this branch, and even more the revolutionary and sometimes offensive social theories associated with it, made the other anxious to part company; and they brought this about by having the annual report in 1838 suggest the nomination and support of abolitionist candidates. The next year, on the refusal of the Garrisonians to listen to this, the political wing split away, and in 1840 organized the «American and Foreign Anti-Slavery Society.» Among the leaders of this secession were James G. Birney, Arthur Tappan, Gerrit Smith, J. G. Whittier, Edward Beecher, John Jay, and Thomas Morris. In a convention at Warsaw, N. Y., 13 Nov. 1839, this branch nominated Birney (a Kentucky ex-slaveholder) for President, and Francis J. Lemoyne for Vice-President. A national convention (mainly from New York) was held 1 April 1840, confirmed these nominations, and took the name of the Liberty party. The nominees refused to accept, but were voted for none the less, and received 7,059 votes in the Harrison-Van Buren election of 1840, of which 2,798 were from New York State. During the next four years the party put up tickets in various local elections. On 30 Aug. 1844 it held another national convention at Buffalo. Polk was already nominated by the Democrats, on the issue of Texas annexation, which Clay had dodged and secured the nomination by the Whigs; but the Liberty Party had pronounced against all ostrich policies or candidates, and nominated Birney again, with Thomas Morris of Ohio as Vice-President. They received 62,300 votes, all in the North and Northwest, 15,812 in New York. Small as this vote was, it turned the scale in New York and Michigan against Clay, and elected Polk, the Southern Democrat; decided the annexation of Texas, and reinforced the slave party with new territory six times the size of New England. This result, however it might prove the potential power of the party, was not wholly satisfactory, and it was evident that a pure Abolitionist party was premature. The Abolitionists, therefore, dropped their separate organization, and in 1848 and 1852 voted for the candidates of the Free Soil Party (q.v.) accomplishing much more by strengthening the forces of this practical movement, whose enemies were constantly playing into their hands, than they could have done with the other. After the rise of the Republican party they formed part of its reliance and its advance guard, but always with a certain separation of feeling and even of organization.

Liberty, Statue of, the name of a colossal statue on Bedloe's Island in New York harbor. On 28 Oct. 1886, after more than 12 years of preparation, this statue, given by the people of France to the United States, was dedicated and unveiled. The statue was the conception of M. Bartholdi, who designed it for the Franco-American Union in 1874. It was built by popular subscriptions in France, and required over five years for its completion. It was mounted in Paris in October 1881. The American pedestal for the statue was not commenced till April 1883, and was finally finished in 1886. This was built by popular subscription. The statue was erected on an iron framework bolted firmly to the stone pedestal. The statue, which is of bronze, is of the following dimensions:

	Ft.	In.
Water-level to top of pedestal	149	10
Statue proper to top of torch	151	5
Total height from water-level	301	3
Heel to top of head	111	6
Length of hand	16	5
Index-finger	8	0
Circumference at second joint	7	6
Size of finger-nail	13 x 10 in.	
Head from chin to cranium	17	3
Head-thickness from ear to ear	10	0
Distance between the eyes	2	6
Length of nose	4	6
Right arm, length	42	0
Right arm, greatest thickness	12	0
Thickness of waist	35	0
Width of mouth	3	0
Tablet, length	23	7
Tablet, width	13	7
Tablet, thickness	2	0

The statue weighs 450,000 pounds, or 225 tons; the bronze alone weighs 200,000 pounds. Forty persons can stand comfortably in the head, and the torch will hold 12 people. The number of steps from the base of the foundation to the top of the torch is 403; from the ground to the top of the pedestal 195 steps. The number of steps in the statue from the pedestal to the head is 154, and the ladder leading up through the extended right arm to the torch has 54 rounds. The cost of the statue is estimated at $250,000; the cost of the pedestal and the erection of the statue $350,000; total cost of the work, completed $600,000. The light in the torch at the top of the Statue of Liberty is maintained by the Lighthouse Service of the government. Liberty exceeds in height the Colossus of Rhodes which was said to have been about 105 feet high. That of Nero is said by Suetonius to have been 120 feet high. The statue of Charles Borromeo, which is still standing on the Lake of Geneva, is 66 feet high, and is mounted on a pedestal measuring 46 feet. The celebrated statue of Jupiter carved by Phidias is said to have been 60 feet in height.

Liberty Tree, (1) a famous ballad of the Revolutionary War, written by Thomas Paine in 1775. (2) An old elm tree in Boston upon which the citizens hanged in effigy British officials connected with the Stamp Act and its enforcement.

Libi-divi, lē'bē-dē'vē. See DIVI-DIVI.

Libmanan, lĭb-mä-nän, or **Libanan,** lē-bä'-nän, Philippines, pueblo of the province of Ambos Camarines, Luzon, situated on the Polanluna River near its confluence with the Naga, 10 miles northwest of Nueva Cáceres. It is on the main road, and is a telegraph and military station. It has also important hemp and rice industries. Pop. 14,500.

Li'bra, (1) the ancient Roman pound weight, consisting of 12 ounces. (2) The original meaning is balance or pair of scales. (3) The seventh sign of the zodiac is called Libra, because at its first point the ecliptic crosses the equator to the southern hemisphere, and we have then the autumnal equinox, when day and night are, as it were, equally balanced.

Libraries, a general term used to designate collections of books and manuscripts for reading and preservation. The term library is also commonly applied to any apartment or building containing such a collection of books or manuscripts.

Libraries of the Ancients.—In early antiquity libraries consisted of archives, which were preserved in the sacred temples. The oldest library is said to have been founded in Memphis by the Egyptian king Osymandyas, of the 12th dynasty. It was housed in a division of the palace, at the entrance of which were inscribed the words: «The Healing of the Soul.» It contained works of an unknown antiquity deemed sacred by the Egyptians, which were destroyed in the ravages attending and following the Persian invasion. The monumental cuneiform records of the ancient Assyrian, Babylonian, and Persian empires have been designated «public libraries in clay.» The principal Hebrew library was in the temple at Jerusalem; it was restored after the captivity by Nehemiah, and again by Judas Maccabæus, and perished in the conquest by the Romans. In Greece, Pisistratus was, according to Aulus Gellius, the first to establish a public library at Athens. It was taken to Persia by Xerxes, returned by Seleucus Nicator, pillaged by Sylla, and restored by Hadrian. Polycrates soon after founded a library in Samos, and large collections of books were made by Euclid, Euripides, and especially by Aristotle, whose library, after passing through two generations, was purchased by Ptolemy Philadelphus and transported to Alexandria. Of ancient libraries, the most celebrated was that at Alexandria, which at one time is said to have contained 700,000 volumes. (See ALEXANDRIAN LIBRARY.) The first library at Rome was that of Paulus Æmilius (167 B.C.), the booty of war in Macedonia. Libraries subsequently became common, and in the time of Augustus it was fashionable for men of culture to have one in their houses. Sylla took from Athens to Rome the library of Apellicon the Teian; Lucullus made a large collection, and his galleries and porticoes became a favorite resort for conversation; Varro, Atticus, and Cicero were enthusiastic collectors of books. One of the unfulfilled projects of Cæsar was the formation of a public library, which should contain all the works in Greek and Latin literature. Augustus established the Octavian and Palatine public libraries, the latter of which continued until the time of Pope Gregory I. More important was the Ulpian library, founded by Trajan. In the 4th century Publius Victor mentions 28 public libraries in Rome, beside many valuable private collections. All of these perished in the storms of barbarian invasion. The library of Constantinople, founded by Constantine, and enlarged by Julian and the younger Theodosius to the number of 120,000 volumes, was partially burned by the iconoclasts in the 8th century under Leo the Isaurian. Libraries were founded from the 9th to the 11th century, especially by the imperial family of the Comneni, in the cloisters on the islands of the archipelago and on Mount Athos. After the fall of the Byzantine empire the imperial library was preserved by the command of Mohammed II. in one of the apartments of the seraglio, and was either destroyed by Amurath IV. or perished by neglect. The Moslems had an important library of Arabic books in Alexandria, and one at Bagdad, which included Greek manuscripts.

Mediæval Libraries.— As early as the 12th century Spain had upward of 70 libraries, and no monastery was founded without a collection of books, sacred and secular. The Benedictines had celebrated collections at Monte Casino, Canterbury, York, Bobbio, and Corbei. There were others at Fulda, Hirschau, Tours, Saint Germain des Prés, and Saint Gall. The revival of classical learning gave a new impulse to the formation of libraries. The large universities, princely families and many private scholars were zealous collectors. With the invention of printing began a new era in library history, the number of books being greatly increased and the cost materially reduced. Several of the largest libraries in Europe date from this period. The suppression of the numerous cloisters caused many small libraries to be incorporated in the larger collections of universities and cities. (See BOOK.) Nicholas V. during this mediæval period founded the library at the Vatican. Among others early founded was the Bodleian at Oxford (1597); the University at Cambridge (1475); the University at Edinburgh (1580); the Imperial at Paris (1377); the Town at Strasbourg (1531); the Royal at Munich (1550); the Royal at Copenhagen (1550); the Laurentian at Florence (1444); the Saint Mark's at Venice (1468); the University at Turin (1436); and the Town at Brussels (1350).

Libraries in Great Britain.—In Great Britain the two largest libraries of modern times are the Bodleian in Oxford, so named after its founder, the diplomatist and scholar, Sir Thomas Bodley (1545–1613), and now containing probably about 570,000 volumes and 30,000 MSS.; and the library of the British Museum at London, now one of the first in the world, and containing probably more than 1,900,000 printed books and perhaps 100,000 MSS. and charters. The library of Cambridge university is estimated at over 500,000 books and 6,500 MSS. Perhaps the fourth library in Britain in point of value is the Advocates' Library in Edinburgh, with about 350,000 books. The four Scottish universities have collections respectively of from 100,000 to 180,000 volumes. The most valuable library in Ireland is that of Trinity College, Dublin, with 240,000 volumes. Important free libraries have been established at Liverpool, Manchester, Birmingham, and Hull, which have each a library of over 100,000 volumes. These free libraries were the result of a Free Library Law passed by Parliament in 1850.

Modern European Libraries.—The principal libraries of modern times on the European continent are: the national library at Paris, about 2,600,000 printed books and 102,000 MSS.; the royal library at Munich, about 1,000,000 books and 40,000 MSS.; the royal library at Berlin, about 1,000,000 books and 30,000 MSS.; the imperial library at Saint Petersburg, with a total number of volumes about 1,100,000 and 28,000 MSS.; the Strasbourg University and public library, 760,000 volumes; the imperial library at Vienna, with more than 500,000 books and 24,000 MSS., and the university library with 559,000 books; the university library at Göttingen, having 500,000 books; the royal library at Dresden, 500,000 printed books and over 6,000 MSS.; Hamburg city library, 600,000 books and 5,000 MSS.; Leipsic University library, 500,000 books and 5,000 MSS.; the royal library at Copenhagen, now said to have more than 500,000 books and 20,000 MSS.; the royal library in Stockholm and the library of the University of Upsala, in Sweden (280,000 to 300,000 each); the national library in Madrid, 500,000 volumes; the royal library at Brussels, more than 375,000 books and 27,000 MSS.; the royal library at Stuttgart, 432,000 volumes; the Vatican library at Rome, with printed volumes estimated at over 200,000, and 26,000 MSS. Besides the national library, there are in Paris those of the Arsenal (454,000 printed books, 6,000 MSS.), of Saint Geneviève, of the Institute, and the Mazarin library (300,000). In the rest of France there are over 270 public libraries, the principal of which are those of Lyons (160,000 volumes), Bordeaux (200,000), Aix (170,000), etc. Access to these great collections is easily obtained both by natives and foreigners. In Italy there are a great number of valuable libraries, of which the university library at Bologna is said to contain 255,000 volumes, 6,000 MSS.; the National Library at Florence, 450,000 volumes, 15,000 MSS.; besides the Laurentian library in the same city, consisting almost entirely of MSS.; the university library at Genoa, 120,000 volumes; the Ambrosian at Milan, about 170,000 printed volumes and about 8,400 MSS.; the national library in the same city containing about 230,000 volumes; that at Parma 200,000 volumes, that of Naples 357,000, and that of Saint Mark at Venice 403,000. The Victor Emmanuel Library at Rome, consisting of the old library of the Jesuits, augmented by the libraries of suppressed monasteries, has over 550,000 volumes; the Casanata library, also at Rome, is said to contain 160,000 volumes, the Biblioteca Angelica 150,000 volumes, the Barberini library 100,000. The French government in the 19th century established over 25,000 popular libraries in connection with primary schools.

Libraries in America.—Soon after the Puritans landed at Plymouth Rock they founded a college and with it a library. The Harvard College Library established in 1638 was followed by Yale and William and Mary in 1700. The Philadelphia Library was founded in 1731, that of the American Philosophical Society (q.v.) (1742); the Charleston, S. C., Library (1748); the Athenæum at Providence (1753); the Society Library in New York (1754); New York Historical (1804); and the Boston Athenæum (1804). In 1800 the Harvard College Library had only 12,000 volumes; the largest, the Philadelphia Library Company, after absorbing three similar libraries, had only 18,391; the New York Society Library had 5,000; Yale College had only 2,700; and the Charleston Society Library had reached 7,000. These were the giants; no other library had 2,500; not half a dozen had 1,000; the average was 500 volumes.

A new era in American library history began in 1833, when a Unitarian clergyman at Peterborough, N. H., founded a free circulating library by an appropriation that has been continued annually to this day. Thus America became the birthplace of the free library, for the leaders of the movement which resulted in the Free Library Law of 1850 in England have said that they derived the idea from this country. In 1847 another small town, Orange, Mass., opened a free library, and four years later Wayland, Mass., followed. Then came the passage of the acts by which New Hampshire in 1849, and Massachusetts in 1851, authorized any town to tax itself for a free public library. In 1835, a law of New York permitted each school district to tax itself $20 to found, and $10 a year to maintain, a free public library. But as the people would not tax themselves, the friends of the measure persuaded the Legislature in 1838 to appropriate $55,000 a year to purchase the books. Fifteen years later the libraries had over 1,600,000 volumes, but they were very little used, except in the cities, and the system was an entire failure.

Meanwhile other great libraries were being established in the larger cities. The New York Mercantile was founded in 1820; the Astor (q.v.) in 1839, and the New York State at Albany in 1818. Others established were the State at Annapolis, Md. (1826); the State at Indianapolis (1825); the Boston Public, (1852); the Congressional, at Washington (1851), and the Smithsonian, at Washington (1849). Until 1876 these institutions and the smaller libraries worked along individual lines with no thought of organized effort, or of comparing views or adopting common plans for library improvement. But in 1876 the American Library Association was formed and the publication of the 'Library Journal' commenced. Since that date development in Library Science has been rapid, there being five divisions in which there has been the most progress — library establishment, the profession, the building, the management, and the methods of reaching the public. The trend of opinion has been toward libraries established by legislation, supported by taxation, helped as far as possible by private generosity, managed by their own authorities, free to all, the library of the people, by the people, for the people. To assist their establishment, 17 State library commissions were organized, the first in Massachusetts in 1890.

The gifts to libraries by private individuals between the years 1893 and 1903, originating, perhaps, in the persistent solicitation of college presidents, have been remarkably generous, the total amounting to many millions of dollars. Most of these donors, however, have preferred to give buildings and land rather than books, or funds for buying books. (See CARNEGIE, ANDREW.) The growth and development of the Boston and Chicago public libraries; the wonderful progress of the Congressional Library (q.v.) at Washington and the consolidation of the Astor (q.v.) and Lenox (q.v.) libraries and the Tilden Foundation into the great New York Public Library (q.v.), are the chief events in the library history of the present day.

Libraries, Traveling. See TRAVELING AND PICTURE LIBRARIES.

Library Administration. In recent years the conception of a library's field and functions has grown so rapidly that library administration has become a recognized science with problems vastly broader and deeper and demanding well equipped professional schools giving systematic instruction to those in whose charge the leading libraries will be placed.

This has greatly altered the librarian's status. Once he was little better than a head janitor whose functions were to keep the books clean and protected. Now the New York State library school, the first of its kind in the world, admits no candidate to its two years' course who is not a college graduate and in addition gives promise of more than ordinary success. In salaries, hours of service and vacations the librarian is rapidly winning his place beside other educational officers, as the public recognizes that in general education, professional training, executive capacity and all the factors which determine salary, the successful modern librarian takes full rank with the highest educational officer of the same community. The proper salary of a college librarian is now that of a full professor. In a university he ranks with deans of departments and in public libraries with superintendents of schools or high school principals. Usual daily hours are now 7 and usual vacation one month, with a growing tendency to allow a second month for illness or other absences, so that a librarian who has lost no time during the year will have two months for a long summer vacation, or somewhat over half what is enjoyed by most teachers.

Functions.— The chief function of the old library was to get all the books it could and preserve them safely. The modern library does this also, but has placed free public use infinitely above getting and keeping. First the word library lost its etymologic meaning from the tree bark on which writing was done, and came to mean any collection of books. It is now rapidly losing that sense and means the community intellectual headquarters where are to be found not only books and pamphlets, but periodicals, newspapers, maps, pictures, coins, medals and collections illustrating science, history or art. It is no longer a reservoir whose chief function is to take in and accumulate, but a fountain. Its work is no longer passive, but aggressive. The modern librarian is as anxious to put his wares before the public and have his books and other material used as is the store or factory to secure custom for its goods.

We have learned that reading is the greatest engine human genius has evolved. It grows constantly in importance. While most reading is better than most conversation, it is as powerful for evil as good, so that the greatest problem for educators and statesmen is to develop in youth a taste for the best reading and to supply it free through life.

Reading has three great functions: (1) To inform, so that one may stand on the shoulders of all his predecessors and utilize their labors and experience in any subject. This cumulative wisdom of the race passed on in books makes possible the marvels of civilization. Books give this information which builds material prosperity. (2) A still more vital function, but less tangible, is the inspiration which lifts up and builds character, the work of the books of power, the books of all time. (3) The last great function is to afford rest and recreation for the tired and overworked to fit them better to carry life's burdens. The free public library has been found the only practicable method for shaping this reading, which in its threefold form of information, inspiration and recreation is the greatest influence in modern life.

Administration.— Books and other suitable material are no more a library than a pile of bricks is a building, or a mob of men is an army. To be effective there must be such arrangement and organization that its great functions can be performed promptly and efficiently without undue cost. Experience proves that the chief factors in a successful library are in order of importance: (1) Librarian; (2) books; (3) methods; (4) building. Because it is most prominent and readily understood by the inexperienced, the least important is usually thought of first.

Library Buildings.— To compete successfully with places of amusement the library should be as accessible as possible, but preferably a few steps off the main street for greater quiet. Books increase in a ratio beyond the plans of architects and librarians, and not one library in a hundred makes sufficient provision for growth, either for books, readers, or administration. Good natural light and ample room for growth are essential. Steel, glass and brick are the best materials for large libraries, but fireproof construction is important only for central libraries which preserve rare books not readily obtainable in open market. The best books should be housed within easy walking distance of every citizen. This requires in larger towns branches or deliveries at convenient points. The most used books should be freely accessible in reading-rooms, but economy and convenience both demand that the main supply should be kept in stacks. The best standard type is made up of double-faced bookcases only 75 cm. apart, thus filling solidly with volumes all space not needed for access to them. Each case is eight shelves high and five tiers long, thus giving 80 shelves on its two faces. Each shelf is 75 cm. long, 20 cm. deep and 25.5 cm. high, thus taking all books up to the largest standard (8vo) which by library rules is limited to 25 cm. These cases make a one-story stack, with every book within reach of the hand without ladders. Wood is used for one or two stories, but steel is better for the taller stacks (sometimes 10 stories) and grows steadily in favor because it is strong, compact, fireproof and more open for light. The simplest satisfactory fireproof construction costs from 15 cents to 30 cents per volume of storage capacity. The plainest oak shelving can be built for about four cents a volume, while for temporary use the cheapest packing-boxes in four-shelf units 75 cm. long, each holding 100 volumes, can be made for 50 cents, the cheapest possible temporary storage.

Hot water heat is best. The boiler costs the same as steam, piping and radiation about 25 per cent more, fuel a trifle less. But steam is a less pleasant heat and is very apt to crack and annoy readers.

Artificial light should be provided on all reading-tables. High lights are bad for the eyes and unnecessary except for occasional illuminations. Acetylene gives a more perfect light, but the convenience of carrying flexible wires and turning on and off with a touch makes electricity almost the universal light where current can be bought cheaply. The stack section of the building should be of glass with only steel or masonry enough for support, with glass always opposite aisles.

Spiral stairs are costly, wasteful and inconvenient. Straight stairs under which space can be used for shelves take less space. Doors to bookcases are worse than useless and have been abandoned except for rare, costly or restricted books. Tables and desks should be 78 cm. high, not 75 cm. as usual; for short people can use higher chairs, but tall people cannot shorten their legs. Skilful arrangement of rooms will greatly reduce cost of administration. Permanent partitions should be used only where necessary for support. Temporary partitions, usually glass, can be readily moved as growth requires. These allow better light and supervision from another room, while shutting off noise, and give a more spacious look. Most important after the central rooms are: first a quiet study room, then a children's room. Even small libraries need one or more class or lecture rooms for clubs, classes and meetings which find their natural home at the library. Larger libraries require a growing number of special rooms for newspapers, art, patents and various other needs of the staff and public.

Selection of Books.— Counting only the prominent nations, a new book is published every five minutes to swell the millions previously printed. Unbound books or pamphlets are almost beyond number. Besides the almost incredible number of daily, weekly, monthly and other periodicals, there are as many more institutions and societies constantly publishing papers, transactions and reports. Large libraries must make a liberal selection from these, complete, bind and preserve them for the use of posterity. The New York State Library alone receives 12,800 of these sequents. As every library is limited for money and space, it is a grave problem just what to buy and, except in cyclopædic libraries that take everything, what to accept as gifts. The need of printed guides has been partly met by bibliographies, catalogues and lists to help determine quickly what is best to buy, its cost, where and by whom published, and perhaps to track it through auctions and stores. Many think of these bibliographies as constituting a dozen or so reference books, but a reasonably complete collection numbers over 20,000 volumes and is growing as rapidly as other subjects. It is one great factor in the professional training of a librarian to learn how to use this extensive apparatus successfully.

Accessions.— After a book is selected, it must be made part of the completely organized library which has as its ideal the choice and delivery to each inquirer, with the least possible delay, of the book, pamphlet, article, essay or other item which then, there and to him will be most useful. This is a most difficult problem even in a small library, and in large ones with a million or more items from which to choose, no satisfactory results can be reached without an elaborately organized system, administered as carefully as are the details of a great factory or railway, where mistakes and carelessness are intolerable. There are 30 distinct steps in the accession department routine alone of a large library before a book is ready to be classified or catalogued. Economists have repeatedly tried to shorten the processes, but after a few years experience have been forced to incur the extra cost of going back and supplying omissions as the only way to avoid a more serious expense in the delays of hourly service to readers. Ownership is marked by a bookplate inside the front cover with name of library and official marks. The name is also repeated (stamped, embossed or preferably perforated) on the title-page so that it cannot be removed by book thieves, and most libraries have private marks at some special page, to be found only by one knowing the key, as a means of identifying lost or stolen books. Book numbers gilded on the back insure quick finding and replacing on shelves, and lending libraries usually put a manila pocket inside the back cover to carry the book or reader's card. The accession book is the business record. Every volume has a line across the two pages as its pigeonhole for its complete history. The columns are: number (in order of receipt), class number (showing subject), book number (showing place in that subject), volume number (if more than one), author, title, place and publisher, year when published, number of pages, size, binding, source (name of giver or seller), cost, with a final wide column for remarks on the book's history, for example, lost, worn out, sold, or withdrawn.

The accession number is stamped on first recto after title, on shelf list and cards, and exactly identifies that particular volume.

The shelf list is an inventory or brief list of all the library contains by subjects, and is usually kept on sheets laced in a binder, one sheet to each subject. Besides class, book, accession and volume numbers, it gives merely author and short title. It is used to take the annual inventory and is also a convenient form ot subject catalogue, though it gives no cross references.

Author Catalogue.— This like all other catalogues and indexes is kept on cards 7.5 cm. high and 12.5 cm. long, the size adopted for national and international use and rapidly displacing all other sizes except for peculiar uses. (See LITERARY LABOR SAVERS, *Card Index System.*) The author catalogue gives under each name all of any author's work which the library has, without including any done by some one with the same initials or full name, thus confusing identity. This author catalogue is often expanded to include striking titles of anonymous books, names of subjects of biographies, criticisms and reviews, or any topic for which the subject entry would be the name of a person or place. It is then called the «name» catalogue.

Subject Catalogue.— This shows what the library contains on any given subjects. For lack of time or money it records in many libraries only books, but a complete catalogue would add pamphlets, articles in periodicals, papers, transactions, essays and collected works, maps and whatever material one studying that topic might want. The Decimal classification, now generally used by libraries, has over 20,000 subject headings and many new ones are added yearly. By means of its very full and simple index, any one who knows what a book is about may readily classify it minutely; the youngest assistant knowing clearly what subject he seeks may find it with equal ease.

The most common form of catalogue extends the name list to include any subject on which the library has a book. A catalogue with authors, titles and subjects in a single alphabet, with cross references from various synonyms so that one consults it like a dictionary, is called a dictionary catalogue. The author catalogue corresponds to the personal list in a directory; the classed catalogue to the business section showing who is engaged in each specific line of business. A dictionary catalogue requires the least explanation and is most popular, but it is more difficult to make well, and except at prohibitive cost cannot give intelligent investigators as clear and methodic exhibits of a library's resources as may be found in the best classed catalogues. Larger libraries have many special catalogues, bibliographies and indexes as keys to their own special collections.

Annotation or evaluation is a most important factor in modern cataloguing. Its purpose is to tell in fewest words what readers are most likely to wish to know about a book as to its scope, treatment and value. The American Library Association publishing board, to which Andrew Carnegie recently made a first gift of $100,000, is publishing numerous lists on this plan. The New York State Library is preparing with the co-operation of nearly 300 prominent librarians and specialists the annotated A. L. A. catalogue which the national library will publish for the St. Louis exposition of 1904. New editions constantly revised and with more notes will follow, so that both librarians and readers will have a guide to 8,000 or 10,000 of such of the best books still in print as would be selected as a model library for a small town.

Lending.— A loan system must give the quickest possible service consistent with accurate and complete records. In America the card system is found better than the indicators so largely used in England. The librarian must know where every book is, when it should be returned and must be able to find daily those that are delinquent. Extra privileges in number of books or time retained are given to scholars having special claim, and many libraries allow two books instead of one provided that only one is fiction. Inter-library loans are frequent so that a reader in one library may, when necessary, secure a book to be found only in some other.

Libraries grow more liberal in privileges to readers who now find a large number of the most used books on open shelves instead of having to ask for each book consulted. In many libraries not only so called reference books but thousands of other volumes are thus thrown open to the public. Losses are not large compared with benefits, and the system grows in favor. The recently novel information bureau or reference desk in charge of an expert librarian whose sole function is to answer readers' questions has become a common feature, while the larger libraries are establishing a library faculty, each member taking some special subject on which he will be a recognized authority. Special rooms are set apart for important subjects, each in charge of a specialist. Even the smallest libraries are providing a children's room with low chairs and tables and a sympathetic librarian devoted wholly to their interests. Experience proves that time and money yield larger returns when spent on children than on adults. The children's room becomes the best possible training school for supplying readers who will use the library properly. Rooms for women's exclusive use are little used, women apparently seeing no more occasion for separate provision than in churches, lecture halls or theatres.

Support of libraries by fees is giving way to support by taxation, as a fee is prohibitive to many, and communities are coming to recognize that it is as much for their interests to have the «people's university» as the public schools free to all. Hours of opening have been lengthened from two or three a day till the larger libraries usually open from 8 A.M. to 10 P.M. and no longer close for evenings, holidays, vacations or the annual inventory of books. Sunday opening has proved unexpectedly successful. The theory of the modern library is to be available to readers at any time when they are inclined to use its privileges.

Paid Help.— A highly appreciated accommodation, offered by the New York State and some other libraries, is assistance of an extent or nature not properly provided at public charge, for mere cost of the time spent, estimated at the rate of annual salary. This saves people at a distance costly journeys, because an expert trained in a given library can often find as much in an hour as the reader himself would find in a whole day. The telegraph or long distance telephone makes the central cyclopædic libraries quickly available for large areas, and editors, lawyers and others whose time is specially valuable may get needed information, and if wished translations, verified copies or any library service needed quickly at the trifling cost of the time of the lowest salaried assistant competent to do the work.

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Library Buildings. See LIBRARY ADMINISTRATION.

Library Laws, in a general sense all legislation relating to libraries, but more specifically legislation providing for the establishment, maintenance and improvement of public libraries. Great Britain and the United States have taken the lead in passing satisfactory laws of this kind.

In Great Britain a law was passed in 1850 providing for the establishment of public libraries and museums by town councils to be supported by taxation; Manchester was the first town to take advantage of this law. In 1892 the general Public Libraries Act was passed, which has since been several times amended. By this law, public libraries may be established (1) in London and metropolitan parishes or districts, on the favorable poll of the majority of voters; (2) in rural parishes, by the parish meeting; (3) in urban districts, by a resolution of the urban districts council; (4) in counties, by the County council for such portions of the county as are not included in a library district where a free library is already established. The amendment of 1899 provided that in an urban district the question of the establishment of a library may be presented to the urban council on a petition of twenty or more voters; if the council does not act upon this petition within two months the question shall be referred to the voters of the district, and if a majority favor the library, such library shall be established as if by resolution of the council. In Ireland a law was passed in 1855 and amended in 1894 and 1902, enabling rural districts to establish libraries under the control of the rural district council, and county councils to grant aid to the maintenance of a public library. In Australia the various states have authorized the establishment of libraries by municipalities, and the New South Wales provides for the levying of a special tax for their support. South Australia, Victoria, and New South Wales also have established traveling library systems (See TRAVELING LIBRARIES).

United States.— It is, however, in the United States that library legislation has reached its most complete development. Almost every state has some form of legislation on the subject of libraries, and while the states are in different stages of advancement, there is everywhere shown the tendency toward a growing liberality and an ever-increasing emphasis on the importance of the library in the state educational policy.

The first library law recorded in the United States was passed in 1700 in South Carolina providing for the preservation and care of Thomas Bray's library in Charlestown; the next was the act incorporating the Philadelphia Library Company in 1742. These laws, however, concerned individual libraries only and had no effect on general library policy. In 1835 New York passed a general law providing for the establishment of school district libraries; Massachusetts passed a similar law in 1837, and Connecticut in 1839; between that date and 1870 ten states adopted the same system, and others even later. New York, in 1838 appropriated $55,000 a year for the maintenance and support of such libraries; the other states appropriated very little money, and the school district libraries were nowhere successful, and were consequently very generally abolished in later years, as the town libraries grew in importance.

Town and City Libraries.— To New Hampshire belongs the honor of passing the first general law for the establishment of town libraries. This law, passed in 1849, gave all towns and cities the right to raise money by taxation for the establishment and maintenance of public libraries, and to receive gifts and bequests for the same purpose. No limit was placed to the amount of money to be raised. Massachusetts was the second state to pass a free public library law in 1851, adopting, however, a tax limit of one dollar for each taxable poll for the establishment of the library and twenty-five cents annually thereafter for its maintenance; in 1859, the law was amended to allow a larger tax, and in 1866 all limitation was abolished. The Maine public library law was passed in 1854, and was similar to the original Massachusetts law. Vermont came next in 1865 with a law similar to New Hampshire, changed in 1867 to a law limiting the tax rate, which was again amended in 1884 raising the limit to two dollars per poll for establishment and one dollar per poll for maintenance. Ohio passed a law providing for free public libraries in cities in 1867, and Rhode Island a law for town libraries in the same year. Further statutes in Ohio in 1873 and 1875 extended the provisions to towns, and in several later amendments provided for the appointment of the library board by the mayor of cities and incorporated villages, and placed a tax limit of one mill on the dollar. The Rhode Island law was superseded by a law of 1875, establishing a tax limit of 2.5 mills on the dollar for establishment and 2/10 mill annually for maintenance. In 1872 Illinois, Iowa, Colorado and Wisconsin passed general free library laws. Of these the Illinois law is the most important, Colorado and Wisconsin following it closely, while the Iowa law was less elaborate. This statute provides for the establishment of libraries in cities on the initiative of the common council; in towns and villages on vote of the majority at any election, the question to be submitted on petition of fifty legal voters. The tax rate for library purposes was limited to two mills on a dollar for towns, one mill on a dollar for cities with less than 100,000 population, and 1/5 mill on the dollar for larger cities; this rate was changed by the law of 1887 to two mills on the dollar for towns and cities and one mill on the dollar for larger cities. The board of directors of the library in cities is to consist of nine members to be appointed by the mayor three every year for a term of three years, and in towns, of six members elected two every year for a term of three years. The provisions of this law have since been generally adopted by other states, with slight variations in detail. The tax limit varies, but usually is about the same as that of Illinois; in some instances, also, the initiative in establishing a public library rests with the voters in cities (instead of with the common council). The New York law differs from any other in that the power to charter and supervise all libraries is vested in the State Education Department under the direct control of the Division of Home Education (or Educational Extension). The rules adopted by this department for the establishment of libraries are similar to the provisions of the Illinois law; there is however, no tax limitation, and the board of trustees, unless otherwise stated in the library's charter, is to consist of five members appointed or elected one every year for a term of five years.

At the present date the majority of all the states and territories have general public library laws; among the more recent legislation of this kind may be mentioned the laws of Virginia (1900); Arkansas, Oregon, Pennsylvania, and Washington (1901); Georgia (1902); Idaho and South Carolina (1903); and Kansas (1905). New Mexico has no library law, but the Municipal Corporation Act allows the council of a city or the trustees of a town to appropriate money for a public library on approval by popular vote, the annual tax rate for this purpose not to exceed one mill on the dollar. Michigan is the one state which has a constitutional provision in regard to libraries; it is that «The legislature shall provide for the establishment of at least one library in every township.» The general library law of that state was passed in 1877. Delaware in 1901 passed a town library law; in 1903 it was changed to give school districts instead of towns the power to establish and maintain libraries, the trustees to be elected by popular vote. The chief reason for the change was the advantage gained by following the lines of school organization, by which the races have been separated.

State Aid and Library Commissions.— Within recent years there has been a growing tendency for the State government to foster the growth of public libraries, both by direct grants of money and books to small libraries needing assistance, and by the appointment of library commissions as State centres for improving and directing the public library work. The states which make direct gifts a feature of their library policy are Maine, Massachusetts, New Hampshire, Connecticut, Rhode Island, Vermont, and New York. The New York law provides for annual gifts equal to the amount raised by any library up to $200; Connecticut the same with the limit $100; Maine for the gift of $100 to a new library and 10 per cent. of the annual appropriation; Massachusetts for a gift of books to the value of $100 to any library organizing under the public library of the State; New Hampshire and Vermont the same as Massachusetts. The Rhode Island law authorizes the Board of Education to distribute annually certain sums to libraries under conditions specified by itself. The board has a graded list of libraries to which appropriations are made equal to the amount raised by the town not exceeding $500.

The first library commission was established by Massachusetts in 1890; the law provided for a commission of five persons appointed by the governor to «foster the establishment and growth of public libraries throughout the State,» and «to furnish librarians and trustees such advice and general assistance as may be required.» It also has in charge, the distribution of the books given by the State and has had an annual appropriation of $500, raised to $900 in 1905, for general expenses. Connecticut was next in the establishment of a commission, consisting of five members, appointed by the State Board of Education; at first this commission was empowered to do but little more than distribute the State money grants, but in 1903 their functions were greatly enlarged. Since 1894 twenty other states have established Library Commissions. The usual number of commissioners is five, either all appointed by the governor or some appointed and some members *ex officio*, as the State Librarian in Maine, and the Superintendent of Public Instruction, the President of the State University and the Secretary of the State Historical Society in Minnesota. In Idaho the commission consists of four ex officio members, the Attorney General, the Secretary of State, the President of the State University, and the Superintendent of Public Instruction. In Colorado by the law of 1903 all members must be women, and are appointed by the governor from nominations made by the State Federation of Women's Clubs. The commissioners serve without salary, but most states provide for a salaried secretary to attend to the details of the work. The functions of these commissioners include encouragement and advice in founding libraries, aid in organizing, selection of books, and cataloguing, and usually the charge of the traveling library systems (See Traveling Libraries). In some states they have been empowered to conduct library institutes and library schools. In New York all the functions of the commission are carried on through the Division of Home Education under the Education Department. Maryland has two commissions, one consisting of seven members having charge of the traveling library system and town libraries, the other consisting of five members which is empowered to encourage the establishment of county libraries. In Washington a law passed in 1901 created a library commission with the usual functions; in 1903 this commission and the board in charge of the State Library were abolished, and a new body appointed consisting of the Governor, five Supreme Court Judges and the Attorney General to have control of the State Library and the traveling library and public library work. An advisory board was also provided for consisting of the State Superintendent of Public Instruction and four members appointed by the governor, the State Librarian to be secretary of this board and to have immediate charge of all the departments. A somewhat similar change has taken place in New Hampshire, where the library commission was abolished in 1903 and its powers conferred upon the trustees of the State Library. These two recent laws exemplify the tendency to increase the importance of the State Library, sometimes even at the expense of the commission. In California the State library trustees were given enlarged powers similar to a commission, and the books of the State library proper allowed to circulate to citizens of the State and in Virginia, which has no commission, a law of 1904 provided for the exchange of books with other libraries, and established a traveling libraries department.

The development of library legislation in the United States, on the whole, has been most satisfactory to librarians; in many cases library associations and prominent librarians have had an important part in directing the legislation of their States. The essentials of a good law as outlined in Public Libraries (vol. 2), are: «Sure and steady revenue provided by taxation»; «Careful and consecutive management»; and a «State centre for library interests.» These essentials have been embodied in most of the existing statutes, and indicate excellently the policy of library legislation generally adopted.

A. M. Burnham, A. B.

Library Schools. With the advance of the free library movement and the growing complexity of the functions and organization of the modern library, the need has been increasingly felt for specially trained librarians. The first library school was organized in 1887 as a department of the work of Columbia College, under the charge of Melvil Dewey, and has since become the New York State Library School. At that time the course consisted almost entirely of instruction in the more technical work of library administration, but since then the ideals and scope of library schools have broadened, and they aim to give their students not only technical courses, but such courses as will enable them to deal with the public successfully, and become a real educational force in the community where they may be placed. The course in library schools usually includes cataloguing, bibliography, shelf-listing and accession work, library building, instruction in printing and book-making, reference and loan work, and general library economy; some schools provide, in addition, courses in history of libraries, and «selection of books»— that is, the critical study of books with a view to determining their fitness for use in different kinds of libraries and with different types of readers. As there are few text-books, the instruction is mostly by lectures and the students' working out problems, preparing sample catalogues, accession books, etc.; all the schools have also some provision for actual work in a library. Instruction is given in different systems of cataloguing, loaning of books, and other technical work, and both the more complex systems suited for large libraries, and the more simple systems for small libraries are taught: sample blanks, forms, and fittings for all departments are used to illustrate the different methods.

Individual Schools.—The first library school was the New York State Library School, founded as has already been mentioned in connection with Columbia College (now Columbia University). In 1889 when Mr. Dewey, its director, was appointed State librarian, the school was moved to Albany and became a part of the University of the State of New York. Its curriculum has gradually been enlarged, and its entrance requirements raised until in 1903 it was decided to require a full college course for entrance to the school; the degree of B. L. S. (bachelor of library science), which was at one time given only to those who had attained a certain rank throughout the course, is now given to all graduates who do the full work of the school; a carefully prepared bibliography or reading list on some approved subject is required, in addition to the class and practice work, for this degree. The practice work is provided for in the State library, and the traveling library and home education department. The Pratt Institute Library School was opened in 1890; entrance is by examination only; the main course is for one year, but a second independent course of one year is given in advanced work; separate certificates are given to show completion of work in each course; and those students who complete the two years' work can take the diploma of the Institute by passing the Institute's normal examinations. Practice work is required in the Institute library, and may also be had in various settlement libraries and home library work; in 1903 the experiment was tried of having the incoming class do two weeks' practice work in the library before the regular instruction was begun; this proved successful and will be continued. The Drexel Institute Library School was opened in 1892; entrance to this school is by examination, and a certificate is given on completion of the course. The Illinois State Library School was opened in 1893 at the Armour Institute of Technology, and in 1897 became a part of the State University. The library course proper is two years, before which three years' collegiate work is required; previous to 1903 only two years' collegiate work was required. For the completion of the three years' collegiate and two years' library work, the degree of B. L. S. is given; for three years' collegiate and one year's library work, the degree of A. B. in library science. In addition to the regular library school courses, a special course in the care of public documents is given. Practice work is provided for in the University Library, and in the Champaign Public Library, a branch of the latter being entirely under the charge of the students of the library school. Since the establishment of these four more important schools, library school departments have been added to several universities and colleges. Among these are Department in Library Science in Chicago University, the course in Library Economics in Syracuse University, the School of Library Science in Columbian University, Washington, and the course in Library Science of Simmons College, Boston. Of these the Chicago department requires two years of college work for entrance; Syracuse admits on high school diploma. The Simmons College course (started in 1902) extends over two years, the library school work being done in connection with work in other departments of the college; a third year of advanced work is given to those who have completed their college work and can give their full time to the technical library work. The college library is under the charge of the library school students.

One other school, devoted to a special line of work, should be mentioned, the Training School for Children's Librarians at the Carnegie Library of Pittsburg. This was started in 1900 as a training class of the library; entrance is by examination or by college diploma, and a certificate is given at the completion of the work. One half the time is given to practice work in the children's room of the library.

Summer Schools.—A number of library summer schools have been organized, mainly with the idea of giving training to those who already hold library positions, or have been appointed to such positions. The instruction is, of course, not so thorough as in the regular library school, but is entirely practical; the courses usually cover the whole range of library science in a general way, and in most summer schools special courses are also given in one or two technical subjects. Among these schools are the Amherst summer school, the Chautauqua school, the New York State Library summer school, the summer library courses of the universities of Missouri and Wisconsin, and the summer schools under the charge of the State library commissions of Indiana, Iowa, and Minnesota.

Besides these schools, many libraries have apprentice classes, designed mainly for instructing and training assistants for such libraries; but a general letter of recommendation to all libraries is in many cases given the graduates of these apprentice classes. Of the larger libraries to have such classes are the public libraries of Providence, R. I., Brooklyn, New York City, Madison, Wis., and Nashville, Tenn. Lately also several colleges have introduced courses in bibliography and the history of printing, and some normal schools have similar courses, including something also of general library economy. This is not with the purpose of training the students to become librarians, but with the idea of enabling them to make the best use of the resources of the library, and, in the case of normal graduates, to enable them to organize school libraries and co-operate intelligently with the public library work.

Consult: The catalogues and reports of the individual schools; 'The Library Journal,' for July, 1898 (Conference number), and for July, 1903 (Conference number).

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Library of Congress, The. See Congress, Library of, Washington, D. C.

Libra'tion, in astronomy, an apparent oscillatory motion of the moon, which causes parts near the edge to appear and disappear from time to time. It was discovered by Galileo. If the moon moved round the earth with a uniform angular velocity equal to its angular velocity of rotation on its axis, and if its axis were at right angles to its orbit, the same side of it would always be presented to the earth, and we should see only one-half of its surface; its libration enables us to see about 4-7ths of its surface. The moon's orbital angular velocity is sometimes slightly greater and sometimes slightly less than its axial angular velocity, hence equatorial parts of the moon near the edge are sometimes visible and sometimes out of sight. There is also a very small diurnal libration due to the motion of an observer on the earth.

Libri Caroli'ni. See Caroline Books.

Libri-Carrucci della Sommaia, Guillaume Brutus Icile Timoléon, gē-yōm broo-tüs ē-sēl tē-mō-lā-ŏṅ lē'brē kä-roo'chē dĕl'lä sŏm-mä'-yä, Count, French mathematician: b. Florence, Italy, 2 Jan. 1803; d. near Fiesole, Italy, 28 Sept. 1869. His father was an Italian adventurer, in 1816 condemned at Lyons to ten years' imprisonment at hard labor and to branding for counterfeiting goods, and who finally became a secret agent of the king of the Netherlands. The son became professor at the University of Pisa, where he published in the scientific journals several articles on the theory of numbers, on analysis, and the resolution of indeterminate equations of the first degree. Having been compromised by his political views, he fled in 1830 to France, where the friendship of Arago introduced him to the world of science. Naturalized in 1833 as a Frenchman he was called to the Academy of Sciences as successor of Legendre. He became inspector-general of public instruction, obtained the cross of the Legion of Honor, and was appointed inspector-general of the libraries of France, an office created expressly for him. Several works published by him during this period gave him a widely extended reputation. Among these were 'Histoire des Sciences Mathématiques en Italie depuis la Renaissance jusqu'à la Fin du 17e Siècle' (1838–41); 'Souvenirs de la Jeunesse de Napoléon' (1842); and 'Lettres sur le Clergé et la Liberté de l'Enseignement' (1844). During the latter part of the reign of Louis Philippe, he was suspected of having made use of his office of inspector-general of libraries to plunder them extensively. After the minutest investigation, Libri, who had escaped to London, was found guilty and condemned in June 1850, to ten years' imprisonment and degradation from public employment. A remarkable paper was written on his behalf by Paul Mérimée entitled 'Le procès Libri,' and published in 1852 in the 'Revue des Deux Mondes.'

Liburnia, lī-bėr'nĭ-ạ, in ancient geography, a district of Illyricum along the coast of the Adriatic, now included partly in Croatia and partly in Dalmatia. The country is mountainous, and the inhabitants were celebrated from early times as sailors. They occupied the northern islands of the Adriatic, and had settlements on the Italian coast. Their chief towns were Scardona and Iader.

Libya, lĭb'ĭ-ạ, the geographical term of the ancients for Africa. At first it had mythical boundaries. Though Herodotus seems to have known that Africa was a peninsula, the moderns knew little about this till the Portuguese doubled the Cape of Good Hope in 1497. Homer and Hesiod comprised under Libya all the territory west of Middle and Lower Egypt. The Macedonian kings of Egypt, on the development of commerce, necessarily acquired a more exact knowledge and the wars of Rome with Carthage first gave men accurate knowledge of the interior. The sandy tract in which the Sahara is included was called the Libyan Desert and that portion of the Mediterranean extending between the coast of Africa and Crete was known as the Libyan Sea. See Africa.

Lich Owl, or **Litch Owl** (Germ. *leich*, a corpse, O. E., *lich* or *lych*, dead), a provincial British name for any owl, which screams at night, and is superstitiously regarded as portending death. From the earliest ages the hoot of the owl has been regarded as ominous. Ovid, Virgil, and Shakespeare contain many illustrations of this common superstition. See LYCH-GATE.

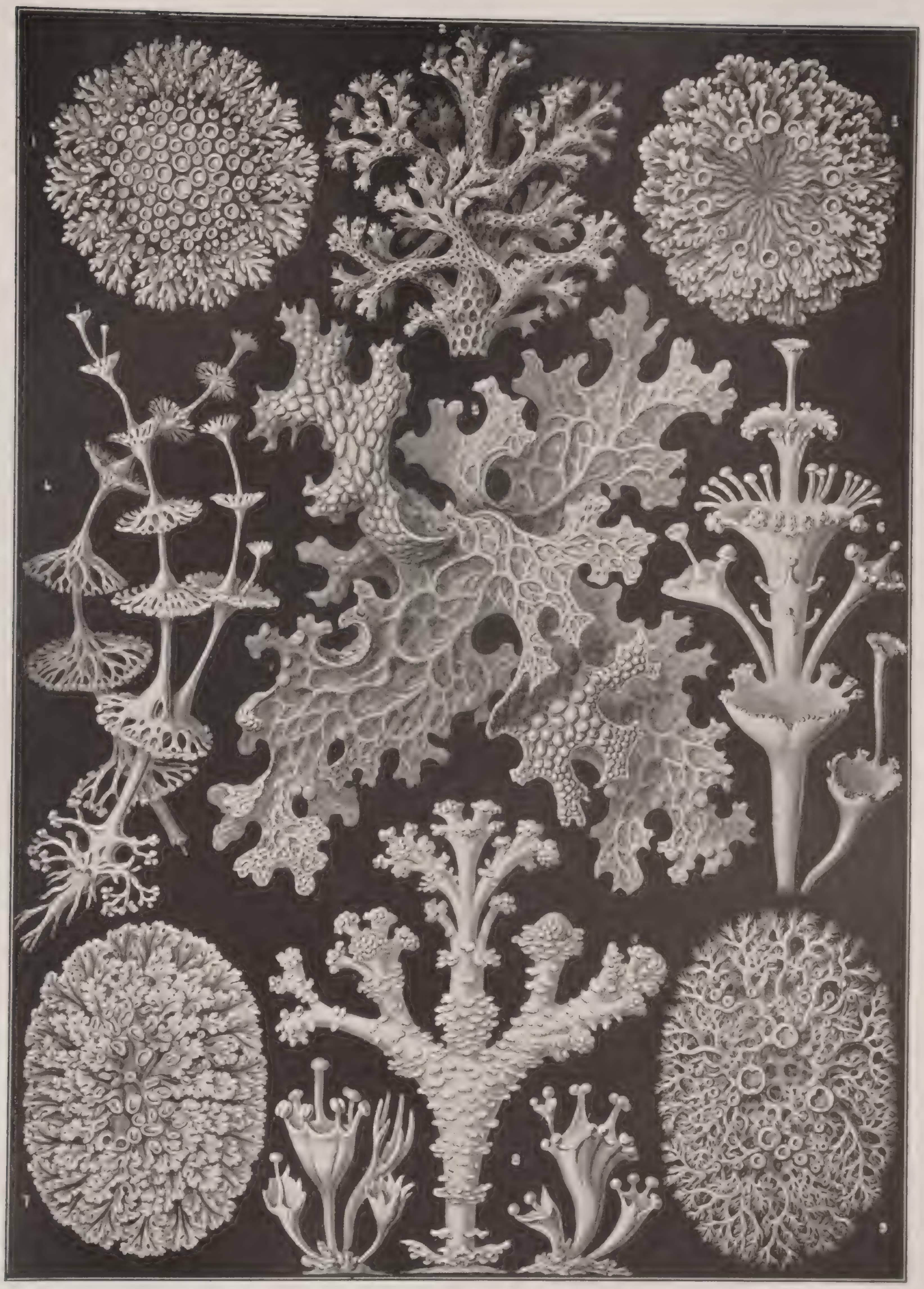
Lichens, lī-kĕnz or lĭch'ĕnz (Lat. *lichen,* lichen, Gr. λειχήν), a large but artificial group of the higher fungi (*Carpophyta*), characterized by parasitic growth upon the lower blue-green and yellow-green algae (*Protophyta, Chlorophyceæ*). Lichens are of the widest occurrence in nature, appearing as gray, yellow, and brown crusts or masses almost everywhere upon trees, rocks and soil. The number of genera and species differs more or less with the authority cited: the valid genera number not far from 250, while the species are in the neighborhood of 4,000.

The vegetative body or thallus varies from a fraction of a millimetre to several decimetres in size, though it shows relatively little variation in thickness. In texture it is powdery, leathery, paper-like, or, in the case of many forms with blue-green algæ, gelatinous: the prevailing colors are gray, brown and yellow, while green and black sometimes occur. The shape of the thallus is typically orbicular or stellate; it is often irregular, especially in branched forms. In general appearance, the thallus varies within wide limits; as a rule, however, three types, crustose, foliose and fruticose, may be clearly distinguished. The crustose type is the primitive one, showing in its granular, warty, and areolate forms the various stages through which the thallus has passed in its development from the original mycelium. The crustose thallus is so closely in contact with its substratum that it cannot be separated from it without tearing. The foliose type is a higher development of the crustose. It is usually a definite, leaf-like structure, more or less lobed at the margin and attached to the stratum somewhat loosely or at but a single point. The fruticose type is a special modification of the foliose, in which the latter is more or less flattened or cylindrical and erect or pendulous. This form is probably an adjustment to conditions of diffuse light. It is especially characteristic of tree-lichens, and of certain ground forms, such as *Cladonia,* where it is termed the podetium. In the latter, there is also developed an accessory or secondary thallus, consisting of minute, leaf-like scales.

The simplest thallus consists merely of a few fungus threads enclosing the irregularly disposed cells of the host or alga. Ordinarily, however, the algal cells not only have a definite position, but the fungal portion of the thallus is likewise highly specialized. Naturally, this differentiation is least in the crustose forms and greatest in the fruticose ones. The structure of the foliose type may be taken as fairly representative, except of the gelatinous lichens, in which the algæ are scattered throughout the thallus. A definite epidermal layer is wanting except in a few of the higher lichens, where the outer filaments have been gelatinized, resulting in the formation of a structure closely resembling a cuticle. As a rule, however, the uppermost part of the thallus is the cortical layer. This consists of hyphæ (filaments) compacted in such a way as to produce a tissue which looks much like parenchyma and is called in consequence, pseudoparenchyma. The function of the cortical layer is in part mechanical or supportive and in part protective. Its structure seems to depend primarily upon the latter function: it is least in those forms growing in forests, and greatest in those found in the open. Below the cortical layer and continuous with it is found the host or algal layer, consisting of filaments more or less loosely intertwined with the algæ. This is the nutritive layer, in which the fungal hyphæ draw their nourishment from the host-cells. The connection between the two may be merely by contact or by penetration. In the latter case the fungal hyphæ either penetrate the protoplasm of the host and finally destroy it, or merely pierce the cell-membrane and lie in contact with the protoplasm. In either event, the hyphæ develop special branches for contact or penetration, which are called haustoria. The algal layer is a specialized portion of the medulla which lies just below it. The hyphæ of the two layers are continuous, but they do not develop haustoria in the medulla, where they tend also to run more or less parallel with the direction of growth. The medullary layer primarily serves the function of transport; it is likewise used for the storage of lichenin (lichen-starch) and fats. The lower surface of the thallus is covered with a cortical layer similar in structure to that of the upper surface. Generally, however, it is somewhat thinner and is designed rather for absorption than for protection. It is frequently produced into fascicles of hyphæ termed rhizoids and cilia.

The thallus of many lichens exhibits several peculiar structures, which are the direct result of the symbiosis of fungus and alga. The most frequent and most important of these is the soredium. This is a minute irregular mass of fungal hyphæ and algal cells, readily carried by wind or water, and able to grow directly into a lichen thallus under the proper conditions of moisture and warmth. Soredia occur upon the upper face of the thallus of many lichens as elevated powdery masses or tubercles. They arise in the algal layer of the thallus by the repeated branching of a fungal filament in such fashion as to completely enclose one or more cells of the alga, which also increase in number. The hyphæ become more or less gelatinized and compacted into a surface very resistant to desiccation. The soredia are pushed upward through the thallus by the growth of the filaments below, and are finally extruded through a rift in the cortical layer, constituting a sorus. Normally, the soredia are carried away from the sorus and develop independently, but in some cases they grow while still in contact with the mother-thallus, producing minute, leaf-like scales upon the latter. These are the so-called isidioid growths or phylloclades, found in *Usnea* and related genera. Soralia are structures which arise from the medulla or even from the lowermost layer by the upgrowth of a mass of parallel filaments which penetrate the algal layer and there develop into normal soredia. Cephalodia bear the general appearance of soredia, but in origin and function they are quite different. They are distinguished as external, and internal. The cause of their development is unknown:

LICHENS.



1. Parmelia stellaris.
2. Cladonia retipora.
3. Parmelia olivacea.
4. Cladonia perfoliata.
5. Sticta pulmonaria.
6. Cladonia verticillata.
7. Parmelia caperata.
8. Cladonia squamosa (center); C. fimbriata (left); C. cornucopiæ (right).
9. Hagenia crinalis.

they are said to arise from the soredia of other lichens, which have lodged upon the thallus. They have never been produced experimentally, however, and it seems much more probable that they are modifications of the thallus due to a change in the life form of the algal element. The cyphellæ are flat or concave gaps in the lower cortical layer of the thallus of *Sticta* and *Stictina*. They are filled with variously branched hyphæ of the medullary layer and probably function as organs of absorption and respiration. The spermagonia are minute black dots occurring on the upper face of many lichens, especially near the margin of the thallus. Structurally they are identical with those propagative organs of black fungi that are termed pycnidia. They are spherical bodies with a membranous or carbonaceous envelope, containing a layer of rod-like filaments which bear at their tips tiny spore-like bodies called spermatia. As the names indicate, the spermagonia were supposed to be male reproductive organs, and the spermatia the fertilizing cells. There now seems to be little doubt, however, that they are propagative organs or pycnidia inherited from fungus ancestors. In a few cases they may be pycnidial parasites, such as *Phyllosticta*.

The fruit (sporocarp) of those lichens which bear spore-sacs (ascolichens) is called a perithecium when the fungus is one of the black fungi (*Pyrenomycetales*), a hysterothecium, when it belongs to the cleft fungi (*Hysteriales*), and an apothecium when the lichen is a cup fungus (*Discomycetales*). All these agree essentially in structure, though they differ in form: the perithecium is globoid, opening by a minute pore at the top, the hysterothecium, linear or irregular, opening by a cleft, and the apothecium usually open and disk-shaped. The essential parts in each are the same, namely; spore-sacs (asci), the spores, and the sterile threads (paraphyses). The apothecium is the highest type of spore-fruit and the most widely distributed. It consists usually of the following parts: the thecium, the central portion consisting of the asci, sometimes called thekes, and the paraphyses; the epithecium, which lies above the asci; and the hypothecium which is found below them. The latter often extends around the sides of the thecium also, and is there termed the exciple (proper exciple, parathecium). All of these consist of densely compacted elongate hyphæ (prosenchyma) which are without algæ and are often more or less dark colored. In most of the higher lichens, the exciple is surrounded by the tissue of the algal layer, producing a thalline margin (thalline exciple) about the apothecium. The apothecium usually sits directly upon the thallus; occasionally it is stalked, and less frequently it is immersed or innate. Lichens show the same differences with respect to paraphyses, asci and spores that are to be found among the other cup-fungi and black fungi. The paraphyses are simple or repeatedly branched, continuous or septate, gelatinized or non-gelatinized, persistent or evanescent. They are often compacted and dark-colored at the tip, appearing to be continuous with the epithecium. The spore-sacs of lichens are cylindrical or clavate in form, more rarely obovoid. Their walls are thin, though sometimes gelatinized; they do not react to iodine as a rule, except when very young. The asci usually open by a terminal slit; in a few cases the entire wall breaks away. The number of spores in an ascus varies from one (*Pertusaria*) to many (*Acarospora*); the normal number is eight, six or four. The arrangement of the spores is usually irregular, though they are sometimes in one row (monostichous), or in two rows (distichous). Lichen spores are ordinarily colorless and simple, less frequently dark brown and many-celled. They may be two-celled (bilocular), several-celled (plurilocular), or muriform, when the partitions run in both directions. The wall of the spore is smooth and without appendages; the contents may be hyaline, granular or guttulate.

Physiology and Reproduction.—The functions of lichens are essentially those involved in the relation between parasite and host, modified to an important degree in those forms with well-developed thallus. Absorption of water takes place readily upon both surfaces of the thallus, but especially on the under side, where hyphæ, cilia and rhizoids all act more or less efficiently as absorptive agents. According to Zukal, the hyphal hairs are capable also of absorbing moisture directly from the air, in *Physcia, Peltigera, Sticta,* etc. Water-storage takes place in the algal and medullary layers. It is effected primarily by the algal membranes, especially of the blue-green slimes, and to a degree also by the lichenin of the hyphæ. Zukal has suggested that the cephalodia, because of their blue-green algæ, are probably to be regarded as structures for the storage of water. The ability of the lichen thallus to retain water arises from its complexity, and from the presence of the gelatinized cortex. Lichens exhibit a number of somewhat primitive devices for the exchange of gases. These are often mere rifts in the thallus, or degenerate pycnidia; sometimes definite openings are present, or absorption takes place through loose protuberances. A specialized organ for this purpose is found in the cyphellæ of *Sticta* and *Stictina,* which are primitive breathing pores, making direct connection between the air and the medullary layer. The latter serves as a pathway for the transport of water and gases to the various parts of the thallus.

The relation of the lichen thallus to the environment is obscure. Of all macroscopic plants, lichens resist drying-out the most successfully. With respect to the temperature extremes which they can endure, they are surpassed only by the bacteria. Many lichens withstand temperatures greater than 65° C., and nearly all are able to resist the intense cold of arctic and alpine winters, with minima of —40° to —60° C. Lichens exhibit very different sensibility to light: the majority of them grow in the fullest sunlight, while some, *Evernia, Usnea, Peltigera, Graphis,* etc., are adapted to more or less intense shade. In alpine regions especially, orange and yellow thalli occur almost exclusively on the under, or shaded, side of rocks. This fact is explained by Zukal's researches, in which he found that the algal layer was most highly developed under a cortex orange or yellow in color, these colors being most penetrable by the rays active in carbon assimilation. The color of the cortex is also thought to be a protection against excessive illumination, though this explanation can scarcely hold for those lichens in which the lower cortex is highly colored. According to Schwendener, the growth of the thallus is largely intercalary, marginal or apical growth being relatively insignificant. In lichens with yellow-green algæ, the growth of the thallus is determined by the fungus, and the development of the algal layer takes place subsequently. In this process, the algæ and hyphæ show a tendency to aggregate into tubercles, which modify the surface of the thallus. Somewhat similar sculpturings are produced by tensions in the growing thallus, especially by the alternation of wet and dry periods. In nearly all of the gelatinous lichens, and particularly those parasitic on filamentous algæ, growth is controlled by the alga, and the fungus has little or no influence upon it.

The propagation of lichens occurs ordinarily by means of soredia. It may take place also by fragments of the thallus, whether abstricted naturally or cut off by accident. The propagative value of the pycnidium (spermogonium) in nature is unknown. The conidia have been germinated in cultures with difficulty, and at present there is no evidence that they grow more readily under normal conditions. Reproduction is a characteristic feature of the lichens: a few species produce apothecia rarely, while in certain sterile forms they are never developed. It is still an open question whether the apothecium is the result of fertilization. Some investigators have thought to demonstrate the presence of a carpogone and trichogyne, and to follow the development of a spore fruit, which results from the contact of spermatium and trichogyne. The germination of many spermatia points strongly to the conclusion that these are mere conidia and not male sexual cells. No fusion of sexual cells has yet been seen in lichens, and, until this is seen, it is impossible to settle the question of their sexual nature. The apothecium arises usually from certain more or less distinctly twisted hyphæ lying between the medulla and the algal layer. Sometimes the point of origin is just beneath the cortex, especially near the margin, and in crustose forms it is in the hyphal layer just above the substratum. The development is essentially the same as in the other cup-fungi; the hyphal fundament increases in size, and becomes differentiated above into two sorts of threads. The first to grow up are the paraphyses, in the centre of which push up the club-shaped branches, which become the asci. Spore formation in the ascus follows the method typical of all sac-fungi. The escape of the spores takes place through a terminal rift in the ascus or by the breaking up of the latter. The mature spores germinate readily under the proper conditions, usually sending out a single filament from each cell; large spores, however, such as those found in *Megalospora* and *Pertusaria,* produce many germinating filaments. The young mycelium is capable of slight development only, unless it comes in contact with the proper alga, when it grows at once into the thallus. The uncertainty that the spores will germinate in a place where the proper host occurs makes multiplication by spores much less sure than by soredia. In a few cases (*Endocarpon, Staurothele,* etc.), this disadvantage has been overcome by the development of algæ in the thecium between the paraphyses and spore-sacs (hymenial gonidia). These are ejected with the spores, and, clinging to the latter, furnish a certain substratum for the germination of the spores.

Origin and Classification.— Lichens are sac-fungi and rod-fungi which show more or less similarity in their vegetative body because of their parasitism upon certain algæ. The clew to their origin and relationship is to be found in the inherited reproductive organ, the sporocarp, and not in the thallus. From this standpoint, the group is highly artificial, containing representatives of two distinct classes of fungi, the *Ascomycetes* and the *Basidiomycetes.* The absidiolichens are a small group, containing but a few genera: the ascolichens consist of the representatives of several unrelated families. It is evident that the lichens have not arisen from a single point, as members or offshoots of one line of development, but that they have originated at several widely separated points. They are of multiple origin; that is, they are polyphyletic. In ascolichens, the form of the sporocarp indicates the main places of origin; the *Verrucariaceæ,* with perithecia, are *Pyrenomycetales;* the *Graphidaceæ,* which show the hysterothecium, belong to the *Hysteriales;* the remaining families, *Caliciaceæ, Collemaceæ, Parmeliaceæ,* etc., belong to the *Pezizales.*

The following synopsis will indicate the relationship and limits of the various families of lichens:

Class Ascomyceteæ: fruit a sporocarp, spores borne in sacs (asci).

Order Pyrenomycetales: sporocarp a perithecium.

Family Sphæriaceæ: mycelium filamentous, saprophytic or parasitic on tissues.

Family Verrucariaceæ: mycelium thalloid, parasitic on yellow-green algæ.

Order Hysteriales: sporocarp a hysterothecium.

Family Hysteriaceæ: mycelium filamentous, hysterothecium carbonaceous.

Family Hypodermataceæ: mycelium filamentous, hysterothecium membranaceous.

Family Graphidaceæ: mycelium thalloid, on algæ, hysterothecium membranaceous or carbonaceous.

Order Pezizales: sporocarp an apothecium.

Apothecia and thallus leathery, waxy or carbonaceous, never gelatinous.

Family Patellariaceæ: mycelium filamentous, mostly saprophytic.

Family Lecidiaceæ: mycelium thalloid, apothecium sessile, exciple without algæ (proper).

Family Cladoniaceæ: mycelium thalloid of two sorts, primary and secondary; apothecia borne on stalks (podetia), proper exciple.

Family Parmeliaceæ: mycelium thalloid, algæ yellow-green, exciple with algæ (thalline).

Family Pannariaceæ: mycelium thalloid, algæ blue-green, proper exciple.

Apothecia and mycelium gelatinous.

Family Bulgariaceæ: mycelium filamentous.

Family Collemaceæ: mycelium thalloid, on blue-green algæ.

Class Basidiomyceteæ: fruit a hymenophore, spores borne on stalks (basidia).

Order Hymenomycetales: hymenophore exposed on a pileus.

Family Thelephoraceæ: hymenophore smooth, mycelium filamentous or thalloid (in *Cora, Rhipidonema, Dictyonema* and *Laudatea*).

Order Gasteromycetales: hymenophore enclosed in peridium.

Family Sclerodermataceæ: peridium broad subsessile, gleba excavate, mycelium filamentous, or thalloid in Emericella.

Distribution and Rôle.— Lichens are distributed over the entire earth: they are least numerous in the tropics and reach their maximum development in alpine and polar lands, where they often form the principal vegetation over immense stretches. Many species are widespread, especially in the northern hemisphere: some of these, such as *Cladonia rangiferina*, *Urceolaria scruposa*, *Usnea barbata*, etc., are truly cosmopolitan. In the tropical and temperate zones, the greatest wealth of lichens is found upon bark and wood. In alpine and polar regions, the stone and earth forms are predominant. In these places, lichens play their most important part in the economy of nature. They take the initiative in the disintegration of the hardest rock by virtue of the acids secreted by the thallus; they are likewise very effective in binding together the new soils which result in this way and in contributing organic material by their decay. In all rocky habitats they are the pioneers which prepare the way for the appearance of more highly organized plants, mosses, grasses, etc. In the case of tree-lichens, the tree is not affected by the lichen, except in so far as the bark may be ruptured by it mechanically. It is a question whether lichens exert any really injurious effect upon timber, though they probably hasten the decay of boards, posts, etc., by increasing the amount of moisture present.

A few lichens are of value as food. The most important among these is the so-called «reindeer» moss, *Cladonia rangiferina*, which covers vast stretches in the north and constitutes an invaluable supply of food for the reindeer and caribou. In Japan, *Gyrophora esculenta*, which is collected in abundance in the mountains, is of sufficient importance to be an article of export. The arid regions in northern Africa and western Asia produce large quantities of the manna-lichen, which is used to make bread, especially by the Tartars. This lichen is readily torn away from the substratum by the wind and is carried often to considerable distance before falling as «manna rain.» This phenomenon has been observed repeatedly in modern times, and probably accounts for the manna of the Israelites. «Trip-de-roche» is an edible *Umbilicaria* of arctic America, but the presence of the bitter principle so common in lichens restricts its use as a food. Lichens owe their food value almost wholly to their high content of lichenin, or lichen-starch. Lichens, though once of extensive application in dyeing and in medicine, have fallen almost completely into disuse in both. The various kinds of orseille, which were made from *Roccella tinctoria* and held in high esteem for their brilliant purples, have been entirely replaced by the aniline dyes. Litmus, which is a similar dye made from a species of *Lecanora*, is still extensively used in chemistry because of its red coloration in the presence of an acid. «Iceland moss,» *Cetraria islandica*, is still used officinally: it contains cetrarin, a bitter principle which is tonic and astringent, and a large amount of lichenin.

Consult: Tuckerman, E., ‘Synopsis of the North American Lichens’ (1882); Schneider, A., ‘A Text-book of General Lichenology’ (1897); Schneider, A., ‘Guide to the Study of Lichens’ (1898). FREDERIC E. CLEMENTS,
University of Nebraska.

Lichfield, lĭch'fēld, England, an episcopal city of Staffordshire, 17 miles southeast of Staffordshire. The principal edifice is the cathedral, a noble structure of early English and transitional architecture with a richly decorated west front, and three spires — two on the west, each 180, and one in the centre 280 feet high. The see of Lichfield was founded in 656. The city has interesting literary associations, Johnson, Addison, and Garrick, born in the town or neighborhood, having been educated at the old grammar school. Pop. (1901) 7,902.

Lichtenberg, Georg Christoph, gā-ōrg' krĭs'-tŏf lĭн'ten-bĕrg, German satirical writer and physicist: b. near Darmstadt 1 July 1742; d. Göttingen 24 Feb. 1799. He was educated at the University of Göttingen and became professor there in 1767. During frequent visits to England he collected material for his explanations of Hogarth whom he thus assisted to popularize in Germany. He gained great celebrity as a lecturer on physical science. His being a hunchback may very possibly have embittered a naturally satiric disposition. The best of his satires are those on the notorious literary pirate Tobias Göbhard; the essay on ‘The German Novel’; ‘Timorus,’ ridiculing Lavater's zeal for proselytizing; and ‘Pronunciation of the Wethers of Ancient Greece,’ aimed at Voss's system of pronouncing Greek. His brilliant sayings have been collected and published in a separate volume, ‘Lichtenberg's Thoughts and Maxims: Light Rays from his Works’ (1871).

Lichtenberg, Leopold, American musician: b. San Francisco, Cal., 22 Nov. 1861. In early childhood he showed his fondness for the violin and received careful training. In his 12th year was asked by Henri Wieniawski, then on a visit to California, to become his pupil, and accordingly spent three years at Brussels Conservatory. Fresh from his European successes, he was engaged in Theodore Thomas' orchestra and then spent three years more abroad playing in the chief cities. On his return to America he became a member of the Boston Symphony Orchestra and later was appointed head of the violin classes at the National Conservatory of Music, New York.

Licinius, lī-sĭn'ĭ-ŭs, **Gaius,** Roman tribune. He came of a plebeian family, but rose to the rank of tribune, receiving the surname of Stolo, or Useless Sprout, by reason of the law which he established forbidding any one to possess more than 500 acres of land. His reason for this was that when more land was cultivated by any one owner the latter could not pull up the useless shoots (*stolones*) which grew from the roots of trees. Another law of his enactment allowed the plebeians to share the consular dignity with the patricians; and he himself became one the first plebeian consuls, 364 B.C.

Licinius, Gaius Flavius, Roman emperor: b. Dacia about 270; d. 324. He was made Augustus by the emperor in 307, and became emperor of Rome after the death of Galerius about 312. He was defeated by his brother-in-law, Constantine, 323, and put to death the year following. His son, Flavius Valerius, declared Cæsar in 317, was slain at Constantinople in 326.

Lick, James, American philanthropist: b. Fredericksburg, Lebanon County, Pa., 25 Aug. 1796; d. San Francisco, Cal., 1 Oct. 1876. In 1821 he set up in the pianoforte business at New York, and later was a manufacturer of musical instruments at Buenos Ayres, Philadelphia, Valparaiso, and elsewhere. In 1847 he went to California, where he gained wealth through investments in real estate and various enterprises. In 1874 he placed $3,000,000 at the disposal of seven trustees, by whom they were to be applied to specified uses. The principal divisions of the funds were: To the University of California, for the construction of an observatory and the placing therein of a telescope to be more powerful than any other in existence, $700,000 (see LICK OBSERVATORY); for the building and maintenance of free public baths in San Francisco, $150,000; to found and endow an institution of San Francisco to be known as the California School of Mechanic Arts, $540,000; for the erection of three appropriate groups of bronze statuary to represent three periods in Californian history and to be placed before the city-hall of San Francisco, $100,000; to erect in Golden Gate park, San Francisco, a memorial to F. S. Key, author of ‹The Star-Spangled Banner, $60,000.

Lick Observatory, astronomical department of the University of California. James Lick (q.v.), by deeds made in 1874 and 1875, charged a board of trustees to expend the sum of $700,000 for the purpose of purchasing land and constructing "a telescope superior to and more powerful than any telescope yet made . . . and also a suitable observatory . . . to be made useful in promoting science." Under the provisions of this deed a site was selected in 1876 on the summit of Mount Hamilton about 26 miles, by road, from San José, Cal. The land (about 3,000 acres) was granted at various times by the United States and by the State of California.

Astronomical observations of precision and delicacy require a steady atmosphere as well as a very transparent one, and the site chosen is favorable in both respects. This was thoroughly tested in 1879 by Prof. S. W. Burnham before any buildings were erected. The first board of trustees (D. O. Mills, president) chose as chief advisers Profs. Simon Newcomb and Edward S. Holden, and appointed Prof. Holden as director. In October 1874 the latter submitted a plan for the building of the observatory and a programme of work, which were accepted by the trustees, according to which the buildings were constructed and the work carried on from 1874 to 1897. The County of Santa Clara built a fine mountain road to the summit, in 1876, at a cost of $78,000. The work of construction was begun in 1880 by the third board of trustees (Capt. R. S. Floyd, president) with Thomas Fraser as superintendent. To obtain a level platform for the observatory 70,000 tons of rock were blasted from the summit. The instruments were ordered from specifications by Dr. Holden, except the object-glass of the great telescope. After a series of experiments Prof. Newcomb advised the construction of a refracting telescope for the main instrument of the observatory. The glass disks were founded by Feil & Mantois of Paris and figured by Alvan G. Clark. The finished objective is 36 inches in diameter, and has a focal length of 56 feet 2 inches. Besides the visual objective, there is a third lens of 33 inches aperture. When this is placed in front of the visual objective the combination becomes a photographic object-glass of 570 inches focal length (the diameter of the photographic image of the moon is about 5.2 inches). The cost of the visual objective was $50,000, of the photographic corrector about $13,000, and of the mounting of the telescope about $45,000. The cost of the dome complete was about $85,000; of the whole observatory about $610,000. The mounting of the great telescope was made by Warner & Swasey, of Cleveland. The whole weight of iron pier and mounting is about 37 tons. The moving parts of the latter weigh about 7 tons; the tube weighs nearly three tons. The telescope is used for visual purposes, and micrometer measurements; it is also used for photographic and for spectroscopic observations. Its steel dome is 75 feet in diameter, and weighs 100 tons. It was built by the Union Iron Works of San Francisco. The floor of the dome is movable vertically (about 16½ feet), according to a plan by Sir Howard Grubb, which ensures a convenient position for the observer, no matter whether the telescope is pointing horizontally or vertically. Other instruments are a 12-inch and a 6-inch refractor, a 4-inch comet-seeker, a 6-inch meridian-circle, a 5-inch photographic telescope, a 4-inch transit, a 5-inch photoheliograph, etc.

The great telescope has been in constant use since its erection, and its optical quality has been proved to be excellent. The admirable design and construction of its mounting and dome have much facilitated its work. In 1895 Edward Crossley, M. P., of Halifax, England, presented to the observatory his 3-foot reflector, which has been a powerful auxiliary to the great refractor. The observatory constitutes the Lick Astronomical Department of the University of California. The directors of the observatory have been: Edward S. Holden (1874 and 1885–97); James E. Keeler (1898–1900); W. W. Campbell (1900—). Its staff has comprised many noted observers: Messrs. Burnham, Barnard, Schaeberle, Tucker, Perrine, Hussey, Aitken, Wright and others. In 1888 the staff was composed of the director, four astronomers, and one assistant. The staff of the observatory in 1903 consists of the director, 3 astronomers, 2 assistant astronomers, 4 assistants, 3 fellows, 1 secretary.

The observatory was one of the very first to be located on a site specially chosen for its adaptation to astronomical work, and its success has had an important effect upon the science of practical astronomy. No one would now think of locating a great observatory without careful consideration of the site to be occupied. The mountain observatories of the world owe much to the experiments made at Mount Hamilton.

The principal objects of research have been: The visual and photographic observation of planets and satellites; the fifth satellite of Jupiter was discovered here by Barnard in 1892. A systematic search for comets has been kept up and 14 unexpected comets have been discovered — Barnard (3), Perrine (9), Coddington

(1), besides a comet discovered by Schaeberle during his observations of the solar eclipse in Chile. Many periodic comets have also been detected and observed. The orbits of new comets have always been promptly computed at the observatory and ephemerides sent out to other stations. Four asteroids were discovered by Coddington in 1898–9. Meteors have been observed and photographed, and their orbits calculated. Double stars have been assiduously observed and many new discoveries made by Burnham, Hussey and Aitken; the orbits of a considerable number of binaries have been calculated. Observations of the zodiacal light and of the aurora have been made by Barnard and others. Successful expeditions have been sent to observe all total solar eclipses since 1888, and very much has been added to our knowledge of solar physics in this way. The transit of Venus of 1882 and three transits of Mercury have been observed and photographed here. The positions of a large number of fixed stars have been determined with great precision by Tucker. Many photographs of the sun and moon have been made. The negatives of the moon have been utilized in the preparation of an atlas of the moon (scale 10 feet to the moon's diameter) by Prof. Weinek, and on a scale of three feet by Messrs. Holden and Colton. A great number of important photographs of the milky way were made here by Professor Barnard and others, and of comets and nebulæ by Keeler, Hussey, Perrine and others. A complete outfit of seismometers for recording the intensity of earthquake shocks was installed at the observatory in 1888, and it was supplemented by similar instruments at Berkeley and at other points in California and Nevada, which regularly report to Mount Hamilton. In this way the elements for a seismometric record for the State were collected and regularly published. At the same time a list of all recorded shocks on the Pacific coast since 1769 was compiled and discussed by Dr. Holden. Spectroscopic observations of nebulæ, new stars, comets, stars and planets have been made in great number and with previously unattained precision by Messrs. Keeler, Campbell, Wright, Perrine and others.

The chief problem of the great telescope is to determine the motion of the solar system by spectroscopic observations. The photography of stellar spectra was proposed in the plan of 1874 and attacked in 1888, and it has been followed with marked success, especially in the hands of Prof. Campbell. Since 1896 more than 2,000 negatives of stellar spectra have been secured. A preliminary discussion by Campbell leads to the result that the solar system is moving toward a point in 277° R. A. and 20° N. D., at a speed of 19.89 kilometers (12.35 miles) per second. An expedition was sent (at the cost of D. O. Mills) to the Southern hemisphere in 1903 to extend this research to Southern stars.

The observatory publishes a series of octavo 'Contributions' (No. 1 in 1889, No. 5 in 1895), of quarto 'Publications' (Vol. I. in 1887, VI. in 1903) and a quarto 'Bulletin' since 1901 — a journal. The Astronomical Society of the Pacific founded by Prof. Holden in 1889, has close relations with the observatory, and has printed 15 octavo volumes. Visitors are freely admitted to the observatory in the day time to the number of 5,000 or more annually. On Saturday evenings visitors are admitted to look through the telescopes, and as many as 150 to 200 are frequently registered. In this way the observatory has rendered important services to popular education.

EDWARD S. HOLDEN,
Librarian U. S. Military Academy, West Point.

Lick'ing, (1) a river of Kentucky, rising in Floyd County, among the Cumberland Mountains, and, after a course of about 200 miles, falling into the Ohio at Newport, opposite Cincinnati. (2) A river of Ohio, the former Indian Pataskala, rising near the centre of the State, and, after a course of 80 miles, flowing into the Muskingum near Zanesville. It furnishes valuable water power.

Lic'orice, or **Liquorice,** a genus of perennial herbs (*Glycorrhiza*) of the order *Leguminosæ.* About a dozen widely dispersed species are recognized, of which *G. glabra* is the most important, since it furnishes the licorice of commerce. It is characterized by long rootstocks, odd-pinnate leaves, and racemes of separated flowers of various colors, usually pale violet. The plant is a native of southern Europe and western Asia, and is cultivated in Spain, Italy, Russia, and some other countries of the old world, the best grades coming from the first two countries mentioned. The roots and the extracted sweetish principle, of which about $500,000 worth are imported into the United States annually, are used in making plug tobacco and porter, to flavor cooling drinks, and by druggists to disguise the unpleasant taste of some drugs. Attempts to cultivate the plant in Louisiana and California has proved partially successful, but the crop is not profitable, since three to four years must elapse before it can be dug, and the selling price is small. Cuttings of the rootstock are planted about three feet apart, and when established the plants are allowed to shift for themselves until harvest, when the land is plowed and the rootstocks pulled by hand. No further planting is necessary, since the bits of root left will restock the land.

Lic'tors, in ancient Rome, a name given to those public servants who attended upon the chief magistrates to fulfil their commands, bearing axes tied up in bundles of rods, which were called *fasces.* When a magistrate of high rank appeared in public the lictors preceded him in a file, following each other. It was their duty to clear the road of the populace. The dictators were preceded by 24 lictors; the consuls, decemvirs, and military tribunes, by 12; the provincial prætors, master of the horse, and proprætors, by six; and the quæstors by five.

Liddell, lĭd'ĕl, **Henry George,** English Greek scholar and Anglican clergyman: b. 6 Feb. 1811; d. Ascot, Berkshire, 18 Jan. 1898. He was educated at the Charterhouse and Christ Church, Oxford; took priest's orders in 1838; and for some years lived in Oxford as a tutor of Christ Church. He took no part in the theological controversies which stirred the Oxford of his time, but worked steadily with R. A. Scott of Balliol, afterward Dean of Rochester, at the 'Greek Lexicon' — the well-known 'Liddell and Scott' of successive generations of students — which forms his chief title to remembrance. It first appeared in 1843, but has undergone extensive revision and enlargement in subsequent editions, of which the 8th appeared in 1897. In 1846 Liddell was appointed the head-master of Westminster School, and in 1855 became dean of Christ Church. He held the deanery till his retirement to Ascot in 1891, and during his rule many salutary changes were introduced. Besides the ‘Lexicon,’ founded on the Greek-German lexicon of Passow, he wrote a ‘History of Rome’ (1855), afterward abridged as ‘The Student's Rome.’ Consult Thompson, ‘A Memoir of H. G. Liddell’ (1899).

Liddon, lĭd'ôn, **Henry Parry,** English clergyman: b. North Stoneham, Hampshire, 20 Aug. 1829; d. Weston-super-Mare 9 Sept. 1890. He was educated at Christ Church, Oxford, where he was graduated in 1850. The year after his ordination to the priesthood he was appointed vice-principal of Cuddesdon College, which bishop Wilberforce of Oxford had recently founded, but resigned in 1859 and became vice-principal of St. Edmunds Hall, Oxford. In 1870 he was chosen as Ireland professor of exegesis, but after the Universities Commission had completed their work, which he looked upon as desecrating, he resigned (1882). From 1870 till his death he was canon of St. Paul's and his sermons under the dome attracted crowds of breathless hearers. He was in fact the last prominent survivor of the theological school represented by Pusey and Keble, and carried its tradition even into the period of the new Oxford movement represented by ‘Lux Mundi,’ a work which he ardently controverted. He also was prominent in the controversies concerning the Public Worship Regulation Act, which he opposed, and the Athanasian Creed, which he defended. An inflexible High Churchman, an uncompromising theologian of the Nicene school, he had much influence even where his rigid dogmatism carried no conviction, through the loftiness of his personal character, his transparent sincerity and a noble eloquence, whose power and sweetness recalled the best utterances of Bossuet and Massillon, preachers on whom he palpably bestowed much earnest study. During the last years of his life he was engaged in writing Pusey's life on a voluminous scale, but had completed but three volumes when he died. He was elected bishop of Edinburgh, in 1886, while traveling in the East for his health, but his decline prevented him from accepting. He published many sermons, but the only series likely to prove of permanent importance is his Bampton Lectures ‘On the Divinity of Our Lord and Savior Jesus Christ’ (1866).

Lie, lē, **Jonas Lauritz Edemil,** Norwegian novelist: b. Eker, Norway, 6 Nov. 1833. He was educated at the University of Christiania and in 1859 settled as a lawyer at Kongsvinger, to the northeast of Christiania. He went to Christiania in 1868 to support himself by journalism and literary work, and in 1870 became famous with his novel ‘The Visionary.’ The profits from its publication enabled him to spend some time in northern Norway, and to visit Holland, Belgium, France, and Italy. Returning in 1874, he received the poet's pension from the Storthing, resided in Dresden 1877–81 and from 1882 till 1891 lived in Paris in comparative retirement writing his most notable works, and in the latter year he went to Rome, from which he returned in 1892 to Norway. The following are his chief novels and stories: ‘The Visionary’ (1870); ‘Stories and Sketches of Norway’ (1872), containing the story entitled ‘The Horse of Nordfjord’; ‘The Three-Master Future, or Life in the North’ (1873), a series of loosely connected stories or sketches dealing with the life of Norwegian seamen; ‘The Pilot and his Wife’ (1874), showing a considerable advance on his earlier works; ‘Thomas Ross’ (1878); ‘Adam Schrader’ (1879); ‘Rutland’ (1880); ‘Forward! Scenes of the Sea’ (1882); ‘Life's Slaves’ (1883), a powerfuly realistic study of a soul involved in the net of circumstance; ‘The Family of Gilje’ (1884), a lighter story of Norwegian life; ‘The Gulf’ (1885), treating of the gradual decline of an old Norwegian family; ‘Eight Stories’ (1885); ‘The Commandant's Daughters’ (1886), by many regarded as his masterpiece; ‘Two Lives’ (1887), a penetrating study in the psychology of marriage; ‘Maisa Jons’ (1888); ‘Mischievous Powers’ (1889); ‘Trold’ (1891–2); ‘Niobe’ (1893), in which his subject is family troubles arising out of differing social, political, or religious views held by parents and children; and ‘Grandfather’ (1895). He published a volume of poems in 1867, and he has writen several dramas, ‘Faustina Strozzi’ (1875), ‘Grabow's Cat’ (1880), and ‘Merry Wives’ (1894). In 1894 he published an important critical work, ‘Honoré de Balzac, The Man and the Artist.’ Lie's chief works have been translated into German, English, and other languages. He is a realist with a fine sense of humor and profound sympathy with the humble and the unfortunate, and is a master in psychological analysis.

Lieber, lē'bėr, **Franz,** American publicist: b. Berlin, Germany, 18 March 1800; d. New York 2 Oct. 1872. He volunteered as a soldier at 15, and was in the battles of Ligny, Waterloo, and Namur. He served also in the Greek war of independence, recording his experiences in ‘Journal in Greece’ (1823). He settled in the United States in 1827, and during the next five years was occupied with the compilation of an ‘Encyclopædia Americana’ (13 vols.). While professor of history and political economy in South Carolina College (1835–56), he wrote the three great works by which he is best known, ‘Manual of Political Ethics’ (1838); ‘Legal and Political Hermeneutics or the Principles of Interpretation and Construction in Law and Politics’ (1839); ‘Civil Liberty and Self Government’ (1853). In 1857 he became professor of history in Columbia and later of political science in the Columbia Law School. During the Civil War period he was a firm supporter of the Federal government and was frequently consulted by the secretary of war. His war code, officially designated as ‘Instructions for the Government of the Armies of the United States in the Field’ (1863), made him still more widely known. He was a member of the French Institute and of many learned societies at home and abroad. Consult ‘Lives’ by Perry (1882); Harley (1899).

Lieber, Oscar Montgomery, American mineralogist and chemist: b. Boston, Mass., 8 Sept. 1830; d. Richmond, Va., 27 June 1862. He was a son of Franz Lieber (q.v.) and was educated at the Universities of Berlin and Göttingen and the School of Mines at Freiberg, Saxony. In 1850 he became State geologist of Mississippi and afterward engaged in the survey of Alabama and South Carolina. In 1860 he went to Labrador as geologist of the American astronomical expedition. During the early part of the Civil War he served in the Confederate army and was fatally wounded at the battle of Williamsburg. He published ‘The Assayer's Guide’ (1852); ‘The Analytical Chemist's Assistant’ (1852); ‘Geology of Mississippi’ (1854).

Liebig, Justus, yoos'toos lē'bĭg, Baron von, German chemist: b. Darmstadt 12 May 1803; d. Munich 18 April 1873. He studied in Bonn and Erlangen, was graduated in 1822, and the same year went to Paris, where he gained the favor of Humboldt by his paper on fulminic acid and the fulminates, read before the French Academy (1824). He thus obtained access to the private laboratory of Gay-Lussac. In 1824 he was appointed extraordinary professor and in 1826 ordinary professor of chemistry at Giessen. Here he opened the first experimental laboratory for college students, and the university soon became the European centre of chemical studies. He had remarkable success as a teacher, and pupils streamed into his class room from every country. The most illustrious chemists of the last century acknowledge their obligations to him as their master. He gave chemistry a settled position in Germany, and turned it into a real science to be taught and learnt by means of experiment. As an original investigator in the domain of chemistry he has shown himself a reformer of the sciences of physiology and agriculture. He may be said to be the founder of modern organic chemistry, and its necessary method of analysis. He analyzed many organic acids; discovered chloroform and chloral; he made the theory of the composition of ether, and the oxidization of alcohol subjects of new experiments, in the course of which he discovered aldehyde. He determined the basicity of many acids; analyzed the chemical composition of urine and the products of uric acid, and made profound inquiries into the juice of flesh, and its component substances. He raised chemistry from a position of obscurity and unprofitable hypothesis into its present all dominating position by his theory of the constitution of alcohol, ether, etc., and his work on the benzoyl compounds is especially remarkable in this connection. The industrial importance of his discoveries is great. Cyanide of potassium is largely employed in electroplating and in the manufacture of ferrocyanides. His improved method of producing this cyanide has cheapened manufacture, just as his discovery of aldehyde has led to improved methods in the making of vinegar and looking-glasses. The result of his vast discoveries has been especially felt in the domains of medicine, agriculture, and food-hygiene. His great generalization that the mineral and organic world were composed of the same chemical elements, and were subject to the same chemical mutations, revolutionized science. He traced for the first time the transformation of inorganic into organic substances in plants, from which they were transferred to the organisms of animals. His exact statement of the elements received by plants from the soil and air enabled him to prescribe the composition of efficient fertilizers and thus, in the treatment and analysis of soils, to raise the fundamental operations of agriculture to the level of exact science. See Chemistry; Agriculture.

Consult: Liebig, ‘The Natural Law of Husbandry’ (1863); ‘Animal Chemistry in its Application to Physiology and Pathology’ (1846); ‘Handbook of Organic Analysis’ (1853); Hoffmann, ‘The Life-Work of Liebig in Experimental and Philosophical Chemistry’ (1876).

Liebknecht, Wilhelm, vĭl'hĕlm lēp'knĕʜt, German Socialist: b. Giessen 29 March 1826; d. Berlin 6 Aug. 1890. He studied at the University of Giessen and later at Marburg and Berlin. He was early interested in the writings of St. Simon, and in 1848 went to Paris to take part in the revolution there; then joined in the unsuccessful attempt to make Germany a republic, and was imprisoned nine months without trial. When released he went to Switzerland, where he tried to unite the trade unions on a socialistic basis, was again arrested, handed over to the French authorities, and banished to England. While there he became an intimate friend of Marx and Engels (qq.v.) and was a member of the Communist League. In 1862 he returned to Germany, continued his socialistic agitation, and in 1865 was banished from Prussia. He went to Leipsic, where he met Bebel (q.v.), was active in trade union organization, and was one of the founders of the Saxony Volkspartei soon absorbed by the German Social Democratic party (1868), of which he was from the first a leading member. In 1867 he was candidate for the North German Parliament, but was under arrest and lost the election; he was later elected. In 1868 he was made editor of the ‘Demokratisches Wochenblatt,’ the next year enlarged and published under the name of ‘Volkstatt.’ In 1870 he denounced the Franco-Prussian war, for which he was imprisoned three months, and later so bitterly attacked Bismarck that he was again imprisoned. In 1874 he was elected to the Reichstag of which he was a member almost constantly till his death. He was one of the strongest leaders of his party in that body, and very popular and highly respected among German workingmen. In 1890 the name of the ‘Volkstatt’ was changed to ‘Vorwärts,’ and Liebknecht was retained as editor. He has written ‘Die Grund- und Bodenfrage’ (1874), a discussion of the land question from the Socialist standpoint; ‘Ein Blick in die Neue Welt’ (1887), an account of his visit to the United States; ‘Robert Blum und seine Zeit’ (1890); ‘Robert Owen’ (1892); and ‘Socialism, what it is and what it seeks to accomplish’ (translated and published in the United States). Consult: Aveling, ‘Wilhelm Liebknecht and the Social Democratic Movement’ (1896).

Liechtenstein, lēʜ'tĕn-stīn, a small independent principality, practically a portion of the Austro-Hungarian monarchy and united with the Austrian Customs-Union since 1866, between Vorarlberg, Tyrol, and Switzerland; area, 65 square miles, pop. (1901) 9,477. The surface has a fertile soil, yielding abundance of pasture, corn, wine, fruit, and flax. The capital, Vaduz, has about 1,000 inhabitants. The reigning family date from the 12th century, and are descendants of free barons who became princes of Liechtenstein in 1608.

Liège, lē-āzh, Belgium, (1) the easternmost province bordering on Rhenish Prussia and the Netherlands. Area 1,117 miles. The surface is diversified with heights varying from 300 to 2,000 feet, and well wooded. It contains rich coal and iron mines. The northern part called Herveland is exceedingly fertile and highly cultivated, affording pasturage for cattle and producing large quantities of butter and Limburg cheese. Pop. (1900) 826,175. (2) An episcopal city and the capital of the province at the confluence of the Ourthe and Meuse, 54 miles southeast of Brussels. The city has been considerably modernized since 1860 by the construction of fine quays and bridges along the course of the Meuse throughout the city. It has numerous striking public buildings including the Gothic cathedral of St. Paul, the Palais de Justice and the celebrated university, occupying extensive grounds, with special institutes for various sciences, a school of mines, a school of arts and manufactures, and an important library. Liège is one of the largest manufacturing towns of Europe, owing principally to its situation in a district abounding with coal, iron, lead, copper, and marble. Cannons and firearms of every description, steam engines, and machinery, hardware of every kind, watches, jewelry, bronze and other ornaments, woolens, cottons, etc., are made. Liège dates from the 6th century. Pop. (1900) 173,706.

Lien, lē'ĕn or lēn, a legal claim on or upon property; a legal right in one person to detain the goods of another until some claim of the former against the latter has been satisfied. Blackstone says a lien may be either particular or general; the former is where the claim of retainer is made upon the goods themselves, in respect of which the debt arises, a claim which the law favors. The other, or general lien, is where goods are retained in respect of a general balance of account, which is less favored. Though general liens are not favored by law, yet in some cases they have become allowed and established by usage, as in the case of attorneys upon the title-deeds and documents of their clients; and factors, warehousemen, and others, upon goods confided to them in the ordinary course of business.

Lieuely, Greenland. See GODHAVEN.

Lieutenant, lū- or lĕf'tĕn'ant, a military term, which, like captain, and many others, has received gradually a much narrower meaning than it had originally. Its true meaning is a deputy, a substitute, from the French *lieu* (place, post) and *tenant* (holding). A *lieutenant-général du royaume* was a person invested with almost all the powers of the sovereign. Lieutenant-general is the title of the commanding general of each division of an army, personating the general-in-chief. Lieutenant-colonel is the officer between the colonel and major. The term lieutenant by itself, in military language, signifies the officer next below a captain, whether in the cavalry or infantry. There are also second lieutenants ranking below lieutenants. A lieutenant in the navy is the officer next in command to the captain of a ship. He takes rank both in the British and United States services with a captain in the army, and after eight years' service he ranks in Britain with a major. In the United States a lieutenant ranking with a major is called lieutenant commander.

Lieutenant-colonel, a military title, the officer next in rank to a colonel, and the senior of a major. He assumes command of the regiment only in the event of the disability or temporary absence of the colonel of the regiment.

Lieutenant-general, formerly general officer in the United States army, ranking above a major-general and below a general. The office of lieutenant-general was first created by Congress for George Washington in 1798, during the troubles between the United States and France. It then lapsed till renewed by Congress for Gen. Winfield Scott, who was made lieutenant-general by brevet. In 1864 it was again revived for Gen. U. S. Grant, and continued for Generals Sherman and Sheridan. The grade was also conferred on Gen. John M. Schofield, 5 Feb. 1895, who held it till his retirement, 29 Sept. following. An act of Congress of 6 June 1900 provided that «the senior major-general of the line commanding the army shall have the rank, pay and allowances of a lieutenant-general»; and on the reorganization of the army in February 1901 the grade was revived and President McKinley appointed Maj.-Gen. Nelson A. Miles its incumbent. In 1903 the rank was again abolished, an act of Congress providing for a General Staff, the chief of staff to take the place of the lieutenant-general.

Lieutenant-governor, an executive office of several of the States, ranking next to the governor. He performs the duties of a governor in case of the latter's death, absence from the State, or inability to act, and is presiding officer of the State senate.

Liezen-Mayer, lē'tsĕn-mī'ėr, **Alexander,** Hungarian painter: b. Raab, Hungary, 24 Jan. 1839; d. 1898. He studied at Vienna and Munich, attending the art academies in those places, and afterward entered the studio of Piloty (1862) in the latter city. Under this master he painted his ‹Queen Maria and Elizabeth of Hungary at the Grave of Louis le Grand› and ‹The Coronation of Charles of Durazzo in the cathedral of Stuhlweissenburg.› Three years later he carried off the first prize at the Munich Academy exhibition. In 1867 he painted ‹Maria Theresa›; ‹The Child of a Poor and Sickly Mother›; and as drop-scene for the Munich theatre, ‹Poesy Surrounded by the Muses.› In 1867 he began to paint portraits, and also furnished illustrations for the works of Goethe and Schiller. During a residence in Vienna (1870–2) he executed portraits of the emperor and many of the nobility. On his return to Munich he painted some ideal figures from Shakespeare's ‹Cymbeline,› and some scenes from Goethe's ‹Faust›; and in 1873 ‹Elizabeth Signing the Death Warrant of Mary Stuart› (in the Museum at Cologne), and one of his masterpieces, although its principal merit lies in the perfection of the technique. He produced also many cartoons for woodcut reproduction as illustrations of the poets. For three years he was director of the Art School at Stuttgart (1880–3), when he was appointed professor of historical painting in the Munich Academy.

Life. No definition of life has ever proved quite satisfactory. Some include too much, others omit certain phenomena, a third class assume conditions purely hypothetical, while many are unintelligible. Bichat says that life is «the sum total of the forces that resist death»; Treviranus, that it is «the constant uniformity of phenomena with diversity of external influences»; Duges, that it is «the special activity of organized bodies»; and Beclard, that it is «organization in action.» De Blainville's definition is: «Life is the twofold internal movement of composition and decomposition, at once general and continuous.» But according to Herbert Spencer this conception is in some respects too narrow and in others too wide. Of his own definition, that it is «the co-ordination of actions,» he says—«like the others this definition includes too much, for it may be said of the solar system with its regularly recurring movements and its self-balancing perturbations, that it also exhibits co-ordination of actions.» His amended conception of life is: «The definite combination of heterogeneous changes, both simultaneous and successive, in correspondence with external co-existences and sequences.» G. H. Lewes suggests the definition: «Life is a series of definite and successive changes, both of structure and composition, which take place within an individual without destroying its identity.» This is one of the most satisfactory definitions that has as yet been given. The most recent attempts have been in the direction of proving that life is merely a form of energy or motion, and show the influence which the physical sciences have had in recent years over knowledge and speculation, which formerly were mainly based on biology and theology. The simplest answer to the question probably is: Life is metabolism.

Leaving the subject of attempted definition, it will be profitable to observe some of the characteristics of life as compared with its absence; that is, substantially, a comparison of the organic with the inorganic part of the universe. The boundary between living and not-living matter is much less distinct than rough inspection suggests, but some of the most striking characteristics which distinguish living organisms from other objects of our experience which are not-living may be pointed out. The distinctive properties of living matter are, first, the fact that it is organized; second, that it has the power of perpetuating itself within definite limits by chemically taking and adapting (assimilating) suitable material from the surrounding media, and in the process generating heat (energy) in the absence of which it disappears; and, third, that it has the power of self-reproduction. Life cannot exist without that chemical interchange between the organism and its inorganic environment, and between the constituent parts of the organism which is summed up in the word metabolism (q.v.). Objections have been made to some of the definitions quoted above, and to others, that they assumed the existence of organization. But so far no evidence is present of any living thing without organization. The simplest one-celled animals and plants (see AMŒBA; PROTISTA) consist of organized protoplasm. This fundamental living substance, called protoplasm (q.v.), is of complicated structure and chemical composition. Its structure differs in different organisms; but it everywhere consists of a combination of viscous «plasma» and water. The plasma contains the chemical substances upon whose changes life depends. Protoplasm is, however, not homogeneous. At least two kinds are found in every mass, the cytoplasm constituting the major part of the whole; and the nucleus, the nutritive and reproductive centre. The combination of cytoplasm and nucleus forms a cell. Combinations of cells constitute the bodies of all organisms, large or small, past or present. These combinations are accumulations resulting from the property, characteristic, regularly and fundamentally, only of living organisms, of the doubling of molecules, by which growth is effected.

The fundamental vital phenomena may be regarded as (1) nutrition and (2) reproduction. The conditions under which these activities may be manifested are narrow in general, and the more closely limited in respect to a particular organism in proportion as its organization is more or less complicated. These conditions belong to the environment, from which the organism must take the elements necessary to its continued repair of loss—in other words, get food. Essential elements are oxygen, water, and certain salts; in a word, all the constituent elements of protoplasm, at the least, must be obtainable from the air or water, in order that vitality may persist. It is needful, however, that certain harmful things (poisons) should be absent, or the organism will be killed. Death will also follow excess or deprivation of the proper proportions of the food elements; too much or too little water; a raising or lowering of the temperature above certain points; the presence of light, proper electrical conditions, etc. The simplest animals and plants, consisting of little except protoplasm and water, have great power of resistance to untoward conditions, and the range of diversity in circumstances in which they are able to survive is very wide. Protozoans, eggs of lowly animals, spores of fungi, and the like, slowly dried show the possibility of persistence for prolonged periods without water. Small nematode worms are said to have survived desiccation for 14 years; and certain starchy seeds, kept thoroughly dry, may germinate after 10 or 20 years. As to temperature, dry yeast will live after exposure to 70° C., and a portion survives even at 100° C.; Pasteur heated dry fungoid spores without fatal results to 120° C., but the same when moist were killed at the boiling-point. Some bacteria are said to resist boiling, but the reverse is usually true. Kühne killed marine amœbæ at 35° C., while fresh-water forms stood 10° more. Even seeds have been known to withstand 100° C., but it is familiar that a longer exposure to much lower temperature is usually fatal. Higher plants have been known to survive burial under a glacier for four years; and fishes, frogs, etc., have often revived after being frozen hard in ice. Dry yeast, according to Cagniard de la Tour (quoted by Huxley), survived —60° C., but when moist was killed at —5° C.; yet Cohn cooled bacteria to —18° C. without death, and seeds have survived such an extreme as —120° C. To illustrate the diverse sensitiveness of animals, Semper notes that a temperature about the freezing-point of fresh water kills Infusoria but not pond-snails, that the minimum of vital activity in the former was seen at 4° C., in the latter at 12° C., yet the optimum for both is the same, namely, about 25° C. These facts illustrate how wide are the conditions to which some organisms have been able to adapt themselves; but they show that limits exist; and only emphasize the fact of common knowledge that life in its higher manifestations is dependent upon the maintenance of a few well-defined conditions, and that innumerable accidents may bring it to a permanent end (see DEATH), whereupon the material which it animated instantly becomes inert matter subject only to the laws that govern the inorganic world.

Reproduction is the means of securing that continuity of life which is one of its primal characteristics, and consists in the separation from the original organism of a part, relatively greater or less in proportion as the organization so divided is simple or complicated, which part is equally endowed with the potentialities of living and reproduction, and normally will reproduce its kind in turn.

For an account of the speculations and reasoning as to the origin of life on the earth, see ORIGIN OF LIFE; PROTISTA.

Life and Advent Union. See ADVENTISTS.

Life-boat, a boat for saving persons from shipwreck, and so built that it can live in a stormy sea. It must be constructed with strength sufficient to resist violent shocks from the waves, the rocky beach, or collision with the wreck; be buoyant enough to avoid foundering, and to float though loaded with men and filled with water; have facility in turning; and when capsized be able to right itself. Such boats are now maintained at most of the life-saving stations in America and Europe, ready to put to sea at once if their services are required, and provided with the means of being conveyed to the beach and launched with all possible rapidity. The first patent taken for a life-boat was as early as 1785. In 1789 Henry Greathead of England patented the best form of life-boat, and by the year 1804 his boat had saved nearly 300 lives. Till 1851 Greathead's invention was almost the sole one in use, though numerous others had been either introduced or proposed; but in that year no fewer than 50 models of improved life-boats were sent to the London Exhibition in competition for a prize offered by the Duke of Northumberland for improved construction. James Peake of Woolwich Dockyard, by combining the excellencies of the competitive boats, and adding others suggested by his own experience, designed a boat which, gradually improved from time to time, became the recognized model, and has been adopted as the standard for boats in all countries. This life-boat possesses in the highest degree all the qualities which it is desirable that a life-boat should possess:—1. Great lateral stability, or resistance to upsetting. 2. Speed against a heavy sea. 3. Facility for launching and taking the shore. 4. Immediate self-discharge of any water breaking into her. 5. The important advantage of self-righting if upset. 6. Strength. 7. Stowage-room for a large number of passengers. The great breadth of beam (8 feet) in proportion to her length (33 feet) is to diminish the liability to capsize in a heavy sea. The relieving-tubes, by which any water that breaks into the boat is immediately self-discharged, are a most beautiful contrivance. Such are the precautions for the safety of the crew that loss of life in the conduct of the boat is of rare occurrence. The life-boat transporting carriage is an important auxiliary to the boat. The life-boat is kept on this carriage in the boat-house ready for immediate transportation to the spot most favorable for launching to the wreck. In this way a greater extent of coast can secure the benefits of the life-boat than could otherwise be the case. Even when the launch is from the immediate vicinity of the boat-house the use of the carriage saves much time, which in a case of shipwreck may prove of the last importance. Besides, a boat can be readily launched from a carriage through a high surf, when without a carriage she could not be got off the beach. The machine is admirably contrived, and the boat may be launched from it in an upright position with her crew on board. To render it more manageable and of the greatest possible utility, the fore and main bodies can be detached from each other by the withdrawal of a forelock pin.

Life-buoys. See LIFE-PRESERVERS.

Life-estate, in the common law, as applied in England and the United States, a freehold not of inheritance; an estate or interest in real property for a life, and which is either conventional or legal. A conventional life-estate is expressly created by the act of the parties, and is for the life of the owner, or for the life of another, in which case it is called an estate *pour autre vie.* A legal life-estate is either tenancy-in-tail after possibility of issue extinct; or what in the older country is technically designated courtesy of England, that is, the life-interest held by a husband in his wife's fee-simple or fee-tail estates, general or special, after her death; or dower, that is, the right which a wife has for her life in the third part of the lands and tenements held in fee-simple, fee-tail-general, or as heir in special tail by her husband at the time of his decease. The tenant for life may cut wood to repair fences and for household fuel. If there is an open mine on the estate he may work it for his own profit, but he cannot open one. See ESTATE; FEE; FEE SIMPLE; ENFEOFFMENT; FORFEITURE.

Life-everlasting, one of the everlastings (*Anaphalis margaritacea*), called the pearly or large flowered; also silver-leaf, cotton-weed, none-so-pretty, etc. See EVERLASTING.

Life-insurance. See INSURANCE, LIFE.

Life-mortars. See LIFE-ROCKETS.

Life-preservers are inventions for the preservation of life in cases of shipwreck. In the mercantile marine and passenger ships there are now life-belts for every passenger and every member of the crew. Buoys are carried on the bridge and at the stern of most ships in the mercantile marine. The danger to ships' ordinary life-boats is that, from being so long out of the water, unless attended to they get so dry that when floated they fill. Although against regulations, these boats have been known to be filled with cargo. Sometimes the handiest life-buoy is an empty water-cask, well bunged up, and with ropes around it to hold on by. There are various kinds of buoyant pillows, life-jackets of india-rubber cloth, and mattresses. The cork-mattress can float three men in an upright position.

The life-belt commonly used was designed by Admiral Ward of England. It is made of cork covered with canvas, and is both strong and buoyant. It has four separate compartments, so that if one should be punctured and burst, the belt's buoyant power is not entirely destroyed. Each life-belt must have sufficient extra buoyancy to support a man heavily clothed, with his head and shoulders above the water, and to enable him to support another person besides himself. It must be flexible in order to fit tightly into the shape of the wearer. There is a division between the upper and lower parts so that it can be securely fastened round the waist, and not impede breathing or the muscular action of the chest or arms. See LIFE-BOAT; LIFE-RAFTS.

Life-rafts are various floating apparatus for saving life in case of shipwreck. A life-raft invented in England in 1870 is triangular in shape, and constructed of wood, cork, and rope-netting. It has the advantage of being handy and could be easily hauled to and fro between a ship in danger and the shore. Other patent life-rafts are merely square frames buoyed up by a cask at each corner. Empty water-casks well bunged up are very ready and effective instruments of safety in shipwreck, and should have ropes attached to them to hold on by. Frames of bamboo and inflated skins have long been in use as life-preservers among different nations, and contrivances more or less ingenious to preserve the buoyancy of the body in case of accidental immersion in water, are resorted to in all countries. Whatever is lighter than water, if used on account of its buoyancy as a means of personal safety, may be considered a life-raft. See LIFE-BOAT; LIFE-PRESERVERS.

Life-rockets are projectiles to communicate between a distressed ship and the shore. These are especially useful where no life-boat can be had, or where it cannot be used on account of the roughness of the sea. They are available, however, only at moderate distances from the shore. By means of them a rope is thrown either from the ship to the shore, or from the shore to the ship, generally the latter, and when communication is thus established a slinging apparatus may bring the crew ashore one by one. Of the numerous projectiles for life-preserving purposes one of the simplest is the heaving-stick, which can be discharged by hand, but cannot be relied on for distances greater than 50 yards. A piece of stout cane two feet long, one end loaded with two pounds of lead, and the other attached to a thin line, is whirled vertically twice or thrice, and then discharged. Kites have been tried, but cannot be relied on with certainty, the most reliable missiles being those that are discharged from a mortar or gun by gunpowder, having a line attached to them. The first trial of this kind was made in 1791 by Sergeant Bell, of the English artillery, who fired his projectile from the ship to the shore, but it was soon perceived that it was better to fire from the shore to the ship. The life-mortar of Captain Manby was invented in 1807, and is practically still that in use, though variations in details have been made on it from time to time. His missile was a shot with curved barbs, resembling the flukes of an anchor, to grapple the rigging or the bulwarks of a ship. The shot was fastened to the rope by strips of rawhide. There was a contrivance for rendering the rope visible to the crew, and another to assist those on shore to descry the exact position of the ship in distress. The life-arrow, a cue-shaped stick of mahogany, with the thinner end projecting beyond the end of the barrel, is fired from an ordinary musket, and can carry 80 yards with a mackerel line attached. The best lines are those made of loosely-spun Italian hemp. There are several ways of arranging the line so that it may run out quickly without kinking or entangling. Dennett's faking-box for this purpose is now generally adopted. The sling life-buoy is employed in conjunction with the rocket-apparatus. It is popularly known as the breeches buoy (q.v.).

In the United States the mortar is in general use at life-saving stations. At each station a cart is kept always ready packed with all the requisites for the rocket apparatus, and can thus be despatched at once on any emergency. Care is taken that the supplies are regularly renewed before the old are exhausted.

Life-saving Guns. See LIFE-ROCKETS.

Life-saving Service, United States, an important and effective branch of the public service, under the direction of the Treasury Department. The present system was inaugurated in 1871, by the present general superintendent, Sumner I. Kimball, then chief of the Revenue Cutter Service. In June 1878, by act of Congress, it was organized into a separate bureau. The service extends to the coasts of the Atlantic and Pacific, the Gulf of Mexico, and the Great Lakes.

The first life-saving stations in the United States were established by the Massachusetts Humane Society at Lovell's Island and Cohasset. All efforts for saving life and property in cases of shipwreck were made by this society till 1837, when the President of the United States was authorized to employ ships to cruise along the shores and render assistance to distressed navigators. William A. Newell, afterward governor of New Jersey, witnessed a fearful shipwreck off Barnegat Island in which many bodies were washed ashore, and was so impressed by the sight that when he was elected to Congress in 1848 he introduced a bill for the relief of shipwrecked persons. The result of the passage of this bill was the placing of a few life-saving stations between Sandy Hook and Little Egg Harbor, N. J., and a little later a few stations were established on the coast of Long Island. Volunteer crews were depended upon at all the stations until the introduction of the splendid system which now extends along the entire coast and lake lines of the United States.

In 1905 there were 277 stations, of which 200 were on the Atlantic and Gulf coasts, 60 on the Great Lakes, 16 on the Pacific, and one at the falls of the Ohio, Louisville, Ky. During the fiscal year ending 30 June 1905, there were 785 disasters to vessels, 63 of which were totally lost. Of the 5,044 persons involved, 37 were lost. The value of property involved was $10,585,350, of which $2,409,940 was lost.

There are 13 districts in the service, over each of which is a district superintendent. There is also an inspector of life-saving stations at large, and in each district an assistant inspector, all being officers detailed from the Revenue Cutter Service. The business of the assistant inspectors is to look after the buildings, apparatus, drilling of the crews, etc., of their respective districts. Each station has a keeper who has six or seven surfmen under him. The keepers are all made inspectors of customs and so have legal custody of all property washed or brought on shore. The stations, generally two-story buildings of six or seven rooms, are built at irregular intervals along the shore from 3 to 20 miles apart, according to the frequency with which vessels approach the land in their course. They are connected by telephones wherever practicable, and the distances between them are patroled day and night. Each patrol carries a red Coston signal light, which he burns when a vessel is discovered in distress. On the Great Lakes the life-saving stations are kept open from the beginning of navigation in April to its close in December. On the Atlantic coast they are open from 1 August to 1 June, while on the Pacific coast they are open the year round. Each station is equipped with the life-boat (q.v.), guns, mortars, breeches buoys, and other devices for saving life and property.

Horace L. Piper,
Assistant General Superintendent, Life-Saving Service.

Liffey, lĭf'ĭ, Ireland, a river which rises in county Wicklow, flows west into Kildare, then turns northeast and passes through the county and city of Dublin into the Irish Sea after a course of 50 miles.

Lig'ament, in anatomy, human and comparative, a band of white fibrous tissue which connects bones. To this class of tissue also belong the tendons or sinews of muscles, by which these structures are attached to the surfaces of bones. Ligaments differ from tendons in being of a stouter structure, and less liable to give way or to be ruptured. When ligaments break during life they seldom snap across or transversely, but generally tear in an irregular manner. Tendons, on the contrary, when subjected to great strains, break across. Ligaments possess little or no elasticity, and when stretched do not recover their resiliency. To the same class of structures as ligaments and tendons, the fasciæ or sheet-like bands of white fibrous tissue spread over muscles and regions also belong. Microscopically examined, both ligament and allied structures exhibit sets of fibres arranged in parallel bundles, imbedded among which little nucleated bodies known as connective-tissue corpuscles are seen. These latter are minute corpuscles of various shapes, and their function has been assumed to be that of ministering to the growth and nutrition of the fibres amidst which they are placed.

Ligao, lē-gä'ō, Philippines, a pueblo of the province of Albay, Luzon, situated near the Inaya River, 22 miles northwest of Albay, the provincial capital, on the main road. It is in one of the best hemp growing regions in the archipelago. Pop. 17,900.

Lig'ature, in surgery, a cord, thread, bandage, etc., by means of which structures are tied or bound. A ligature is used for tying a bleeding artery or other vessel; for tying the pedicle of a tumor to prevent effusion of blood or other fluid after its removal; it may be tightly fastened round the base of a tumor to cause its subsequent removal by arrest of its blood-supply and consequent death. Thread of silk or hemp was formerly employed. Ligatures of animal material are now mostly used, catgut, silkworm gut, etc., also those of silver wire, and they are usually rendered antiseptic by steeping in carbolic acid or other antiseptic solution.

Ligature. See Monogram.

Light. The word light is used in two distinct senses, namely, to designate the sensation which is characteristic of the organ of vision (q.v.), and also as a name for the usual cause of that sensation. This double meaning of the word would result in little inconvenience if there were always a definite relation between the sensation and its cause; but this is far from being true. For example, when we speak of white light, we may mean a sensation which is perfectly definite and familiar to all persons of normal vision, or we may mean that form of energy which can give rise to such a sensation. In this second sense the term is wholly indefinite, since there is an infinite variety of forms of energy which may give rise to the sensation of whiteness. The difficulty, which is a serious one in scientific language, may be avoided by restricting the use of the word to one of its significations, preferably to that of sensation, after the analogy of the use of the word sound. But such a restriction would not be in accordance with well-established usage, and it would necessitate the frequent employment of awkward circumlocutions. Another means of avoiding confusion is to so divide the subjects treated that the sense in which the word is used is unmistakable. This second method has the advantage of conciseness as well as that of being in accordance with the usage of most writers. The present article treats of light as a phenomenon of wave motion, wholly independent of the sense organ which betrays its existence to us. In it the eye is regarded as a simple optical instrument, quite like the photographic camera. This limitation admits of a satisfactory definition of the terms «white light,» «yellow light,» etc. Thus, by the former term we mean such waves as are emitted by a solid body at a very high temperature, as, for example, the incandescent lime in the lime-light. Any other kinds of waves, even if indistinguishable from these by the unassisted eye, are not white light. Again, yellow light, green light, etc., are the simplest waves which excite in a normal retina the sensations yellow, green, etc.

Theories Concerning the Nature of Light.— It is now a little more than two centuries since the Dutch philosopher Huyghens published a paper in which he explained the familiar phenomena of light by waves in a medium that pervades all space and is called the luminiferous ether. His reasoning was so convincing, the explanations so simple, and the experiments supporting his views so apt, that except for the labors of the single philosopher then living who was greater than Huyghens himself, they could hardly have failed to receive at an early day the universal acceptance which they now command. Nine years earlier, in 1669, Newton had commenced his labors in the field of optics, by which, largely on account of fame and authority won in the domain of mechanics and astronomy, he established a theory of light which remained almost unquestioned for nearly a century and a half. Newton supposed light to consist in extremely small particles of matter projected from shining bodies with enormous velocities. We now know that this hypothesis was not only less fruitful than that of Huyghens, but, even with the comparatively limited range of optical phenomena known to Newton and his contemporaries, was also less probable.

According to this view of Newton, visual sensations are produced by the impact upon the retina of minute corpuscles emitted from luminous bodies which pass freely through transparent substances, differences of color being due to differing size in these small bodies. When these corpuscles approach the boundary of an optically denser medium, they are subjected to a force of attraction which causes them to deviate from their otherwise rectilinear paths. This is the explanation of the phenomenon of refraction. The secondary phenomenon of dispersion was very simple and naturally explained by an assumption that this attracting force varies with differing size. Singularly enough, the explanation of one of the most common phenomena, that of partial reflection at the boundary of a transparent medium, offered formidable difficulties: How is an attraction which is necessary to account for refraction also to act as an apparent repulsion for those corpuscles which are thrown back from the surface in reflection? This is a difficulty which the advocates of the Newtonian theory have never been able to meet in a satisfactory manner.

When Newton attempted to extend his theory to the explanation of the colors of thin plates, a subject which he was the first to investigate in a scientific manner, it was found even less satisfactory. He was obliged to supplement it with the highly artificial hypothesis that the corpuscles experience periodic changes in the ease with which they enter a refracting body. Even this addition to the theory fails to yield more than a rough approximation to an explanation of the phenomena, since the blackness of the central spot in Newton's rings apparatus, when the plates are brought into contact, is in contradiction with it. But it was only on account of a subsequently accumulated knowledge of optical phenomena which refused to adjust themselves to this theory, no matter how it might be modified, that its final overthrow came about. This not only required a long time, but also a champion of transcendent power to break with a system which had the force of tradition as well as the authority of the greatest of all philosophers to support it.

From 1704, the date of the publication of Newton's Optics, until 1815, the corpuscular theory was hardly questioned; at any rate, it reigned supreme in all treatises on light, and it was questioned only by a very few investigators who failed to acquire an influence that was anywhere decisive. In the latter year Augustin Fresnel, a young French government engineer, entered upon a career of scientific activity which proved of almost unprecedented brilliancy and success. This, as far as it bears upon the purely physical theory of light, may be regarded as completed in 1826. Beginning with a highly philosophical criticism of some of the accepted doctrines of optics, supported by the most apt appeals to ingenious experiments, he quickly extended his investigations until he embraced nearly all phenomena of light known to his contemporaries; and this with such success that he not only established as beyond question the essential truth of a wave theory but brought it to so high a degree of completion that his views were long supposed to be practically final. On account of the importance of this work of Fresnel in the history of physical science of the past century, it is well worth while to briefly review its character.

The phenomena of diffraction first engaged the attention of Fresnel. It had long been known that the shadow of an opaque body cast by a point-source of light is somewhat different from what would be supposed from simple geometrical considerations, the difference consisting chiefly in an encroachment of the light upon the borders of the shadow. Newton, who called this phenomenon inflection, attributed it to an attractive force exerted by the opaque body upon the corpuscles while in its neighborhood, thus causing an inbending of their paths. Fresnel showed that this explanation was quite untenable, since the inflection caused by the back of a razor is exactly the same as that caused by the edge, although in the former case it is manifest that the time during which the corpuscles are subject to the deflecting force is far greater than in the latter. By similar appeals to ingenious crucial experiments he demonstrated that none of the current theories was sound; but far from resting here, he showed that all the observed phenomena could be perfectly accounted for in the undulatory theory of light, by an application of the principle of Huyghens. Extending this principle, so fertile in his hands, to wider fields in the domain of optics, he found in every case that the new method was adequate to yielding perfectly satisfactory results. With quite simple and natural hypotheses as to the conditions which must exist at the common boundary of two transparent media, he was even able to deduce quantitative laws governing the phenomena of reflection and refraction, which accord surprisingly well with experiments devised to test them.

A few years before the commencement of Fresnel's activities, Malus, while looking through a double-image prism, observed that the two images of a distant window which happened to be in such a position as to reflect light strongly to his eye, were quite different in brightness, and that under some conditions one image might entirely disappear. Further study showed that all ordinary transparent substances were capable of thus modifying light by reflection, and that the modification is complete at an angle which is simply related to the refractive index; moreover, that under the latter conditions the light would be transmitted through doubly refracting crystals in certain directions without bifurcation. Such modified light is called polarized light, and the phenomena thus briefly described are two of the simplest of an enormously extensive class, many of which are of extraordinary beauty. This discovery and those which quickly followed in the same field presented a host of new and difficult problems to physicists. Of the many active and able workers in this domain Fresnel was easily the leader. In a very few years he had proposed and developed a general theory of light which embraced these new phenomena and which stood almost unquestioned until our own day; and even now the most essential principles of his theory are wholly unshaken. In its barest outlines the theory may be described as follows: Fresnel assumes that the motion of the particles which constitutes the vibrations of light is always in a direction at right angles to the line of propagation of the waves. When the paths of the particles are quite irregular or without order, the light is ordinary light; but when the paths are similar, whether straight lines, ellipses with their axes parallel, or circles with a common direction of motion, the light is said to be polarized. From this simple hypothesis he succeeded in erecting an extraordinary structure which harmonized and explained nearly every known phenomenon of light in a manner that until the most recent times practically withstood all destructive criticism. Even recent achievements in this field of science have been supplementary to, rather than subversive of, Fresnel's general work. Of the phenomena known to his contemporaries, that of dispersion alone was unconsidered by him, a phenomenon which obviously depends upon the ultimate molecular structure of the refracting substance and which has recently been reduced to comparatively simple laws. This great work of Fresnel was looked upon, as indeed it well deserves to be, as one of the greatest monuments to the human understanding — comparable to Newton's doctrine of universal gravitation — and it long remained of almost unquestioned authority. Ultimately, however, one of its fundamental postulates, namely, that the vibrations are always at right angles to the direction of the motion of the light, began to give rise to difficulties. The fact also that the theory could not determine specifically whether the direction of vibration of plane polarized light is in the plane of polarization or perpendicular to it was not only a manifest incompleteness, but it was a constant stimulus to a critical inspection of its premises. The more these points were studied the more insoluble the difficulties apeared, until there came to be a tolerably widespread belief that the theory was not only incomplete, but that in some way it must be essentially in error. To acquire a notion of what modern science has done to clear up these points, we must first review a class of phenomena which seem to be totally unconnected with optics, but which in the end will afford a very remarkable example of the tendency of all science toward unity.

In 1845 Faraday discovered that if polarized light is passed through a transparent substance in a magnetic field and in the direction of the field, the plane of polarization is rotated. The amount of rotation for a given substance is found to be proportional to the strength of the magnetic field and to the length of the path in the material. As many substances, such as turpentine, a solution of common sugar, quartz crystals in the direction of their crystalline axes, etc., present us with a similar fact, this would not be so surprising save for a remarkable difference in the two cases which may be thus described: When the plane of polarization is rotated by passing through a sugar solution or a similar body, and the transmitted light is reflected back upon its course so as to retrace its path, it is found that the original angle of polarization is perfectly restored by a precisely equal rotation in the opposite direction in the return; but a similar experiment upon the body giving the magnetic rotation shows a doubled change of angle. This indicates that, although in the first case we must explain the rotation by the molecular constitution of the material, we are not permitted to suppose that the magnetic field has produced a similar molecular structure in the second case, since the rotation is constant in direction irrespective of the direction of motion of the light. Of course, from the known nature of magnetism, this is equivalent to asserting that there must be some relation between light and electricity. But this is not the most obvious connection between these two classes of phenomena, for as we now know, the earliest division of materials in accordance with their electrical properties involved a classification according to their most characteristic optical properties also. Thus all conductors of electricity, excepting only those liquids which undergo a chemical decomposition when they transmit an electrical current, and therefore belong to an obviously different class, are extremely opaque to light; conversely, all substances which are good insulators are also transparent to light, at least to an extent which would make a sheet a few hundred-thousandths of an inch in thickness appear perfectly transparent, although such a sheet of metal or similar conductor would not differ greatly in opacity from a thick plate. An excellent illustration of the generality of this law is furnished by the element carbon, which in the dense opaque form — like graphite, for example — is a very good conductor of electricity, but in the form of the transparent diamond is an insulator.

Before the middle of the 19th century two methods of measuring electrical magnitudes had been developed; one of these is based upon the repulsion which exists between two electrically charged bodies, and the other upon the repulsion which exists between two similar magnet poles. Elaborate and repeated investigations have demonstrated that if a given electrical magnitude is measured according to one of these systems, and the value thus found is compared to a measurement of the same quantity in the other system, the ratio involves a velocity only. This statement is quite independent of the kind of magnitude chosen for the experiment. Within the limit imposed by unavoidable errors of observation the value of this velocity always appears to be the same as the velocity of light.

Here, therefore, are three distinct relations between light and electricity, which have long been known and to no one of which it is possible to attach any *a priori* reason. It was left to Maxwell to illuminate this obscure field. His long and successful investigations in electricity and magnetism, especially his efforts to reduce Faraday's brilliant discoveries to correlation and to a consistent scientific statement, led him to the conclusion that light itself consists of electrical vibrations. He attempted to test the validity of this hypothesis by every means at his command. For example, according to his theory a non-magnetic substance ought to have a dielectric constant, or what Faraday named its specific inductive capacity, equal to the square of its index of refraction. This indicated relation was found to hold with all expected precision in some cases, but to be widely removed from the truth in others. Again, since, according to the theory, only those substances are transparent which will offer a resistance to the motion of electricity within them analogous to elastic reaction, there ought to be a determinable relation between electrical conductivity and opacity. Maxwell attempted to find this relation in the case of gold-leaf, which is sufficiently thin to transmit a measurable portion of the light falling upon it. Notwithstanding that the discrepancy was here found disappointingly great, the gradual accumulation of knowledge of the more recondite phenomena of the electrical field had led the great majority of physicists to the conclusion that Maxwell's theory was at least a close approximation to the truth, and accordingly one of the most brilliant discoveries of the 19th century. This may be regarded as a fair statement of the attitude of the world of science in 1888, when Hertz, a German physicist, made a series of remarkable experiments which have eliminated all possible doubt as to the essential verity of Maxwell's theory of light. Fortunately it is not difficult for us to gain a sufficient knowledge of the character of these experiments to make clear their general bearing.

It had long been known that a Leyden jar suddenly discharged through a thick wire gives rise to an oscillatory current of very brief duration, and that in certain simple cases the period of the oscillations can be calculated with considerable accuracy. Hertz recognized that during the time of discharge such an electrical circuit must be a source of oscillatory changes in the magnetic field, which, if the views of Maxwell are in accordance with fact, should be propagated through space with the velocity of light. Although it is difficult, if not quite impossible, to measure directly this velocity, if one knows the wave-length and the period it is perfectly easy to deduce the velocity from these two elements, since in its period every wave moves a distance equal to its own length. In these experiments the period was calculated from the elements of the electric circuit; it only remained therefore to determine the length of the waves. Hertz accomplished this in the following simple and ingenious manner: At a considerable distance from the source of the waves he placed a large sheet of metal perpendicular to its direction from the source. From this sheet the waves were returned upon themselves by reflection. Now, a well-known fact in wave motions is that when two systems of waves of like period are moving in opposite directions, they combine to form a system of standing waves of half the length of the free waves. The regions where motion is destroyed by this kind of interference are called nodes. Hertz demonstrated the existence and position of these nodes by means of an apparatus which possessed the same electrical period as the source. This apparatus he called a resonator. The value of the velocity of these waves deduced from his observations differs no more from the known velocity of light than would be expected from the unavoidable errors of observation; thus it complies with the requirements of Maxwell's theory. These waves, therefore, are shown to differ from light waves only in their enormously greater wave-lengths, and that they must be subject to all the established laws of optics which are independent of the length of the waves. The last conclusion was thoroughly tested by Hertz by a series of most interesting and convincing experiments. He found that strictly according to the laws of optics these waves are reflected from the surfaces of all bodies which conduct electricity; that they readily pass through substances which behave as insulators; and that in passing from one insulating medium to another the direction of propagation is altered in accordance with the law of sines. Further than this, he showed that such electrical waves admit of polarization, and they are therefore characterized by motions at right angles to the direction of propagation. During the time which has elapsed since these investigations a host of experimenters have improved the methods and apparatus of Hertz, and have largely extended the range of wave-lengths that can be observed. On the other hand, many investigators have been employed in the application of analysis to both the old and the new problems in optics. The difficulties which attach to Fresnel's mode of regarding the optical phenomena of crystalline media are found to disappear, and all the complex phenomena of light admit of explanation from a consistent body of premises.

Reflection — Refraction — Dispersion.—When light waves originating at a point fall upon a surface separating two media, the system of waves is broken up into two systems, one of which remains in the first medium, though moving in a changed direction, and the other entering the second medium. The former system constitutes reflected light, and the latter, also in general changed in direction, is called refracted light. If the bounding surface is smooth the phenomena of reflection and of refraction are regular and the modified paths of the light can be calculated. The total intensity of the reflected light varies greatly with the nature of the media on either side the interface and also upon the angle at which the wave surfaces meet this surface. If we consider only the case of the first medium being air, we may describe two general cases of interest. (1) If the second medium is a transparent substance, like most liquids, ice, glass, etc., the reflected light is ordinarily of small intensity as compared to the incident light, but increases with increasing angle of incidence, until, as this angle approaches 90°, the rate of increase becomes very great. (2) If the second medium is a metal the reflected light is ordinarily a large portion of the whole, but its intensity does not vary greatly with the angle of incidence. Turning now to a consideration of the light which passes the interface and enters the second medium we find that in some substances these waves will go a great distance without notable diminution of intensity. Such substances are called transparent. In others, described as opaque, the light waves are converted into other forms of energy in longer or shorter distances, and are destroyed as light. In the case of metals and other good conductors of electricity this destruction follows a penetration of only a few millionths of an inch. The laws which determine the directions of the reflected and refracted light are simple. Calling the angles which the incident waves, the reflected waves, and the refracted waves, make with the surface separating the two media, the angles of incidence, of reflection, and of refraction, respectively, we have for the law of reflection the angle of reflection is equal to the angle of incidence, and for refraction, the sine of the angle of incidence divided by the sine of the angle of refraction is equal to the velocity of propagation of the waves in the first medium divided by the velocity in the second medium. These laws are not absolutely without geometrical ambiguity, but are made so by the addition that the change of direction in both cases is the least possible. If the refracted light is observed critically it will be found that the direction varies somewhat for lights of different colors, so that, if white light is incident, the light will be arranged in direction according to its component colors, the red being least changed, then yellow, green, blue, and, most of all, violet. This phenomenon is called dispersion. Since the maximum difference of deviation for small angles of incidence is never more than a small part of the whole — very few substances exhibiting a ratio greater than one twentieth — dispersion should be regarded as a secondary phenomenon of refraction.

Optical Images—Optical Instruments.—When light waves originating at a point are modified by one or more smooth surfaces — either by reflection, or refraction, or by a combination of the two — so that after these modifications they either pass through a new point or seem to do so, this new point is called the optical image of the first. To distinguish the cases of real points from those which only appear to be new centres the terms real image and virtual image are employed.

If an optical system can form an image, real or virtual, of a point, it follows from the law of continuity that it will also form simultaneous images of near lying points with a like degree of precision; the images of remoter points, however, may be, and in general will be, imperfect. The simplest of all optical systems is a plane mirror, and it is the only optical instrument which is absolutely perfect, provided only that it is not of too small dimensions. Such an instrument forms virtual images of all points in front of it, the sources and images being symmetrically placed with reference to the plane of the mirror. Bodies of transparent substances bounded by smooth curved surfaces, ordinarily spherical surfaces, are called lenses. Almost all optical instruments employ lenses for producing the required modification on transmitted light. If a lens increases the curvature of the wave-surfaces which pass through it — which in general requires the middle of the lens to be thicker than its periphery — it will produce real images of remote objects near its geometrical axis. Such a lens is called a *positive-lens.* A screen to receive the images and an opaque enclosure to shield it from extraneous light constitutes the important instrument known as the camera obscura. One of the earliest optical instruments invented, it has only been of importance since the discovery of a method of fixing the images a short time before the middle of the last century. The requirements of modern photography, especially the demand for brightness and wide angular extent in the images, have led to inventions of wonderfully complex camera lenses, so that ordinarily they are made of combinations of from four to ten different lenses, involving two or three different kinds of glass in their construction.

The eye is properly a camera obscura, in which images of objects neither too near the observer nor too far from the axis of vision are formed upon the retina as a screen. The most important difference between the eye and the photographic camera lies in the fact that the interior of the eye is filled with a substance optically different from air, which introduces some remarkable modifications in the phenomena of vision. These may be ignored in this casual review of the construction and function of optical instruments.

In almost all optical systems, excepting the camera obscura, the eye is a necessary part in use, and it is therefore convenient to specify the conditions under which distinct vision is possible. To a normal eye, any object very near the axis of vision can be distinctly seen if it lies at a distance comprised between five or six inches for a nearer limit and infinity for the farther. Thus, the moon and a printed page held at the customary distance for reading can be seen equally distinctly. We shall assume a distance of 10 inches as a standard of comparison.

Microscope — Telescope.— If a small object be brought quite close to the eye it will appear larger, but when too close vision will be indistinct. This is because the refractive power of the eye is insufficient to cause the light waves to form new centres at the retina; but if the refractive power of the eye be suitably increased by the aid of a positive lens placed between it and the object, vision is rendered distinct with the increased apparent size. A lens so used is called a simple microscope and the ratio of the apparent diameter of the object to that which it would have at the conventional distance of 10 inches is called the magnifying power of the microscope. Since nature presents us with innumerable examples of such microscopes in small drops of water, of transparent resins, etc., the phenomenon has doubtless been known since prehistoric times, and we have the best of reasons for believing that some of the artisans of antiquity employed magnifiers as aids in their work.

There is no theoretical limit to the magnification attainable with simple microscopes except that set by the nature of light itself, but very high powers demand inconveniently small lenses and such close approximations to the eye that illumination of the object becomes difficult. These difficulties can be greatly reduced by employing two systems of positive lenses, one of which serves to form a *real* and enlarged image of the object, while the other is a simple microscope used to observe the real image quite as if it were the object itself. The former system is called the objective, or object-glass, and the latter the ocular, or eyepiece. The instrument thus constituted is called the compound microscope, and its magnifying power is equal to the product of that of the objective into that of the ocular. The compound microscope was invented about the middle of the 17th century, but it was not perfected so as to be of real value as an instrument for scientific research until after the second decade of the 19th.

If a lens, or lens system, is employed to form a real image of a distant object and this image be viewed through a microscope, the combination forms a telescope. Since the real image is in general inverted, the object appears inverted to the observer if he employs a simple magnifier as an ocular, but it appears erect if the ocular is a compound microscope. The inverting telescope is optically superior and is universally used for astronomical observations, but for terrestrial observations the second type is ordinarily preferred, which, when it is desired to distinguish it by a name, is called a terrestrial telescope, or a spy-glass. The terms objective and ocular are also applied to the two lens systems in the telescope.

Since concave mirrors can also produce real images of distant objects they may be used in place of the objective. Such instruments are called reflecting telescopes; they have been very extensively used for astronomical purposes in the past.

Achromatism — Achromatic Combinations.— Newton was led by his experiments to conclude that the secondary phenomenon of dispersion bears a constant ratio to the refraction. It follows from this that a separation of composite light into colors is the inevitable concomitant of change of direction by refraction, and that this imposes a somewhat narrow limit upon the power of all optical instruments involving refraction. This belief led him to invent the reflecting telescope, which remained the leading form for astronomical purposes for more than a century. About the middle of the 18th century, however, Dolland found that Newton's conclusion was founded upon too limited a range of experiment and showed that it is possible, by a combination of two or more materials, to secure a change of direction of light by refraction with little or no evident dispersion. Thus, he found that a prism of crown glass, say of 10°, combined with a prism of flint glass of 5°, turned in an opposite direction, would yield a deviation nearly as great as a prism of crown of 5° and without the colors of dispersion. Such a combination is called an achromatic combination, and a pair of lenses similarly combined to give colorless images, is called an achromatic lens. All refined optical instruments utilize this invention of Dolland. In telescopes the objective ordinarily consists of two members only, a positive crown lens combined with a negative (diverging) flint lens; in microscope objectives there are rarely less than four lenses, and sometimes, in the case of very high powers, not less than ten.

Interference Phenomena — Diffraction.—That light is in fact some form of wave-motion does not appear from the phenomena of reflection and refraction in their commoner manifestations, although if the acting surfaces are made very small there are deviations from the simple laws given above which inevitably lead to a wave theory for an adequate explanation. For the present purposes it seems far better to describe some of the simpler and easily produced phenomena which demonstrate the wave-motion.

One of the most striking properties of all varieties of waves is their propagation independently of the state of motion of the medium in which they exist, for example, water waves of all possible lengths and having all possible directions of propagation may coexist on a single surface of water. In familiar acoustic phenomena we have excellent analogies which will greatly help in the comprehending of the less familiar optical phenomena. If two tuning-forks of exactly the same pitch be sounded together it is found that there are regions where all evidence of sound vanishes, provided that the forks are equally loud. These regions of silence are those where the maximum of density due to one set of waves corresponds with the minimum of the other set, and they are so simply related to the positions of the two forks that having established their places, it is easy to deduce from the geometrical relations the length of the waves. Could we get two sources of light which emitted waves exactly alike, there should be corresponding regions where illumination from the two sources would be wanting, provided that light is in fact produced by a wave-motion. Since, however, the ultimate sources of light are the molecules of luminous bodies and we are unable to control such small bodies, so simple a test is impossible; but a perfect optical image of a source is exactly like the source itself, hence, if light is allowed to fall upon a screen and a portion of the same radiation is reflected by a mirror upon the screen, the conditions for interference are met. The experiment is a delicate one and liable to escape observation, only, however, because of the shortness of the waves. Fresnel tried the experiment, not only by using two mirrors, enclosing an angle a very little less than 180°, but also by using two prisms of very small angle, with complete success. The advantage of using a pair is obvious when similarity of the two sources — here two virtual images of the same source — is considered. His measurements showed that the waves which are found in ordinary white light have all lengths between those of $\frac{1}{33400}$ and $\frac{1}{65000}$ of an inch, the former being that of the extreme red of the prismatic spectrum, and the latter of the extreme violet. The mean value for white light may be taken as $\frac{1}{45000}$ of an inch.

A much easier, though less simple, method of exhibiting interference phenomena is the following: If a hole, less than $\frac{1}{50}$ of an inch in diameter, be pierced in a piece of paper, a distant bright point, such as an arc light or the bright point of a mercury thermometer-bulb in sunshine, will appear to an eye looking through the hole as a disk surrounded by one or more concentric rings. If now a second similar hole be made within less than $\frac{1}{20}$ of an inch from the other and the experiment be repeated, the disk will appear brighter and traversed by a series of dark lines perpendicular to the direction of a line joining the two holes. These dark lines mark the regions of complete interference and are exactly like the dark bands produced by Fresnel's method. The fact that the point-source of light appears as a disk of appreciable magnitude is also explicable by the fact that light is a wave-motion. Broadly stated the condition is this: if light consists of waves, we ought not to expect that the laws of reflection and of refraction will hold unmodified when the acting surfaces are no longer large with respect to the length of a light-wave. These deviations from the laws are called diffraction.

Since most of the light with which we ordinarily experiment is composite, that is, made up of a combination of many different wave-lengths, the places of complete destruction of illumination differ for differing wave-lengths. Such phenomena are therefore generally, sometimes splendidly, colored. Familiar cases of simple interference are presented by thin reflecting plates, such as soap-films, rifts in transparent media, as in precious opal, etc. In these cases we have the two sources produced by reflection from the two sides of the plates, and the phenomena are generally known as the colors of thin plates, first studied by Newton.

Diffraction phenomena are even more commonly seen. The peculiar lustre of satin spar, of the gems known as cat's-eye, and of the star sapphire, find their explanation here. The iridescence of mother-of-pearl and of certain feathers, and the brilliant colored pattern seen when an electric arc light is viewed through a fine and uniform fabric, like silk or the web of many feathers, are diffraction phenomena of greater regularity than the former group.

Optical Phenomena of the Atmosphere.— Of the many optical phenomena which belong either to the air as a transparent body or because of foreign bodies temporarily suspended in it, mirages, coronas, rainbows, and halos are among the most striking. The refractive power of the air increases with its density, and, as this is increased both by pressure and by lowering of temperature, there results varying effects of refraction. With the normal condition of the air, in which the density decreases in a geometrical ratio as we rise above the surface of the earth, the only very obvious effect is to prolong the length of the day to twice the time which it requires the sun to sink at the horizon by its own diameter. Atmospheric dispersion is also present, but is not sufficiently marked to be detected by the unaided eye, although conspicuous enough with a telescope under favorable conditions. The scintillation of the stars, however, is a direct effect of atmospheric dispersion.

In the not infrequent cases when the air departs widely from the normal law of continuous decrease of temperature with increasing height above the surface of the earth, the paths of the light waves which are nearly horizontal may change the direction of curvature between the object and the observer, in other words, may have points of inflection. In low latitudes the prevailing condition, when such abnormal refraction may be observed, corresponds to a lower layer of air at a higher temperature than that immediately above. In such cases distant objects near the horizon appear lifted above their real positions and portions of these much elongated vertically. A further development shows inverted images, generally without much distortion, underneath the raised images. Over sun-heated plains the inverted image is that of a portion of the sky, whence the effect of a sheet of water between the observer and the horizon. In high latitudes it is sometimes possible to find the condition of a layer of much cooler air in contact with sheets of ice or of cold water, in which case the inverted image is seen above the erect image. These phenomena are known under the name of mirage.

When the atmosphere is not quite clear one may sometimes see colored circles concentric with the sun or moon, generally not more than four or five times the diameter of the sun, and invariably having the inner edge blue. Such circles are called coronas. They are diffraction phenomena produced by very small spherical drops of water suspended in the air, and their diameters are in an inverse ratio to the diameter of the drops to which they are due. The only necessary conditions for well developed coronas are smallness and general uniformity of size in the drops.

When sun-light falls on drops of water which are not small compared to the length of a light wave, an entirely different phenomenon, involving reflection, refraction and dispersion, results. It can be shown that, when flat wave-surfaces of light enter a sphere of water, there are two cases in which a portion of the wave emerges from the drop still nearly flat, and that in these directions, therefore, the light will be transmitted with relatively great intensity. The first case corresponds to refractions at entrance and emergence with a single interior reflection; and the second case to the two refractions separated by two interior reflections. The total change of the direction of the light in the former case is 138°, and in the latter, 231°. It, therefore, follows that all drops at these two angular distances from the sun should appear relatively bright, in other words, that opposite to the sun there should appear two concentric circles under proper conditions of illumination, one, much the brighter of the two, of 42° radius, and the other of —51° radius. The secondary phenomenon of dispersion causes these angles to vary continuously for different wave-lengths, hence the circular arcs, constituting the double rainbow when perfectly developed, appear as bands of prismatic colors. It is not difficult to see that the primary bow, often the only one which can be traced, must be red on the outer border, whence we conclude from the algebraic sign attached to its radius, that the secondary bow should present the red border on the inner margin.

When the temperature is low, water cannot exist in the form of drops, but only in that of snow crystals and of a perfectly transparent vapor. On those occasions when there are numerous ice crystals of very regular form suspended in the air and illuminated by the sun or the moon, we may see one or more of a series of highly complicated phenomena which bear the names of halos, parhelia, sun-dogs, etc. A bare description of all the features which have been observed and recorded would demand far more space than is available; only the most common ones can be noted here. The simplest form of ice crystals, and the only form which is necessary to produce all the known forms of halos, is that of a right hexagonal prism. Such a body supplies two refracting angles, namely, that of 60° contained between two alternate faces of the prism, and that of 90° embraced between each of these faces and a base. As light traversing a 60° prism of ice has a minimum deviation of 22°, if there are present a sufficient number of such prisms between the sun or moon and the observer, the luminous body would seem to be surrounded by a concentric circle of 22° radius, having, on account of the secondary effect of dispersion, a red inner margin and a pale bluish outer one. Similarly the rectangular edges would give rise to a colored circle of 44° radius. The smaller circle can be seen very frequently — perhaps on sixty to eighty days a year in our latitude — while the 44° circle is rarely seen.

When the length and width of a small hexagonal prism differ greatly, it will not remain while falling through quiescent air in a purely chance position, but it will set itself more or less perfectly in a definite position with respect to a vertical. Thus a flat prism will fall with its base horizontal, and an elongated crystal will maintain its axis nearly horizontal. This peculiarity in falling crystals produces a large number of features in complicated halos which are generally recognizable because they are all symmetrical with respect to a vertical circle passing through the sun. Some of these are comparable with the most brilliant rainbows in their coloring. The most familiar of this class of phenomena are the two bright prismatic spots to the right and left of the sun respectively, having the same altitude as the sun and their red side turned toward the sun. When the sun is very low they are 22° distant and appear merely as bright portions of the inner halo, but as the altitude of the sun increases they increase their angular distances, and above a moderate altitude they disappear. These spots are called parhelia, or sun-dogs; they are sometimes the only feature of the halo visible and are by no means infrequent. See also CAMERA; ELECTRICITY; ELECTRIC LIGHT; MICROSCOPE; TELESCOPE; VISION.

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Light, Therapeutics of. In medicine light has been used from the earliest times, and the therapeutic application of sunlight is an empirical mode of treatment, in many diseases, which has been handed down through generations. Only in recent years, however, have more definite forms of light-therapeutics been applied, but with the discovery of the X-ray by Röntgen began a new era. The reaction of the human body to different forms of light is very striking, and however various the sources of light, the mode of reaction is often marvelously similar. Thus, the surface capillaries of the skin are dilated, there is exudation of serum into the subcutaneous tissues, and the nerve-endings are stimulated. The results of the application of light widely vary, the variations depending upon the area exposed and the part affected. There is one form of sunburn resulting from direct action of the rays of the sun, and similar burnings have been produced by X-rays and by means of radio-active substances.

At the present time sunlight is used as a general tonic, and as a special tonic to the skin, while as a disinfectant its powers are systematically applied. Modified electric light, X-rays, and radio-active substances are now extensively employed in the treatment of certain forms of new growths of the skin and of the interior body. Lupus is readily cured by means of the Finsen light, and superficial forms of cancer of the skin, and even cancers of internal organs have been cured by means of the X-ray. The X-ray, moreover, produces marked stimulation of the skin, with sweating and at times loss of hair, so that it may be used as a depilatory agent. It is not unlikely that the applications of the X-ray and of radio-active bodies, such as radium, polonium, uranium, etc., will within a few years undergo profound modifications. The study of scientific radiotherapy is only in its infancy. See RADIUM; X-RAY.

Light of Asia, The, a noted epic poem by Sir Edwin Arnold, published in 1878 in eight books. It attracted general attention at its first appearance and familiarized the average reader with the teachings of Buddha. The poem is smoothly written, with not a little beauty of description and movement, but is not the great work its early admirers imagined. The poem has been translated into many languages.

Light That Failed, The, a novelette by Rudyard Kipling (q.v.), published in 1890; the first long story written by this author. The story was dramatized and received its first presentation in 1903, Forbes Robertson appearing in the title-role.

Light-Horse Harry. See LEE, HENRY.

Lighter, a flat boat or barge for transporting merchandise on rivers and canals, and to and from vessels moored in a stream, or where they cannot be laden from or discharged on to a wharf or pier alongside.

Lighthouse, a structure on some conspicuous point of seashore, island or rock, or on the bank of rivers and lakes, from which a light is exhibited at night as a guide to mariners. Lighthouses are generally placed on salient points, each requiring structures specially designed to meet the exigencies of varied sites. When placed on headlands or large islands lighthouses are very much alike in general features, the differences being mainly in the height of the towers, depending on the distance at which the light requires to be seen, and the lighting apparatus. Towers erected on isolated wave-swept rocks in the open sea, such as the Eddystone (now superseded by Sir James Douglass' tower), the Bell Rock, Skerryvore, and Chickens Rock lighthouses, in Great Britain; the Minot's Ledge and Spectacle Reef in the United States, and Bréhat in France, are triumphs of engineering.

History.— The history of lighthouse building and illumination may be said to extend over a period of more than 2,000 years; but the regularly organized life-preserving system of modern lighthouse engineering goes back very little further than the beginning of the 19th century. None of the early lighthouse buildings now exist. The Pharos of Alexandria (331 B.C.) gave its name to its successors. The Romans built lighthouses at Ostia, Ravenna, Puteoli, and other ports. The Phœnician Pharos at Coruña was repaired during the reign of the Emperor Trajan, was re-established as a lighthouse about 1634, and in 1847 had a dioptric apparatus placed in it. On the cliff at Boulogne there are the remains of a lighthouse ascribed to Caligula (40 A.D.), and at Dover there are remains of another Roman Pharos. Until the end of the 18th century the lighthouses of Great Britain and the United States were few in number, and of an inferior description in the great essential of a lighthouse, namely, sending the greatest number of rays of light toward the horizon. Many of the public lights in England were private property, as was also the case with the Isle of May in Scotland, the patent for which was ratified in 1641. There were only 25 lighthouse stations and six floating lights in England at the beginning of the 19th century. The coast and harbor lights in Great Britain and Ireland are now upward of 880 in number. In the United States of America the first act of Congress relating to lighthouses was passed in 1789, and there are now in American waters over 3,000 lights and light-ships and 246 fog-signals.

The early lighthouse towers had on their summits grates or chauffers, in which billets of wood or coal were burned, but though expensive to maintain — some of them using 400 tons of coal yearly — were uncertain in their appearance, varying with the ever-changing character of the atmosphere. Such coal-lights survived in Scotland till 1816, in England till 1822, and on the Baltic till 1846.

Construction.— The difficulties of building are very great, as may be judged from the following facts: Winstanley's Eddystone took four years to erect, and was finally swept away; Rudyerd's and also Smeaton's Eddystones took each three years, the Bell Rock took four years, the Skerryvore five, and Dhuheartach three and a half, the great difficulty being to effect a landing of men and material. At Minot's Ledge, off the Massachusetts coast, General Alexander got only 30 hours of work in the first year, and 157 in the second, and the histories of the Bell Rock, Skerryvore, Dhuheartach, Chickens, Eddystone, and some others tell the same tale. The cost of lighthouses may vary much; for instance, the Bell Rock cost $310,000, Skerryvore, $430,000; Spectacle Reef, on Lake Huron, $300,000; and it will be easily seen that an ordinary land station, fully equipped, will cost much less — as a matter of fact, about $25,000 to $50,000. Light-vessels cost about $45,000.

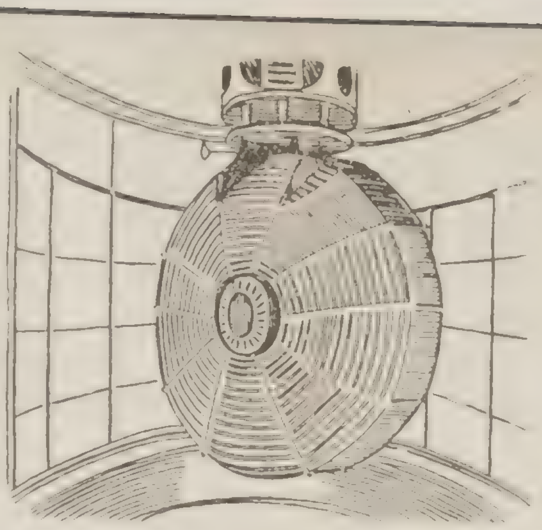
These towers are constructed of steel, or hard stone, such as granite, or cement-concrete faced with hard stone, and of such a mass and strength as to prevent their being overturned or destroyed by the waves. A typical stone lighthouse is built of granite, say 140 feet in height, with a diameter at the base of 42 feet and at the top of 16 feet, and contains 58,580 cubic feet, or about 4,308 tons of masonry. A staff of four light-keepers is attached to such rock lighthouses, three residing in the lighthouse and one on shore, the reliefs being fortnightly, so that each man has six weeks on the rock and two weeks ashore. At land lighthouse-stations, where women and children can be stationed, the keepers' families reside with them, and the staff consists of three men when there is a fog-signal, and two men when there is only the light to attend to. It is considered essential that a constant watch be kept in the light-room during darkness to ensure the proper exhibition of light.

Optical Apparatus.— The object of using optical apparatus in a lighthouse is to direct, as far as possible, all the rays of light that proceed from the *radiant,* or source of light, so as to be visible only on the sea between the near sea and the sea horizon. In the Eddystone lighthouse, up to the commencement of the 19th century, the lighting apparatus consisted of a chandelier of tallow candles, though parabolic reflectors made of facets of silvered glass mirror, set in a mould of plaster of Paris, were introduced in 1768 and used in several lighthouses, the effect of these reflectors being to concentrate and throw seaward the rays of light from a flat-wick lamp placed in the focus. At a later date reflectors composed of sheet copper, plated with silver and formed into a parabolic curve, were largely introduced and are still in use. These reflectors, where a fixed light was desired, were arranged in two tiers on a frame, as many as 26 being necessary to show a light of equal power all around the horizon, and in the case of flashing lights seven were grouped on each of four faces of a frame that was rotated by clockwork. This mode of lighting is termed *catoptric* or reflecting system. The method of building lenses of separate rings or prisms of glass, so as to form a larger lens than could be obtained from a mere bull's-eye formed of one piece of glass, was first adopted for lighthouses in 1822. For a fixed light the built-up lens was so arranged as to form a polygon with one burner in the focus, and for a flashing light annular lens panels were grouped round the one central burner and revolved by clockwork. In 1892 Charles A. Stevenson made the lenses spherical in form in the vertical plane, and in 1895, with great advantage to the power of the light, abolished the old section of the elements and gave them an equiangular section. This equiangular profile also permits of the refracting elements being extended to 80° of focal opening, and indeed farther, without loss of efficiency. The setting of lenses eccentrically has rendered possible a diminution in the diameter, and consequent saving in cost of lantern and tower. Besides the fixed-light apparatus and the lens panels many other forms of prisms for various purposes have been introduced. Thomas Stevenson's catadioptric mirror, formed of totally-reflecting prisms, and subsequently improved by James I. Chance, is largely used; and vertical straight prisms, placed in front of either fixed light or holophotal panels, are used to deviate the light azimuthally over particular arcs where the light is required. The desire to increase the power of the lights induced some lighthouse authorities to advocate the use of larger burners without increasing the focal distance of the apparatus, with the result that little advantage was gained, as most of the light was ex-focal. It was not, however, till 1885, that the first *hyper-radiant* lens was constructed, with the result that when tested it was found to produce a beam twice as intense as that from the previous lenses with the same large burners in the foci. This hyper-radiant lens is now largely used where great power is desired. See PLATE.

Radiants.— The radiants used in the focus of the apparatus in foreign lighthouses are generally 1-, 2-, 3-, 4-, 5-, 6-, or even 10-wick cylindrical paraffin burners, though gas burners, incandescent burners, and the electric light, both arc and incandescent, are also in use. The use of paraffin resulted in a large saving. The electric light is now generally used in the United States. The popular idea that the electric light is not so good in fog as oil or gas lights was confuted in 1885, when it was found that oil and gas were equally affected by atmospheric variations, that the electric arc light is absorbed more largely proportionately to its initial power by haze or fog than oil or gas lights, but that in all weathers and at all distances its penetrative power was found superior to the gas and oil lights, and that all three are nearly equally affected by rain. These results are confirmed by practical experience in our lighthouses.

Characteristics.— To enable the sailor to distinguish one lighthouse from another, lights in proximity to one another are arranged to exhibit different characters. The characters in common use are: fixed light; flashing light, showing one flash at regular intervals of a few seconds; group flashing lights, showing two or more

LIGHTHOUSE.



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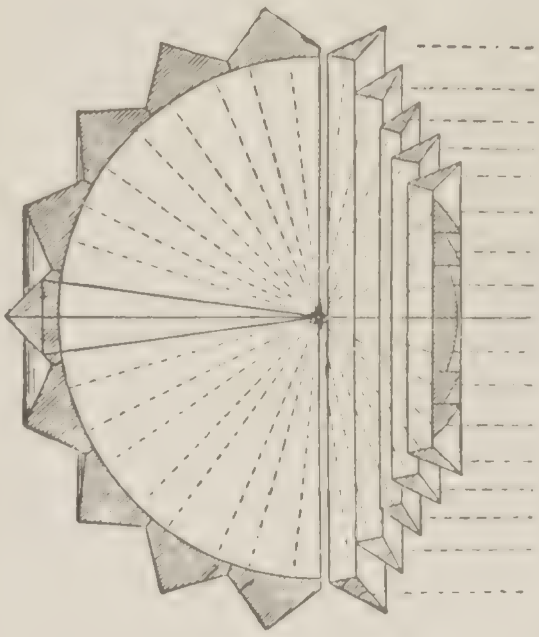

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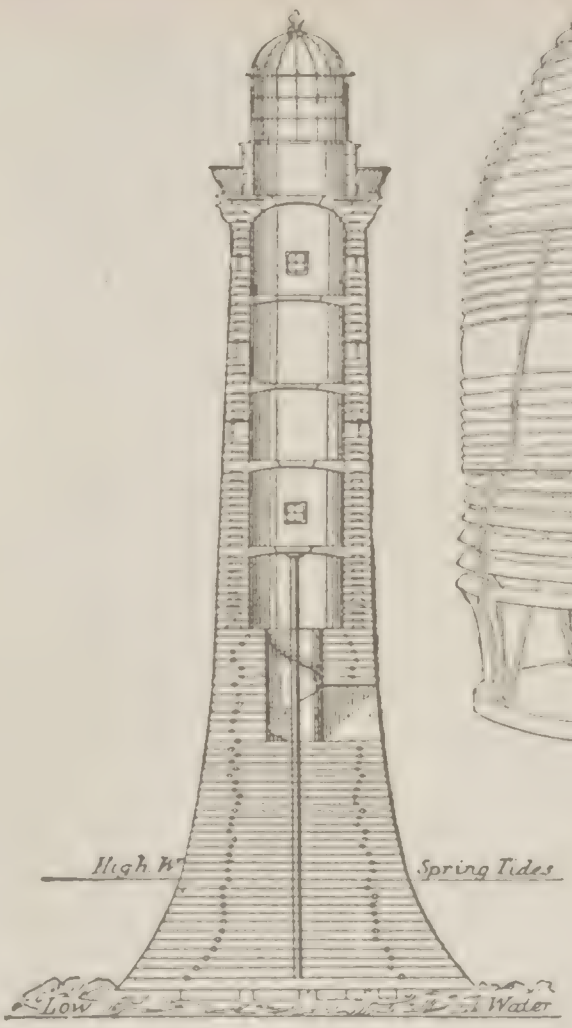

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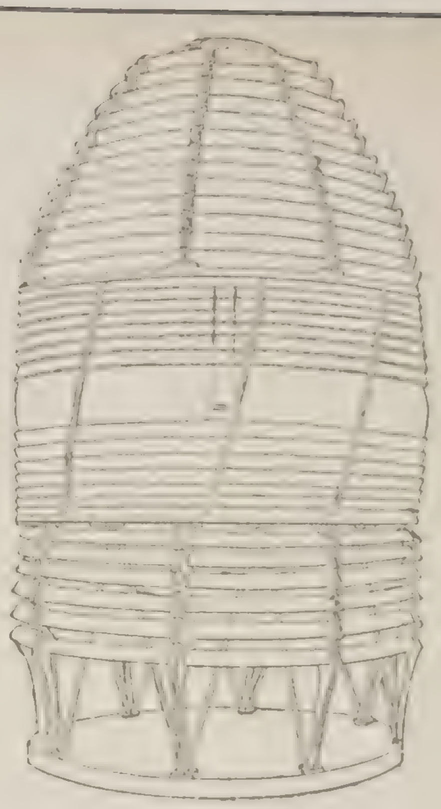

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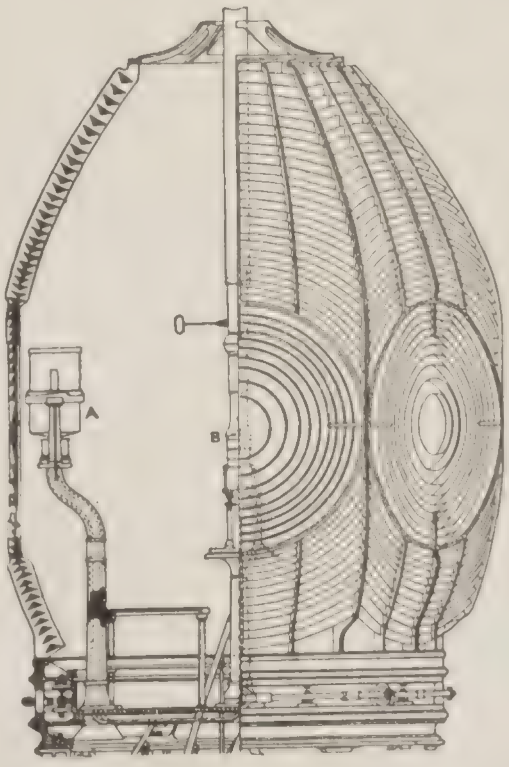

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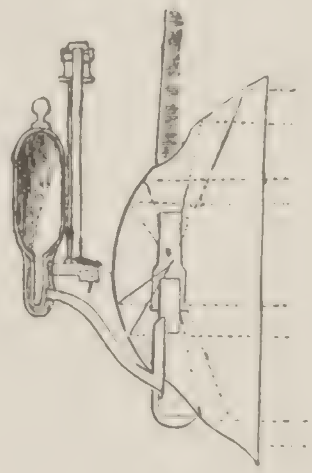

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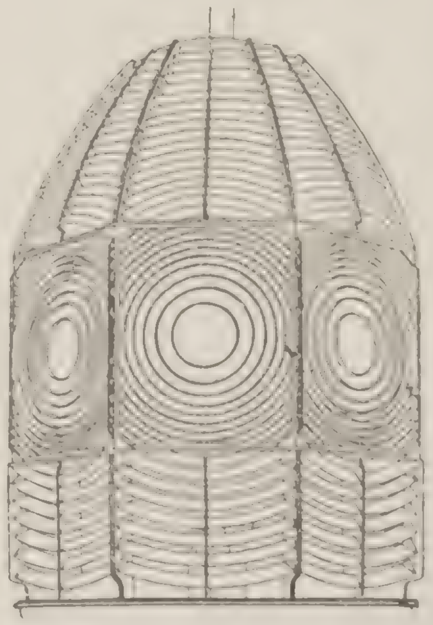

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1. New revolving light, Barnegat, N. J.
2. Holophotal univalve apparatus with dioptric mirror.
3. Sectional plan of Bell Rock Tower.
4. Fixed dioptric light.
5. Parabolic reflector with oil-fountain lamp.
6. Elevation of triple-flashing apparatus.

flashes in quick succession, followed by a longer period of darkness than that which separates the flashes; occulting lights, which show a fixed light and are eclipsed for a few seconds at regular intervals. Colored lights, red and green, are also used with any of the foregoing characters to produce further distinctions, but in general only to mark danger arcs, or in conjunction with a white flash, as the tinted-glass shades interposed to produce the desired color seriously cut down the power of the light, and are not, unless of a very dark shade, easily distinguishable in foggy weather from a white light.

Machines.— To produce these various characters tne lenses are placed on a carriage which revolves on conical rollers, or is floated in a mercury trough, and is driven round by clockwork actuated by a falling weight. The tendency has been in recent years to drive the apparatus faster, so as to make the period of phase of the light as short as possible. While this is a desirable object it involves at the same time shortening the duration of the flash on the eye of the sailor, to which there is obviously a limit, if distinct vision is to be obtained under practical conditions. A flash of about half a second in length is regarded as what should be aimed at. The light at Sandy Hook, N. J., is an example of the modern flashlight.

Lanterns.— The apparatus is placed in a glazed lantern erected on the top of the lighthouse tower. With the view of intercepting as little light as possible, the framing or sashes are made of as small sectional dimensions as is consistent with strength, and are made either diagonal, with diamond-shaped flat panes, or helical with curved panes. The upper part of the lantern is made dome-shaped with a ventilator to carry off the fumes from the lamp. The size of the lantern varies with that of the apparatus, the usual size for a first-class light being 12 feet in diameter and 10 feet height of glazing.

Lightships.— In certain situations, such as on rocks where there is not sufficient room to get a large enough base for a tower, or on sandbanks where the sand is liable to shift, it is impossible, except at a prohibitive cost, to erect towers to carry the light. In such situations recourse is had to mooring in the vicinity a vessel which carries the light on a mast. The light is generally shown from a lantern formed round the mast, and the apparatus consists of parabolic reflectors or small dioptric apparatus. These light-vessels have a crew consisting of a master, mate, and nine men.

Beacons and Buoys are used in situations where powerful lights, such as can be shown from lighthouses and lightships, are not necessary, and where the extinction of the light would cause inconvenience and not disaster, but where some guidance is desirable, as, for example, in narrow sounds, rivers, and estuaries. Beacons are now frequently lighted with small dioptric apparatus, the illuminant being either compressed oil-gas stored in a receiver, in which case they need no attention for six weeks, or with oil-burners, in which case they must be trimmed every three days. Buoys are made of various shapes to denote on which side of them the safe channel lies. Thus, can-shaped buoys, those with a flat top, are to be passed on the port hand, and conical shaped buoys on the starboard hand when the ship is going up an estuary or with the flood-tide, and vice versa. Spherical buoys denote a middle danger which may be passed on either hand. Buoys for particular places are further differentiated by color and top marks.

Fog-signals.— During the prevalence of fog and snowstorms the most powerful lights are obscured, and it becomes necessary to guide the mariner by sound signals. Hence a fog-signal has become a necessary adjunct of a fully-equipped lighthouse station. Various instruments, such as bells, gongs, guns, steam-whistles, explosive charges of tonite, reed trumpets, and sirens sounded by steam, electricity, or compressed air, are used. The most efficient and powerful fog-signal is the siren sounded by compressed air. In spite of the recent improvements in fog-signals they are undoubtedly the weak point in coast protection, as the exact direction from which a sound is coming is not easy to locate, and owing to the capricious and uncertain range at which sound can be heard.

Administration.— In Great Britain, the Trinity House of London, the Irish Lighthouse Board, and the Northern Lighthouse Board are the lighthouse authorities. The two last named were not constituted till 1786, but the Trinity House may be said to have originated in 1514. The French Commission des Phares was constituted in 1792, and remodeled in 1811; the United States Lighthouse Board was formed in 1789, and reconstructed in 1852. In Sweden, Norway, Holland, Denmark, Russia, and Austria the lighthouse administration is under the Admiralty or minister of Marine. In Spain, the system of administration is similar to that of France. For American administration see the article LIGHTHOUSE BOARD OF THE UNITED STATES.

Progress in America.— From one of the poorest-lighted coasts, the American Atlantic seaboard has, within a quarter of a century, become one of the best in the world, and the new system of lighthouses and signal lights is far more comprehensive than anything heretofore attempted. The Cape Hatteras region, and the scarcely less important Cape Cod district, early received special attention. Both of these capes were in the direct route of commerce, and the storms and shoals that made them dangerous to navigators had to be offset by adequate lights which would warn mariners of their proximity. The first attempts at lighthouse construction were consequently made at a few such dangerous points along the coast, and from these in either direction new lights were gradually erected. They formed the beginning of the new system which seeks to make all of our coast so well protected that navigators need have little apprehension in approaching the land from any direction at any point. But the rapidly increasing commerce on both the Atlantic and Pacific seaboard has made in recent years a more comprehensive system of lighthouses imperative. Likewise the shipping interests of the Great Lakes, the Gulf of Mexico, and the great inland rivers, have multiplied in importance, and the need for better protection from dangers to navigation has been general. For a quarter of a century now the American lighthouse system has expanded and developed, until it has reached a point in its evolution where it is without question one of the best in the world.

The full extent of the lighthouse service can best be appreciated by simply stating that there are some 9,000 warning lights and signals stretched along the American coasts, forming a perfect link so that the navigator need never be beyond the sight of one of the beacons. Of this grand total — including lighthouses of different classes, buoys, beacons, and danger signals — over 3,000 are lighted, giving forth their signals at night time. One thousand of these lights are located on the Atlantic coast, 1,500 are scattered along the rivers and inland waterways, 500 on the Great Lakes, and 200 on the Pacific coast. The so-called lighted «aids» include a great variety of modern inventions, from the tall flashlight lighthouse, with its base of steel and stone, and costly lamp operated by electric power, to the modern gas and electric-lighted buoys, beacons and lightships. The advances made in lighthouse and buoy construction represent some of the marvels of modern engineering science.

In 1903, the most important light in the United States, the great tower at Barnegat, N. J., was completed with a light equipment equal to 30,000,000 candle-power. Steam and power are generated for local use, for the heart of the light is a 6,000 candle-power arc light. This is intensified by a great lens built up of rims of prismatic glass, with a bull's-eye in the centre 18 inches in diameter. This monster light can be seen at a distance of 100 miles; but, taking the curvature of the globe into consideration, sailors can make it out while still over 20 miles away. The Barnegat station is a most important one, being located on the most easterly point of the dangerous low-lying Jersey coast. See Plate.

In the matter of lightships the United States leads the world. More than 40 of these are stationed at points along our coast where beacons are necessary, but where the building of lighthouses is impracticable. The Diamond Shoal lightship warns the navigator of his approach to dreaded Cape Hatteras. For years the lighthouse board tried to build a lighthouse on Diamond shoal, but at last, after more than $250,000 had been spent and several lives lost, the attempt was given up.

The Fire Island lightship is one of the line of ocean lampposts which mark the entrance to New York harbor. It is equipped with a steam engine, electric lights, a steam whistle and many other improvements. The new South Shoal lightship, which is anchored 26 miles off Nantucket, is farther from shore than any other lightship in the world. It is the first American outpost and guards a shoal which in times past was a veritable graveyard for ships.

Steel Tubular Structures.— One of the most noted advances in modern times has been the abandonment of the old towers of stone or brick and the adoption of the steel tubular structures in their places. The latter are built more easily on a solid, rocky foundation than the old huge piles of masonry. The steel skeleton is bolted into the solid rock or anchored there by means of long spindle-like legs, which sink many feet down into the firm foundation. These huge cylindrical towers of steel withstand the pressure of wind far better than the stone and brick structures, and their strength is so great that there is practically no danger of their ever being seriously injured by the elements. Even where the lighthouses are built in the water to mark shoals or dangerous reefs, the steel tubular style of structure is adopted. The foundation work of the structure is built up above the water with stone or concrete, and to this the steel tower is bolted. The latter looks more like a giant smokestack than anything else, and its stands as a permanent beacon of the sea to warn mariners of their danger. Not only is additional strength and security obtained through the adoption of the steel tubular lighthouses, but the cost of construction is greatly reduced. Modern lighthouses cost far more than they did in former days, but that is due to the fact that they are built on a larger and more enduring scale, and the lights are of far greater power and intensity. A modern American lighthouse frequently costs $125,000, and often one third of this is spent in the electric light and apparatus alone. In the old system the lights represented a comparatively small proportion of the expense.

Bibliography.— Edwards, 'Our Seamarks' (1886); Elliott, 'European Lighthouse System' (1875); Heap, 'Ancient and Modern Lighthouses' (1889); Stevenson, 'Lighthouse Construction and Illumination' (1881); and United States Lighthouse Board's Annual Reports.

Will M. Clemens,
Editorial Staff, 'Encyclopedia Americana.'

Lighthouse Board of the United States, The, was organized in 1852 by Act of Congress, and has the management of all lighthouses, beacons, buoys, lights, etc. The board is composed of two naval officers, two engineers, and two civilians of scientific attainment. The Secretary of the Treasury is *ex-officio* president, while a chairman is annually elected from the Board. Standing committees are appointed on «experiments,» «lighting,» «engineering,» «finance,» and «floating aids to navigation.»

Light'ning and Lightning-rods. Franklin in 1751 proved that lightning is merely a vast electric spark; and until a generation ago, little was added to his exposition, to define the differentia of this special variety. The origin of atmospheric electricity is believed to be simple friction. Faraday showed that a powerful current could be excited by steam-driven spray against a water surface, and the friction of wind-driven mist on the earth's surface may produce a great difference of potential between the latter and the upper air, possibly though not probably assisted by the friction on dust particles in the air. In any event, rain conducts a portion of it to earth; so that a period of dry weather causes a great accumulation of electricity, the particles of air distributing their charges through each other. This would make the earth and sky, in Lodge's comparison, the two coatings of a Leyden jar, but ordinarily the distance is too great for a spark to pass. The effect of electrical discharges on vapor, however, is to condense it into larger globules; this causes it to sink toward the earth as cloud, and the enormous tension relieves itself by passing to the earth or objects upon it, preferably projections of some height. If conduction through the cloud were instantaneous, it would be drained of its charge in one immense flash; but it being a poor conductor, several flashes at different points are requisite.

The discharge is determined by the tension of the air, the maximum of which without rupture is ½ gramme per square centimetre. If the rupture is local, there is no flash, but only a brush; but it is often the case that when the weakest spot has given way, a general breach follows for a long distance, sometimes miles, creating the flashes which pass either from cloud to earth or from cloud to cloud; and as the discharge of this portion draws the remaining current toward it, a second flash or set of flashes is made probable. But this analysis shows what experiment proves, that this flash is not a single discharge, but the successive discharges of a countless number of vapor particles or raindrops toward the earth or other electrified particles in the air, with such rapidity of progress that they seem simultaneous; since it is most improbable that if vast numbers of points gave way at once, they should all give way in the same line. It has been further proved by Prof. Ogden N. Rood that even so, the flash is not a single sequence merely too swift for the eye to individualize; but although it lasts only a fraction of a second, it is itself composed of primary flashes in irregular sequence, each lasting but from a thousandth to a few thousandths of a second. This result was obtained by photography, which has invaluably supplemented laboratory experiment. By the latter, Prof. John Trowbridge has formed artificial flashes of lightning many feet long, made up of a combination of small discharges from a great number of petty cells. It had been long before proved by Joseph Henry that every electric discharge is an alternating or oscillating current, the periods of oscillation being only a few millionths of a second each and diminishing very rapidly in intensity; the entire duration depending on the magnitude and distance of the bodies. Hence it has been inferred that the small primary flashes are instances of these alternating discharges. Photography steadily tends to confirm these views.

Lightning according to its manifestations is divided into three classes. The "flash" or "stroke" lightning is the one had in mind when the name is used without qualification; it occurs either as a sharp zigzag line of extreme brilliancy, or the same forked, or in a wavy line oscillating with enormous rapidity, or in tree shapes with endless branches, or ribbon shape, or in a mass of strands of close but distinct parallel flashes like unraveled rope, or still other shapes. Dark flashes in photographs are only photo-chemical decompositions on the plate. The second sort is sheet lightning, a sudden glow of a golden or reddish tinge on the horizon, with no definite shape or bounds. It is not usually an actual discharge in that form, the very genesis of lightning making it rare; but is the reflection of lightning flashes out of sight beyond the horizon, cast on the clouds or atmospheric haze, and visible sometimes for many scores of miles beyond the place of the actual storm which causes the flashes. A third is ball lightning, which for a long time was not admitted as a genuine form of electric discharge, and is still a very difficult and in some points unexplainable phenomenon. It has not been photographed, though something like it has been produced on a small scale in the laboratory. It is described as a ball or globe of brilliant light moving slowly a short distance above the surface of the earth or even rolling upon it, and has been said on occasion to float through an open door or window into a house, as though drawn in by a draft of air; it usually explodes, but without doing much damage. Under the head of lightning is sometimes included Saint Elmo's fire or corposant,— jets and brushes of light seen not only at the tips of masts and yards of a ship in a thunderstorm, but on mountain tops, in hissing tongues of brilliant white and blue light several inches long.

The rope-strand lightning is not solidly accounted for; though there is general agreement that the first flash makes a rent or tube in the air, along which succeeding discharges rush back and forward. Of the multiple flash, the explanation most conformable to laboratory experiment — where a spark between electrodes has been made to assume a like shape by blowing across it — is that the tube does not close for a fraction of a second, and the wind always violently present in a thunderstorm moves the mass of air sidewise simultaneously enough to keep the tube intact for a moment. Another theory holds that the tube closes up too quickly for this, but is so large that the alternate flashes appear side by side.

The thunder and the large raindrops accompanying lightning are well understood. The heat produced by the electric discharge traversing the atmosphere causes a sudden expansion of the particles next it, with a sharp compression of those beyond, in a great wave; on its passage the particles contract as suddenly, and the waves roll violently back, producing the noise of thunder. From the relatively slow passage of sound in the air, and the increased and uneven refraction due to differences of temperature and wind movement, the thunder-waves very soon begin to rise and pass inaudibly overhead; so that it is rarely heard more than fifteen or twenty miles off. The consolidation of the vapor into drops has been exactly imitated in the laboratory by electrifying spray, which causes the mist particles at once to begin aggregating in large globules. It has been shown that the mutual repellence of particles ceases as soon as a difference of potential is established by electrification, which substitutes a sort of suction around centres of force.

Protection from Lightning.—The annual destruction of life and property by lightning is very considerable: the former cannot be prevented to any great extent — though common-sense as to exposure can be instilled,— the latter could in part. In the United States during 1900, 713 persons were killed; parts of the Rockies and the upper Missouri Valley were the most dangerous. This rate, about five per million, is larger than in other countries, from our great population of outdoor agricultural and ranching laborers. Fatalities are everywhere increased by the tendency to seek shelter from the rain when caught out in a storm; and these isolated shelters, as trees, barns, monument buildings in public parks, etc., are among the most liable to be struck. In the same year, 1,842 domestic animals were killed; barbed-wire fences are held blamable to a large extent, from the animals' habit of huddling in fence corners during a storm. Statistics of buildings struck are in some respect significant, in others not detailed enough for utility. Thus, in Schleswig-Holstein during 1874–83, the annual average of strokes for wooden and thatched roofs was nearly 2½ times greater than for slate or metal roofs, that for chimneys over 16 times as many even as the former, and that for windmills over one third larger still. On the other hand, we learn nothing from the fact that in the United States during 1900, out of 1,847 buildings struck, 40 had lightning-rods, 855 had not, and there is no report of 952, because not knowing what proportion of all buildings had them,— probably a very small one,— we have no percentages. On the other hand, it is notable that in nine years ending 1892, 2,335 barns, 104 churches, and 664 dwellings were struck, and the larger fire-insurance companies have generally ceased insuring farm buildings. Isolated buildings in general were in five times as great danger as those in city blocks, perhaps partly because protected by metal cornices, etc.

But is it worth while attempting to protect buildings in general from lightning? Aside from the fact that we are never sure a building struck may not involve a loss of life, the matter resolves itself into a question of cost, and it must be said plainly that it is not worth while. The problem is one for the insurance companies. In the eight years, 1885–92, in the United States, there were 3,516 fires from lightning, with a loss of $12,663,835, or a little over $1,500,000 a year. The insurable part of this was nearly all insured, and the practical question for property-holders is whether lightning-rods secure lower rates. Notoriously, they do not. The companies make not the least difference in rates for «protected» buildings, as to insurability or rates, and the officials rarely put them on their own dwellings; the lightning-rod business is virtually extinct in this country. The public would therefore gain nothing by the outlay; except that with uninsurable buildings, it would probably pay to enmesh them with metal points rather than undergo the risk. Of course also there are many cases where even a heavy expense ought to be incurred, as with buildings or their contents not replaceable with money,— historic or noted architectural structures, museums, etc. But the fact remains that to reduce this $1,500,000 to one third that amount would cost fifty times the saving in gross and several times the amount in yearly interest.

If protection is desired, however, it is fully proved that a great quantity of scattered metal points — whether iron or copper is immaterial, and iron is cheaper — is the most effective; a mesh of barbed-wire fence over the roof and chimneys would be not only the cheapest, but one of the most effective protections. Perfect safety would be obtained by enclosing the building in a metal sheath, as no electric discharge can penetrate into an enclosed metal safe; next to this, a closely meshed wire cage; next a number of metal rods or wires all around. One rod is of little moment. Bulk of rod is of no avail, because the flash is so sudden that the interior or core of the rod has no chance to operate, all the discharge passing back and forth along the «skin»; but as the latter is liable to corrosion, the wire should not be too thin. The heavy copper rods of old time, however, are not regarded as needful. Nor can any rods or wires ensure absolute protection. The old «conduit» theory of draining off the lightning, and having a good conductor to prevent resistance and insulators to prevent jumping, is now discarded: it is recognized that there is an enormous amount of electric energy to be discharged almost instantly, it is almost certain to distribute itself around a considerable area, and all that the points can do is to insure and regulate that distribution. There should always be a good «ground» or «earth» at the bottom, as a ton of coke or a water ditch. Consult Lodge's 'Lightning Conductors and Lightning Guards,' 1892.

Lightning Arrester, in telegraphy, a contrivance for guarding against passage of atmospheric electricity through the instruments. The line wires are attached to a plate of brass, usually serrated on the under side. This plate rests on another plate connected with the ground, the two being separated by a thin layer of insulating material.

Lightning-stroke. The effects of lightning-stroke on the body resemble those produced by large amounts of electricity at high voltage. Persons subjected to the influence of lightning-stroke may suffer very slightly or may be killed, and between these extremes a vast variety of minor or major injuries may result. The most characteristic form of injury is some sort of burn. This occasionally shows on the skin as an arborescence, which was formerly thought to resemble the tree under which a patient had sought shelter during a storm, but is, of course, solely an effect of the zig-zagging of the electrical discharge. In many persons mental shock and prolonged nervousness are frequent symptoms. Mild stunning, with a sense of suffocation, may be experienced when an electrical bolt strikes near a person, and occasionally nervous and hysterical attacks are induced. Suppression of menstruation and abortion have been reported. Numbness and prickling of various areas of the body; paralysis of the muscles; deafness; loss of smell and taste; and paralysis of the bladder and rectum have all been described. Occasionally insanities follow lightning-stroke. The experiences of persons who have been exposed vary greatly; but flashing in the eyes, buzzing in the ears, general tremor, which may go on to convulsions, with or without loss of consciousness, are not uncommon, and people who have been seen in this stage have been described as being blue, with muscles tightly contracted, the pupils dilated, the breath deep and snoring, and pulse feeble.

In death by lightning, changes in the nervous system have been found, and it is probable that the cause of death may be either the result of minute hemorrhages, which take place in the important centres of breathing and of the heart-action and in the medulla; or death may be the physiological effect of the electricity on the heart, causing a form of heart-tetanus, with rapid cessation of the movement of this organ.

The treatment of lightning-stroke, as well as of other forms of electrical injuries, should be promptly instituted. If commercial currents are used they should be removed at once, care being taken to use insulating materials to remove live wires. External heat to the body with hot-water bottle, cardiac stimulation with whiskey, ammonia, etc., with artificial respiration, should be simultaneously used.

No method of artificial respiration or other attempt to produce consciousness should be abandoned under three to six hours, as often no signs of life may be brought out in less than two to three hours. It is seriously advised by some observers that, before giving up all hope, an injection of an alkaline solution into the blood should be used. Hot saline solution may be thrown into the rectum, and the treatment should be continued until all possible methods of resuscitation have been employed. Consult Jelliffe, ‘Death by Lightning and Electricity’ (in ‘Text-book of Legal Medicine and Toxicology,’ 1903).

Lighton, William Rheem, American prose writer: b. Lycoming County, Pa., 13 July 1866. He was admitted to the Kansas and Nebraska bar in 1891 and has published ‘Sons of Strength: a Romance of the Kansas Border Wars’ (1899); ‘Lewis and Clark,’ in ‘Riverside Biography’ Series.

Lig'nin, the substance of wood-fibre, formed in part at least by conversion from cellulose (q.v.), and contained within the cellular tissue, giving hardness and weight to the woody parts of plants. Its chemical composition is not determined, but it is characterized by being soluble in weak alkalies and insoluble in water.

Lig'nite, a partially carbonized fossil wood, retaining its woody fibre, and intermediate in its qualities between peat and coal. It is found in the secondary and tertiary strata, but chiefly in the latter. For description of lignite, and especially for composition of American lignites, see Coal.

Lig'num Vitæ, vī'tē. See Guaiacum.

Ligny, lēn'yē, Belgium, village, 14 miles northwest of Namur, celebrated by the defeat of the Prussians under Blücher by the French under Napoleon, 16 June 1815, the same day on which Ney's command was engaged with the British under Wellington at Quatre-Bras. The Prussians lost 12,000 men and 21 cannon; the French, 7,000 men.

Liguori, lē-gwō'rē, **Saint Alfonso Maria de,** Catholic prelate, founder of the religious order called Redemptorists: b. Naples 26 Sept. 1696; d. Nocera, Italy, 1 Aug. 1787. He was originally a lawyer, but became a priest in 1722, joined the Congregation for the Propagation of the Faith, instituted in Naples, and occupied himself as a missionary in the instruction of the ignorant peasantry. In 1732 he founded a monastery at Villa Scala, the members of which were called the Order of the Most Holy Redeemer and were to be employed in the instruction of the people. This order, approved of by Pope Benedict XIV. in 1749, rapidly extended in Italy, Germany, Spain, and France. Liguori was in 1762 appointed bishop of Santa Agata de' Gotici by Clement XIII., from which office he resigned in 1775. He was canonized in 1839, and in 1871 was declared a doctor of the Church. His ‘Theologia Moralis’ has appeared in several recent editions (Ratisbon, 1881; Turin, 1892; Genoa, 1898), and there is a German edition of his letters (Ratisbon, 1893, et seq.).

Liguria, lĭ-gū'rĭ-a̤, in ancient Greek and Roman geography that portion of northern Italy extending along the Mediterranean from the frontiers of Gallia Cisalpina to those of Etruria, bounded on the north by the Po, east by the Macra, and west by the Varus. These were its limits at the time of Augustus, but at an earlier period it extended to the borders of Gaul, or even to the mouths of the Rhone. In 1797 Genoa received from Napoleon I. a democratic constitution, under the appellation of the Ligurian Republic. This republic ceased to exist in 1805, when the emperor incorporated it with France. After 1814 it formed part of the kingdom of Sardinia, and now of that of Italy, in which it comprises the provinces of Genoa and Porto Maurizio.

Ligu'rian Republic. See Liguria.

Lija, a fish. See File-fishes.

Lilac, a genus of ornamental deciduous shrubs and trees (*Syringa*) of the order *Oleaceæ*. The species are characterized by opposite slender-stalked leaves, and purplish or white usually fragrant flowers in erect panicles. Nearly all the species, which have developed many horticultural varieties, are valued for park and garden planting, on account of their hardiness and free-blooming qualities. The common lilac (*S. vulgaris*) is a native of southwestern Asia, whence it was taken to Vienna during the closing years of the 16th century. It is probably the most widely planted of all the species. The wood of its larger specimens, which sometimes attain heights of more than 20 feet, is valued by cabinet makers, for turning and inlaying. About a dozen species are cultivated in America. They do best in deep, rich soil, but will succeed almost anywhere; indeed, they are likely to become a nuisance from their habit of suckering, a habit taken advantage of for propagating purposes. Cuttings are also used, and some of the newer and choicer varieties are grafted upon ordinary lilac or upon privet stocks. During the closing years of the last century the plant came into vogue as a florists' flower, large quantities being forced for the winter and early spring markets.

Lilburne, lĭl'bėrn, **John,** English sectary and political agitator: b. Thickney Puncharden, County Durham, about 1614; d. Eltham, Kent, 29 Aug. 1657. For putting forth tracts hostile to the Anglican Church he was whipped and imprisoned in 1637, but was released by the Long Parliament in 1640, and the conviction having been declared illegal and tyrannic, he received $15,000 indemnity. He then joined the army, and rose to the rank of lieutenant-colonel. He was one of the party known as the "Levellers" (q.v.), and for his attacks on Cromwell and others was several times committed to the Tower. Having been exiled and having returned without leave, he was put in prison and tried for his life, when he was acquitted but not liberated for some time. Subsequently he became a member of the Society of Friends. Hume describes him as "the most turbulent, but also the most upright and courageous of men."

Liliaceæ, lĭl-ĭ-ā'sē-ē, or **Lily Family,** one of the most important orders of plants because of the uses made by man of many of its species, about 2,500 of which are comprised in nearly 200 genera. The characteristics of the group are monocotyledonous seeds; usually herbaceous stems which arise from bulbous, tuberous or rarely fibrous roots; generally narrow, simple leaves; and six-parted or toothed flowers solitary or arranged in various ways, such as panicles, racemes, etc. In habit, many are adapted to deserts, some to ponds and streams, others are climbers, etc. Among those useful for food may be mentioned asparagus, onion, garlic, leek, chive, rocambole, shallot, camass and various species of lilies. A very large number of species are used for ornament; for example, lily, hyacinth, tulip, fritillary, lily-of-the-valley, tuberose, Allium, and Yucca. Several species of Xanthorea and Dracæna yield useful resins; some of the genus Chloragalum furnish a substitute for soap; and certain species of Yucca, Sanseveria, and of other genera, yield valuable fibres. Isolated species of various genera have been used in medicine.

Lil'ienthal, Max, American rabbi: b. Munich, Bavaria, 15 Nov. 1815; d. Cincinnati, Ohio, 5 April 1882. Graduating from the university of his birthplace, he was called to the directorship of a Hebrew school in Riga, Russia, and at government expense traveled through the 17 western provinces of Russia to encourage the Jews to make educational reforms. In 1842 this mission was ended, and until 1845 he remained in St. Petersburg, perfecting his educational system, when the Czar Nicholas issuing orders which aimed at the conversion of the Jews to the Greek Church, he emigrated to America. On his arrival in 1844 he was made rabbi of three synagogues, but in 1850 resigned to establish a school. In 1855 he accepted a call as rabbi of the B'nai Israel Congregation of Cincinnati, a position he held until his death. He was foremost in civil and educational reform, an active member of the board of education, and a director of the Cincinnati University. He was prominent in the councils of the Free Religion Associations, and always championed the cause of progressive Indians with his voice and pen. He aided largely in the establishing of the Hebrew Union College, and as an orator did much in his addresses in churches and on the public platform to promote social and religious reform.

Lil'is, or **Lilith,** a character in Jewish mythology. The Talmudists say that Adam had a wife before Eve, whose name was Lilis. Refusing to submit to Adam, she left Paradise for a region of the air. She still haunts the night as a spectre, and is especially hostile to newborn infants. Some superstitious Jews still put in the chamber occupied by their wives four coins, with labels on which the names of Adam and Eve are inscribed, with the words «Avaunt thee, Lilith!» Our word «lullaby» is said to be a corruption of «Lilla, abi» (Lilith, avaunt).

Liliuokalani, lē-lē-wō-kä-lä'nē, **Lydia Kamekeha,** kä-mā-kä'hä, ex-queen of Hawaii: b. Honolulu 2 Sept. 1838. She was a sister of King Kalakaua, and succeeded him in 1891. She was married to John O. Dominis, an American (d. 1891), who became governor of Oahu. She attempted to substitute a less liberal constitution for that of 1887, and this course resulted in her being deposed 30 Jan. 1893. The islanders then adopted a provisional government, which soon became a republic. She endeavored to secure assistance from the United States, visiting Washington in 1896 for that purpose, but on the annexation of Hawaii to the United States, in 1898, returned to the island. She revisited the United States in the winter of 1901–2 to press her claims for idemnity on the crown lands. See HAWAII.

Lille, lēl, France, an important town, capital of the department of the Nord and chief fortress of the north, 127 miles north of Paris, and 7 miles from the frontier of Belgium. The former capital of French Flanders it was fortified as early as 1007. It is well built, and has spacious, regular streets, lined with large, massive houses. In the northwest of the town stands the citadel, a masterpiece of Vauban. New fortifications include a circle of detached forts. Among the churches are: St. Maurice, in the flamboyant style, recently restored; Notre Dame de la Treille, in 13th century Gothic; St. Catherine; the Madelaine; and the Protestant Church. Among secular buildings are the Hôtel de Ville, with rich collections of pictures, drawings, etc.; the exchange (1652); the prefecture; the palace of justice; the arsenal; the Paris Gate, a triumphal arch in honor of Louis XIV.; the general hospital; the theatre; and the concert-hall. Lille possesses a state university with four «faculties,» a Roman Catholic university, lyceum, communal college, school of art, conservatory of music, public library of 100,000 volumes, botanic garden, zoological garden, etc. The industries include cotton spinning and weaving, fine linen thread, linen and cotton twist, broadcloth, beet-sugar (raw and refined), soap, oil, ribbons, tulles, tobacco-factories, engine-works, foundries, dye-works, bleach-fields, breweries and distilleries. Its situation on the frontier and extensive railway and water communication, make Lille a great entrepôt of trade. Pop. (1901) 215,431.

Lillibullero, lil''ĭ-bŭ-lē'rō, a political ballad that «sung James II. out of three kingdoms.» A scurrilous attack on the Irish recruits, it is said to have been written by Lord Wharton in 1686, and the setting is ascribed to Henry Purcell.

Lillie, lĭl'ĭ, **Arthur,** English author. He went to India and served in the Bengal infantry 1847–63. He has published: ‹Out of the Meshes,› a novel (1869); ‹Buddha and Early Buddhism› (1881); ‹Buddhism in Christendom› (1887); ‹The Influence of Buddhism on Primitive Christianity› (1893); ‹Madam Blavatsky and her Theosophy› (1895); ‹Buddha and Buddhism› (1900); etc.

Lillie, Lucy Cecil White, American writer of juvenile and other books: b. New York 1855. Among her many works are: ‹Prudence,› a novel (1882); ‹Rolf House› (1886); ‹The Colonel's Money› (1888); ‹The Squire's Daughter› (1891); ‹Alison's Adventures› (1895); ‹Honest Endeavor›; ‹Kenyon's Wife.›

Lilliput, lĭl'ĭ-pŭt, the name of a fabulous kingdom described by Jonathan Swift (q.v.) in ‹Gulliver's Travels,› of which the inhabitants are not greater in size than a man's finger.

Lillo, lĭl'ō, **George,** English dramatist: b. London 4 Feb. 1693; d. there 3 Sept. 1739. The son of a Dutch jeweler, he was brought up to his father's trade, and was for several years in partnership with him. ‹Silvia, or the Country Burial' (1730), a ballad opera, was his first piece; and was followed (1731) by the famous 'London Merchant, or the History of George Barnwell,' nowadays better known by its subtitle, which made its author famous, and held the stage for nearly a century. It had a marked influence in its day, and may be regarded as a precursor of the "domestic drama." His other dramatic productions include: 'Britannia, or the Royal Lovers' (1734); 'Fatal Curiosity' (1736); 'Arden of Feversham,' an adaptation of an Elizabethan play, revised or completed by John Hoadly after Lillo's death.

Lilly, lĭl'ĭ, **William,** English astrologer: b. Diseworth, Leicestershire, 1 May 1602; d. Horsham, Surrey, 9 June, 1681. In 1632 he became interested in astrology, and two years later was associated with others in an unsuccessful search for treasure in the cloisters of Westminster Abbey. In 1644 he published the first volume of his almanac, 'Merlinus Anglicus Junior, the English Merlin Revived, or a Mathematical Prediction upon the Affairs of the English Commonwealth,' which appeared annually till his death. The king of Sweden sent him a gold chain and medal in 1659 in recognition of a favorable horoscope cast for him a short time before. He published many works, and was frequently engaged in controversy. His chief writings are: 'Christian Astrology, modestly treated in Three Books' (1647), reprinted in 1852 by Zadkiel as 'An Introduction to Astrology'; 'An Astrological Prediction of the Occurrences in England for the Years 1648, 1649, 1650' (1648); 'Monarchy and No Monarchy' (1651); 'True History of King James I. and King Charles I.' (1651); 'Annus Tenebrosus' (1652); 'Anima Astrologiæ' (1676); and 'Catastrophe Mundi' (1683). Butler satirizes Lilly in Hudibras under the name of Sidrophel. His autobiography was published in 1715.

Lilly, William Samuel, English controversial writer: b. Fifehead, Dorsetshire, 10 July 1840. He was educated at Cambridge and has been secretary to the Catholic Union of Great Britain from 1874. He is a champion of the Roman Catholic point of view in such works as 'Ancient Religion and Modern Thought' (1884); and 'The Claims of Christianity' (1894). Other works of his are: 'A Century of Revolution' (1899); 'First Principles in Politics' (1899); 'Essays and Speeches' (1897); 'A Year of Life' (1900); 'Renaissance Types' (1901); 'India and Its Problems' (1902).

Lily. The type genus (*Lilium*) of the order *Liliaceæ* (q.v.). The several hundred well marked species which have been described are succulent herbs with scaly bulbs and usually leafy upright stems terminated by solitary or variously grouped six-segmented flowers of very diverse colors and markings. In general, lilies are among the most popular of garden flowers, having held this position for centuries. But in the United States they have not taken the high rank that they hold in Europe, especially in Great Britain. This is probably due largely to the dryer, hotter climate, and the injudicious planting of the bulbs where they cannot long survive.

The various species and their varieties are adapted to a wide range of soils, a few, such as *L. tigrinum, L. canadense,* and *L. superbum,* often succeeding in heavy land if well drained, and some, such as *L. washingtonianum, L. philadelphicum* and *L. concolor* withstanding the peculiar conditions of slaty ridges if deeply planted and well mulched during the growing season. But the greater number thrive best upon fairly rich, well drained, deep sandy loam, especially if sheltered from prevailing winds and the hot sun of midsummer. Not that the stems cannot stand sunlight; but the bulbs and roots should be cool and well but not excessively supplied with moisture and food. The bulbs should always be planted deeply, six inches or more, and the soil stirred to double the depth of planting. This not only assists in keeping the roots cool but protects the bulbs from excessive freezing, which seems to have some effect upon the vitality of shallow planted specimens of even the hardiest species. Since vitality is also impaired by the exposure of the bulbs to the air, great care should be taken in transplanting to place the bulbs back in the soil as soon as possible after their removal. Transplanting is best done in early spring, the clumps being dug up, divided, the large bulbs planted in new, permanent quarters and the small ones and the bulb scales in nursery beds, where they should remain from one to three years, according to size when planted and to the species. One reason why bulbs obtained from seedsmen fail is because of undue drying. Orders for lilies should be given before the seedsman can obtain the bulbs, and they should be filled by him without delay after the bulbs arrive. Often bulbs become so flabby from loss of moisture that they may fail to grow until the second year. Hence it is advisable to plant all but plump and turgid bulbs in a nursery bed, or where they may remain undisturbed for a year or two before being placed in permanent quarters. Propagation by means of seeds is slow in most cases; and many species rarely produce seeds in the United States.

The Bermuda Easter lily (*L. longiflorum,* var. *eximium*) is the only kind that is forced upon a commercial scale in the United States, though several other kinds are to be found in the principal florists' stores and in private conservatories. For forcing, the bulbs of this variety are planted as soon after their arrival from Bermuda as possible, generally before the end of September, and are kept in a cool dark place until roots are well developed and the tops commence to form, when they are brought into the light, and by judicious management of heat, are hastened or retarded to ensure their blossoming at desired seasons, especially Easter Sunday. The management of other varieties used in greenhouses is more or less closely similar.

In general, lilies are most effective when mixed in small masses among shrubbery and hardy flower borders, the various kinds being sufficiently separated either in distance between the groups, or in season of blossoming, to avoid the clashing of inharmonious colors. Many of them have been used thus for ornamental planting, but though the great majority are well worth growing, scarcely a dozen have become widely popular in the United States, and of these not one is a native American species.

The following are probably the best known species: Tiger lily (*L. tigrinum*), a Japanese species, often exceeds three feet in height and bears a loose raceme of sometimes a dozen nodding dark-red, purplish-spotted flowers. It is a very hardy, useful species for the border, where it does best in masses. Madonna lily (*L. candidum*), a native of southern Europe, often attains three feet, bears from half a dozen to two dozen large pure white fragrant flowers in a raceme. It is a highly ornamental species, will do well upon sandy soils and in full sunlight. The Siberian coral lily (*L. tenuifolium*), which seldom exceeds two feet in height, bears from one to a score of scarlet, nodding flowers. Being very easy to propagate from seeds and bulb scales and of simplest culture, it is especially popular with beginners. Gold banded or Japan lily (*L. auratum*), which sometimes attains four feet, bears a few yellow-banded, purple-spotted, white flowers in a short raceme. It is less persistent than the tiger, and the showy lily, and somewhat less easy to cultivate, but is particularly useful for planting among groups of dark colored shrubbery. Showy lily (*L. speciosum*), a Japanese species, often exceeds three feet, bears six or more white or pinkish, red-dotted flowers in a raceme. It is a specially hardy, thrifty and satisfactory species both for out-of-door planting and for greenhouse use. Next to the Bermuda Easter lily and *L. longiflorum* it is probably more widely grown by florists for cutting than any other kind. It has both white and red varieties. *L. longiflorum*, the original species of the Bermuda Easter lily, is forced in the same way as its variety. It is a native of Japan, from which country most of the bulbs are imported.

Besides the species mentioned the following are considered worthy of wide popularity: *L. chalcedonicum*, *elegans*, *testaceum*, *maximowiczii*, *martagon*, *maculatum*, *henryi*, *monodelphum* and *superbum*. These do well with little care upon ordinary light loamy soils. *L. canadense* and *superbum* succeed upon the same soils but require rather shady places. For cold climates even as far north as Ottawa, Canada, the following have proved successful: *L. brownii*, *wallacei*, *citrinum*, *croceum*, *melpomene*, *pardalinum*, *pomponium*, *dahuricum* and *batmanniæ*. The odors of *L. croceum* and *pomponium* are very offensive even in the garden, and when they are planted they should be at some distance from the house. Among the most fragrant are *L. longiflorum*, *auratum*, *candidum* and varieties.

Consult: Bailey, ‘Cyclopedia of American Horticulture,’ 1900–2; Elwes, ‘A Monograph of the Genus Lilium,’ 1880; ‘Botanical Gazette,’ Vol. XXVII., p. 235 (1899).

Lily-of-the-Valley, a low-growing perennial herb (*Convallaria majalis*) of the lily family, with creeping rootstocks from which ascend radical leaves and little white or pink fragrant flowers arranged in racemes upon scapes. The plant being a native of western Asia is one of those popularly supposed to be referred to in the Sermon of the Mount, the tulip being another. The plants are perfectly hardy. They thrive in partially shaded fairly rich loam, and may be readily propagated by means of the underground parts. Since beds are apt to run out they should be renewed every few years. The strong terminal buds known as pips are extensively used by florists for forcing the flowers throughout the year. Several horticultural varieties have been produced, some with variegated or striped foliage, others with pink, variegated or double flowers. A highly esteemed perfume, *eau d'or*, is made in France from the flowers; and the rootstocks have been used by druggists, but are less popular than formerly.

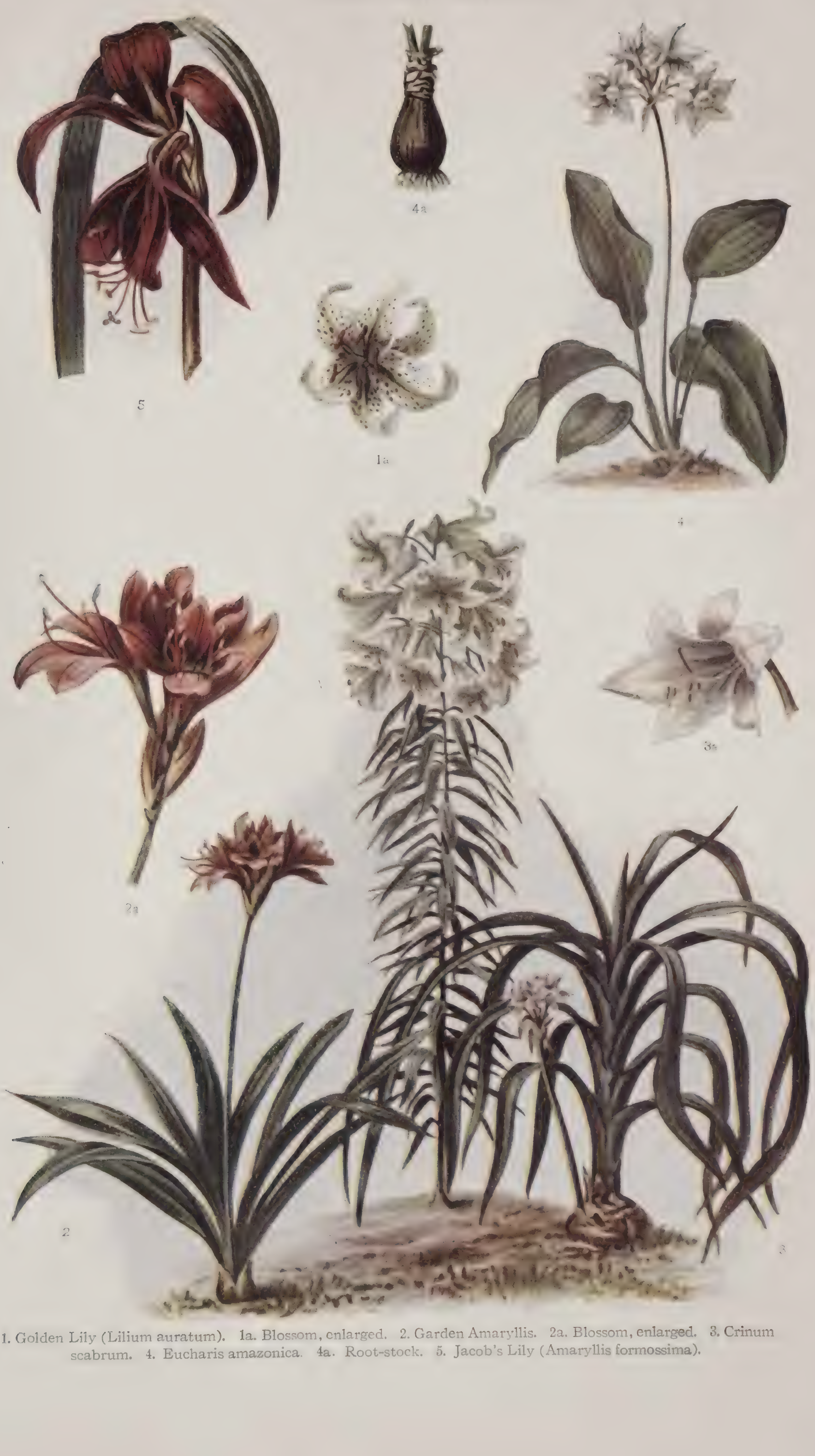
Lilybæum, lĭl-ĭ-bē'ŭm, the ancient name of Cape Boeo (q.v.).

Lima, lī'ma̤, Ohio, city, county-seat of Allen County; on the Ottawa River, and on the Erie, the Pennsylvania, the Cincinnati, H. & D., the Detroit Southern and the Lake Erie & W. R.R.'s; about 70 miles north of Dayton and the same distance south of Toledo. It is situated in an agricultural region and in the natural gas and petroleum belt of the State. The oil fields extend into six counties in the northwestern part of the State. The chief industrial establishments are locomotive and car works, machine-shops, petroleum refineries, and railroad shops. The shipping trade is chiefly in petroleum, farm and dairy products, and railroad car equipments. The city is the seat of Lima College, opened in 1893 under the auspices of the Lutherans. The city owns and operates the waterworks. Pop. (1890) 15,981; (1900) 21,723.

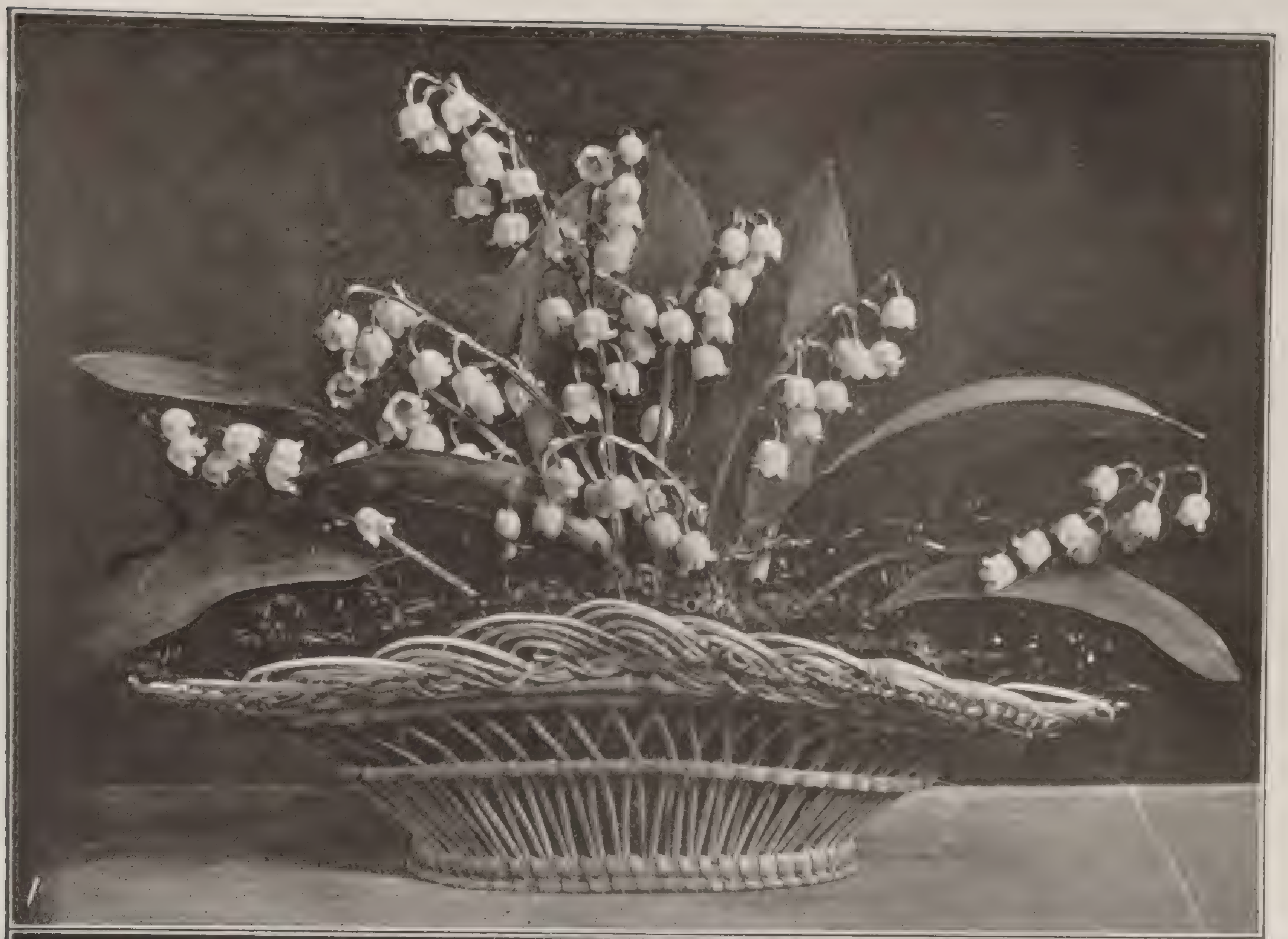
Lima lē'mä, Peru, South America, a department in the western part, on the Pacific Ocean; area, 13,310 square miles. It is mountainous in the east, but along the coast the land is low, and in the river valleys productive. A number of villages and towns are in the valleys. One of the principal agricultural productions is sugar. There are rich mineral deposits, but as yet the mines are undeveloped. Pop. about 300,000.

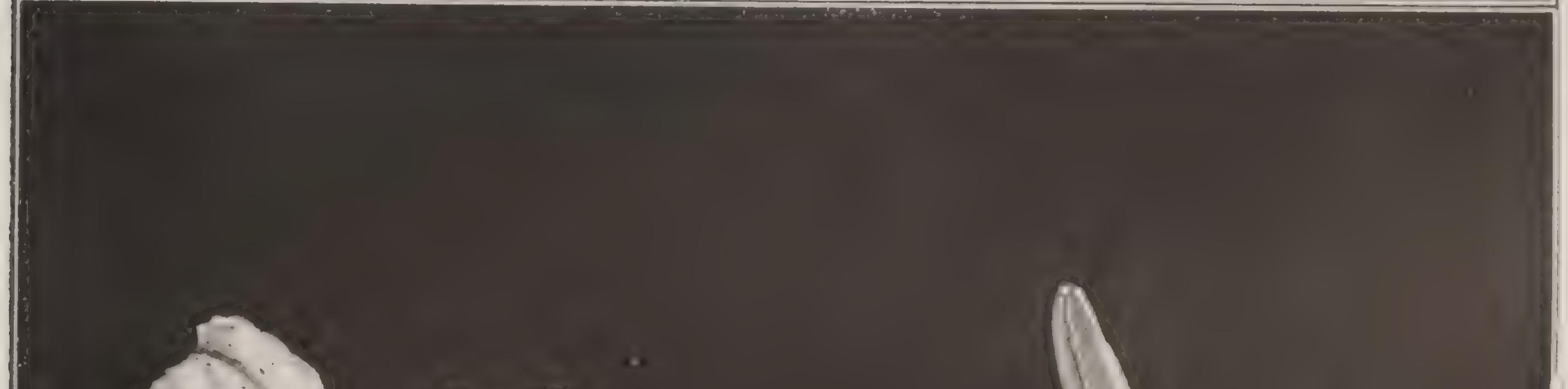
Lima, Peru, South America, city, capital of the department of Lima; on the Rimac River, seven miles from the Pacific. Callao, on the Pacific, at the mouth of the Rimac, is the port of Lima; it is connected with Lima by two railroads, one on each side of the Rimac. Another railroad extends from Lima to Concepcion, a town on the eastern slope of the Andes. This railroad is in one place 15,000 feet above the sea. The city was founded by Francisco Pizarro 1535 and named Ciudad de los Reyes, «City of the Kings,» because the site was chosen on 6 January, the feast of the «Wise Men,» or the «Three Kings.» Lima has considerable manufacturing industries and is developing rapidly. The adobe walls which surrounded the city were destroyed in 1870, and boulevards made in their place. The city has long been famed for its educational institutions; the national university, chartered in 1551, is the oldest university in America. It has courses in theology, law, medicine, applied science, political science, art, and music. The national library, founded in 1822, with some books from older libraries, was destroyed in 1880 by the Chileans. It contained then 60,000 volumes. It now contains about 50,000 volumes. There are several other libraries in the city. There are several technical schools, professional classical, naval, and military, and about 100 elementary schools, besides a number of small private schools. Several scientific and literary societies provide public lecture courses. The city is noted for being the home of the first American canonized by the Roman Catholic Church, Saint Rose of Lima (1586). It has frequently suffered from earthquakes; the most destructive of which any record exists occurred in October 1746. At the time of the war between Peru and

LILIES AND AMARYLLIS



1. Golden Lily (Lilium auratum). 1a. Blossom, enlarged. 2. Garden Amaryllis. 2a. Blossom, enlarged. 3. Crinum scabrum. 4. Eucharis amazonica. 4a. Root-stock. 5. Jacob's Lily (Amaryllis formossima).





1. Lilies of the Valley.
2. Golden-Banded Lily of Japan.

Chile, Lima capitulated and the Chileans kept possession for two years. Pop. 116,000.

Lima e Silva, Luiz Alves de, loo'ēs äl'vĕs, dā lē'mä ē sēl'vä, duke of Caxias, Brazilian soldier and politician: b. Rio de Janeiro 25 Aug. 1803; d. Santa Monica, province of Rio de Janeiro, 7 May 1880. He became brigadier in the Brazilian army, was president of Maranhao, vice-president and military commandant of Sao Paulo, and president of Rio Grande do Sul; and in 1851–2 commanded the Brazilian army. In 1855 he became minister of war; and from 3 Sept. 1856 to 3 May 1857 and again from 3 March 1861 to 4 May 1862 was prime-minister. He commanded the army of Brazil against Paraguay in 1866–9, and from 25 June 1875 to 5 Jan. 1878 was a third time premier.

Limantour Jose Ives, Mexican statesman: b. Mexico City 26 Dec. 1854. He graduated from the National Preparatory School of Mexico City in 1871; and from the National School of Law in 1874, receiving his lawyer's diploma at the age of 20, after having successfully passed the required examinations both in that institution and the National School of Jurisprudence. He traveled and studied abroad until 1876 and soon after his return to Mexico was appointed assistant professor and subsequently professor of political economy in the National School of Commerce, and still later professor of international law in the National School of Jurisprudence. In 1881 he was elected to the Mexico City council, and afterward served several terms in the lower branch of the national congress, of which he was several times presiding officer. During the 10 years prior to 1892 he served in various diplomatic and financial positions, and was connected with the department of Fomento much of that time. In 1892 Mr. Limantour was appointed assistant secretary of the treasury and secretary on 9 May 1893, which position he now holds. During his administration many important financial reforms have been inaugurated. In recognition of his public services he has been decorated by several foreign governments. He has written much on financial and other subjects.

Lime, also known as caustic lime, quicklime or calcium oxide (CaO) is snow white in color and strongly alkaline, being one of the strongest bases. In contact with water for which it has great affinity it increases in bulk, evolves much heat and changes to the hydrate (CaH_2O_2). Unless kept in a dry place it will absorb moisture and carbonic acid gas from the air and change to the carbonate ($CaCO_3$) (see CALCIUM). Lime except for certain impurities is entirely soluble in water, the principal insoluble impurities being silica, alumina and iron oxide. It is never found native. For ordinary commercial uses lime is obtained by heating limestone, shells or other material composed of calcium carbonate to a temperature high enough to drive off the carbonic acid gas. As the materials used vary in purity, so is there a corresponding difference in the purity of the lime produced. Owing to its property of hardening, by change to calcium carbonate, and its comparative cheapness, lime is the most important of building materials. For commercial purposes the many varieties of lime are grouped into, (1) common or fat limes containing less than 10 per cent of impurities, (2) poor or meagre limes containing 10 to 25 per cent of impurities, (3) hydraulic limes containing 15 to 40 per cent of impurities and (4) hydraulic cements which may contain as high as 70 per cent of impurities.

Common or fat limes in slaking evolve much heat and increase in bulk from two and a half to three times; except for some impurities they are entirely soluble in water. In hardening they shrink, and hence in making mortar require the addition of a large amount of sand. As fat limes are cheap and abundant and can take a large proportion of sand in making mortar, they are generally used for masonry. The poor or meagre limes are seldom used in this country. The hydraulic limes, so called from their property of hardening under water, though valuable for certain purposes, are also seldom used in the United States for masonry. They slake more sowly than ordinary limes with little rise of temperature and little increase in volume. Hydraulic cements (see CEMENT) do not slake and do not require the addition of sand to form mortar. They also set or harden much more quickly than ordinary limes, as the formation of calcium carbonate is a slow process that may under certain conditions take years, while in some quick-setting cements the formation of the calcium silicates and aluminates to which setting is due may take place in a few hours.

Limestone, marble and shells are burnt to lime by exposure to a temperature of 850 to 900° C. in a current of air. The harder the limestone the longer the time required for burning, but the better the product. Impurities in the limestone may or may not be injurious, depending on the quality of lime desired. Moisture in the limestone, or added to the charge, as by a steam jet, helps carry off the carbonic acid and hastens burning. Lime burning may be done in heaps or kilns. Heap burning in which pieces of limestone are piled on a grate of wood, then covered with fines or clay and fired, is now little used. Of kilns there are various types, intermittent and continuous firing. Of intermittent kilns the old «dug out» kilns built of ordinary brick on masonry into the side of a hill require about 72 hours for each firing. Heat is supplied by a coal or wood fire at the bottom. For continuous firing vertical kilns 20 to 25 feet high with draw openings, preferably below the fire line, are used, the lime being drawn every six hours. To supply moisture, water is kept in an iron pan in the ash-pit. In the kilns most commonly used there is no grate, but the fuel, preferably charcoal or anthracite, is charged with the limestone. The lime is not as pure as from furnaces with a bottom grate, but the consumption of fuel per pound of lime made is less. In such kilns burning is started by partly filling the kiln with limestone, putting in a thick layer of kindling wood and coal, starting the fire, and then adding alternate layers of coal and limestone. The type of continuous kiln in most favor is vertical, about 25 feet high, bottle-shaped and made of boiler iron lined with fire brick. Such a kiln may use petroleum for fuel, the oil being injected through openings in the wall just above the widest part of the furnace. Vertical kilns fired with gas have not proved successful. The type of kiln that requires the least fuel for amount of lime produced is the horizontal circular Hofman kiln, also used for making brick, drain tile, etc. The fuel is fine coal or even coal dust, and is put in through openings in the top. The lime produced is lighter than that from vertical kilns, slakes more easily and hence cannot be stored as well.

Most of the lime made is used for building purposes, but lime is also used for making glass and artificial stone, as an agent in many chemical processes, as whitewash, and was until recently largely used in sugar-making to separate sugar from molasses. No statistics of the amount of lime annually made in the United States have been compiled, but the value of the 1901 output was over $8,400,000. See LIMESTONE.

S. SANFORD,
Assoc. Editor ‹Eng. and Min. Journal.›

Lime, a shrub or small tree (*Citrus medica,* var. *acida*), a variety of the citron (q.v.) resembling the lemon in habit but rather more prickly and spreading; its fruits, also, are more nearly spherical, more acid and rather bitterer than commercial varieties of lemon. It is a native of southeastern Asia, whence it has spread to other warm countries where its juice is highly valued for making cooling drinks. In Florida and the West Indies, which supply the American market, large thickets of wild limes are to be found and these add to the crops from the cultivated groves. In California the lime is little cultivated because the cheapness of Mexican fruit prevents the realization of a profit from orchards. The lime is one of the most important sources of citric acid (q.v.). The trees are propagated, cultivated and trained much like lemon trees, but are planted closer together. They will stand poorer, stonier soil and nearer proximity to the ocean than other citrous fruits. The name is given in the Orient to various sour-fruited trees related to the true lime; in Europe and occasionally in the United States to the lindens (q.v.); and locally in the Southern States to the sour tupelo (q.v.), whose tart fruit is eaten.

Lime Light. See CALCIUM LIGHT.

Limerick, lĭm'ĕ-rĭk, Ireland, a city and civic county, capital of Limerick county, at the interior extremity of the estuary of the Shannon, 106 miles by rail southwest of Dublin. It consists of three portions connected by five bridges, English Town on King's Island, and Irish Town and Newtown Pery on either side of the river. Limerick is of very ancient foundation, being mentioned by Ptolemy as Regia. The principal buildings are the Episcopal and Roman Catholic cathedrals, custom-house, chamber of commerce, town-hall, exchange, assembly-house and linen-hall. The manufactures include the curing of bacon, the preparation of butterine, and the making of army clothing. There are, besides, distilleries, breweries, tanneries, corn-mills, a patent slip for vessels of 500 tons, and a large graving-dock. Limerick is the leading port on the west coast for the shipment of raw produce. The harbor, naturally a fine one, has been improved at a considerable outlay. Pop. (1901) 45,806.

Limestone, a common and widely distributed rock, consisting essentially of carbonate of lime and varying greatly in composition, color and texture. Most limestones are of organic origin and represent the calcareous remains of sea animals, such as corals, foraminifera and mollusks. These remains may be reduced to a fine ooze by the action of the waves and in other ways, and the rock resulting from the consolidation of this ooze may show no trace of organic origin. Some limestones have been formed by the precipitation of calcium carbonate from sea water through evaporation in confined estuaries. Other limestones (travertine, calcareous tufa) have been formed by the deposition of calcium carbonate from springs, while still others represent calcareous deposits in fresh-water lakes. The varieties of limestone are almost endless, including the crytalline limestones or marbles. Thus starting with nearly pure calcium carbonate, the calcium may be replaced gradually by magnesium till finally we have dolomite, the double carbonate of calcium and magnesium. Pure dolomite contains 21.72 per cent of magnesia, but limestones containing over 5 per cent are said to be dolomitic. Again the lime may be replaced by silica, with a gradual transition from limestone through cherty limestone to pure cherts; or again iron oxide may replace lime with a resulting transition from limestone to merchantable iron ore. Besides these chemical transitions silicious or argillaceous sediments may be laid down with the calcareous material, and in the resulting rocks we may trace gradual changes from limestone through limy sandstones to pure sandstone and from limestone through marls or calcareous shales to ordinary shales. Bituminous matter may make limestone black or give rise to asphaltic varieties. Besides all these varieties of composition, limestones are often classified according to their texture, as earthy limestone, oölithic limestone with a concretionary texture, like the roe of fish, etc. Under rock stresses, with possible rise in temperature, limestones become crystalline and change to marbles. Chalk is a soft and powdery textured limestone. Limestones are also classified according to the uses to which they are put, and thus we have cement rock or hydraulic limestone used for making cement, lithographic limestone, statuary marble, etc.

The various limestones and marbles are widely used for building purposes, and a great amount of limestone is annually burnt to lime or to cement, though no statistics of the amount thus used are available (see CEMENT, LIME). Limestone is also used as a flux in smelting iron and other ores, the total amount thus used in the United States in 1902 amounting to fully 9,000,000 tons. Of the limestones used for build-

COMPOSITION OF SOME LIMESTONES.

	Silica	Alumina	Iron Oxide	Lime	Magnesia	Calcium Carbonate	Magnesium Carbonate
Coral rock, Bermuda	.....	.....	.....	53.82	1.01	96.11	2.13
Marble, Adams, Mass	0.63	.....	0.55	55.60	0.23	99.30	0.49
Bedford limestone, Indiana	1.13	.....	1.06	53.78	0.34	96.04	0.72
Lithographic stone, Bavaria	.....	.....	1.25	53.89	0.10	96.24	0.21
Hydraulic limestone, New York	15.37	.....	11.38	25.70	12.44	45.91	26.14
Fresh water limestone, Wyoming	31.28	1.83	0.22	34.20	0.11	61.07	0.23
Marl, New Jersey	43.70	10.20	18.63	9.07	1.50	.....	.....

ing purposes particular mention may be made of the buff or blue oölitic Bedford limestone of Indiana and of the marbles of Vermont, Georgia and Tennessee. Marble or limestone is also used as a source of carbonic acid gas for aërated waters. The total value of the limestone and marble produced in the United States in 1901 was fully $31,000,000. See Calc-Tufa; Calcite; Chalk; Coral; Dolomite; see also Marble.

S. Sanford,
Assoc. Editor ‹*Eng. and Min. Journal.*›

Limicolæ, lī-mĭk'ō-lē, a group of birds, within the order *Charadriiformes,* containing the plovers, sandpipers, snipes, sheathbills, coursers, seed-snipes, stone-curlews, jacanas (qq.v.) and their immediate allies, most of which are known to gunners as «shore birds» or «beach birds», because they haunt the shore of the sea or of inland bodies of water. They are mostly small, with slender bills of varying length, grooved for the nostrils, and in some families flexible at the tip, where nerves come close to the surface and enable the bird to feel about in the mud for its food. The legs are rather long, and the toes are ordinarily quite free, as these birds run about, and do not wade or swim as a rule; some, indeed, rarely approach the water, but dwell upon dry plains. The wings are strong and the powers of flight considerable; the most extensive migrations known are performed by some of the limicoline birds. All make their nests on the ground, and many breed only in the far north; the young run about as soon as freed from the shell. Light and pleasing, but not conspicuous colors prevail, but some species display great beauty. Nearly all are edible and are the objects of skilful sport by the aid of dogs, decoys and other devices to overcome their wit and wariness. Consult Evans, ‹Birds› (Vol. I., Cambridge Natural History, 1900); Steineger, ‹Birds› (Vol. IV., Standard Natural History, 1885); Elliot, ‹North American Shore Birds› (1895); Baird, Brewer and Ridgway, ‹North American Water Birds› (1884); Sclater & Hudson, ‹Argentine Ornithology› (1888); and general works on ornithology and shooting.

Limited Liability, in modern statute law, a principle whereby the persons liable are bound under certain clearly defined conditions. The phrase is chiefly used in connection with stock companies, meaning that the stockholders shall not be called upon, under any circumstances, to contribute more than the par value of the shares of stock for which they have subscribed. If the debts of such a company, when wound up, amount to more than the resources of the company can meet, the creditors must bear the loss. In the United States shareholders in national and other banks, insurance companies, etc., are held to a specific and strict liability; in the case of the national banks, it is for twice the amount subscribed. In England the shareholders of a limited company from whose name the word «limited» is omitted must pay its debts in full. The United States Congress has adopted the rule followed by the British Parliament, and prevailing in European countries generally, with respect to the maritime law (q.v.) whereby a ship-owner, by surrender of the ship and the freight, may absolve himself from liability for negligence on the part of master or crew. Under the amended United States Revised Statutes the principle of limited liability is clearly maintained and defined as applicable in this country; wherefrom it appears that «the owner of any vessel, whether steamer or canal-boat, employed whether in seagoing or inland navigation, whether he be an American citizen or a foreigner, may obtain a limitation to the value of his interest in the vessel and her pending freight, of his liability not only for the results of a single disaster, but for the results of a disastrous voyage, including all debts due on account of the vessel save seamen's wages».

Limne'a, the central genus of the pulmonate family *Limneidæ,* containing the typical fresh-water snails. See Pond-snails.

Limoges, lē-mōzh, France, an episcopal city, capital of the department of Haute-Vienne, situated on a hill sloping to the Vienne, here crossed by three bridges, 88 miles west of Clermont. The fortified walls which surrounded the town have been replaced by fine shady boulevards. The principal edifices are the cathedral, commenced in 1273, presenting both Romanesque and Gothic features; the Gothic church of St. Michel des Lions; the church of St. Pierre du Queyroix; a modern town-hall, palace of justice, bishop's palace, public library, and several hospitals. The principal industry is the manufacture of porcelain; there are also wool and cotton spinning mills, cloth factories, foundries, paper-mills, and extensive shoe and clog making establishments. Limoges has a considerable trade in cereals, wine and spirits, wood, and cattle. It is the seat of courts of first resort and commerce; of a consulting chamber of commerce, lyceum, preparatory school of medicine, normal schools for male and female teachers, etc. Limoges was originally the capital of the Gallic tribe, the Lemovices, and an important city as the Roman «Augustoritum Lemovicum.» Pop. (1901) 83,569.

Limon, lē-mōn', or **Puerto Limon,** poo-ăr'tō lē-mōn, Costa Rica, Central America, a port on the northeast coast, 72 miles (103 by rail) east of San José, the capital. A railway connects with Cartago, San José, Alaguela and Puenta Arenas. The port has been greatly improved by modern docks and iron piers, and a growing export trade is carried on especially in coffee, also in bananas, rubber, mahogany, dyewood, etc. The town has ice factories, a brewery, a fine water supply, and a modern sewerage system. Pop. (1903) 4,000.

Li'monite (Greek λειμών, a meadow), an ore of iron (q.v.), varieties of which are bog iron-ore and yellow ochre. It is a hydrated oxide of iron ($2Fe_2O_3.3H_2O$), of a brownish color, occurring in mammillated or botryoidal masses, which when broken across show a fibrous radiating structure, and also in compact and earthy masses. It is opaque, rather brittle, moderately hard, and has specific gravity 3.6 to 4. It dissolves in warm aqua regia; when heated it loses water and becomes magnetic. It is a very important ore of iron, and is found abundantly in the United States, especially in Virginia and Alabama, and in other parts of America; also on the continent of Europe, and in some parts of Great Britain. In 1901 the United States produced over 3,000,000 long tons of this ore.

Lim'pet, a gastropod mollusk, with a low conical, non-spiral shell; properly a representative of the families *Patellidæ* and *Acmæidæ.* The former has no *ctenidia* or true gills, but breathe by means of a ring of special branchial filaments between the mantle and the foot; in the latter the left *ctenidium* functions as a gill and there is no accessory ring. By means of a muscular, sucker-like foot, the limpets adhere so firmly to rocks near low-water mark that they defy the beating of the heaviest surf and are difficult to detach without injury. At high-tide they move about in search of the algæ on which they feed, but are said to return to exactly the same place and position, the muscle in time wearing a smooth spot or «form» on the rock, and the shell becoming adapted to its irregularities. A widely distributed circumpolar species (*Acmæa testudinalis*) is common on the New England coast, and may be recognized by its low, conical, smooth shell with the eccentric apex slightly turned forward. In Europe limpets are utilized as food and in this country for bait. The key-hole limpets belong to the family *Fissurellidæ,* in which the shell is usually perforated like a key-hole at the apex to permit the protrusion of a process of the mantle. Numerous species occur in the littoral zone of warm seas. The *Haliotidæ,* ear-limpets or abalones (q.v.) are closely related. The cup-and-saucer limpets and slipper-limpets (*Calyptræidæ*) have flat shells usually provided with an internal lip or shelf. Several species of *Crepidula,* having interesting commensalistic habits, are abundant on our coasts, and are known to fishermen as «half-decks.» Finally the fresh-water limpets (*Ancylus* and *Gundlachia*) belong to the pulmonate family *Limnæidæ.* Numerous species of these true air-breathing limpets are found abundantly on stones and plants in the fresh-water streams and ponds of the United States. They feed on confervæ. Limpets, especially *Acmæa* and *Patella,* are of very ancient race, having existed almost unchanged since the Silurian Age.

Limp'kin, a crane-like bird of the swamps of tropical America, known and superstitiously feared by the ignorant natives on account of its sombre plumage and wailing cry. Two species exist, *Aramus scolopaceus* and *A. pictus.*

Limpopo, lim-pō'pō, or **Crocodile River,** South Africa, a river which rises to the south of Pretoria in the Witwatersrand, flows northwest through the Transvaal, then northeast, forming for a considerable distance the northern boundary of the Transvaal, then southeast into the Indian Ocean north of Delagoa Bay; length about 1,100 miles. Its largest tributary is the Olifants, which flows through the Transvaal and joins it in Portuguese territory.

Linacre, lin'a-kėr, **Thomas,** noted English physician and scholar: b. Canterbury, England, 1460; d. London, England, 20 Oct. 1524. He was the projector of the College of Physicians in London and the founder of lectureships in both Oxford and Cambridge.

Linares, José Maria, hō-sā' mä-rē'ä lē-nä'rĕs, Bolivian statesman: b. Potosi 10 July 1810; d. Valparaiso, Chile, 1861. He was admitted to the bar, was appointed one of the commissioners to prepare a legal code for Bolivia, in 1839 became minister of the interior, later minister to Spain, and in 1848 president of the senate. In 1857 he was chosen president, but was deposed by revolutionists in January 1861.

Linares, Chile, (1) a southern province bounded north, south, and west by the provinces of Talca, Nuble, and Maule, and on the east by the Andes; area, 3,589 square miles; pop. (1895) 101,858; (2) a town, the capital of the above province, 10 miles southeast of Talca. Pop. (1895) 7,331.

Lincoln, Abraham, 16th President of the United States: b. Hardin County, Ky., 12 Feb. 1809; d. Washington, D. C., 15 April 1865. His ancestors were English Quakers, who settled in America in the 17th century. His grandfather, Abraham Lincoln, a man of property, removed from Virginia to Kentucky about 1780 with three sons. Thomas, the youngest son, learned the carpenter's trade, and married (12 June 1806) Nancy Hanks, a handsome young woman of lowly condition but possessing qualities of intellect and character above the average. From this union came three children: the oldest a daughter; the second, named Abraham; the third, a son who died in infancy. Abraham's parents were plain people, and the log-cabin they lived in was a true home. The father could not read or write (except to scrawl his signature); he was always poor, and is described as shiftless. The mother could read but not write. A woman of piety and excellent judgment, she left an indelible impress on her son. From her he inherited the serious temperament, brightened by the spirit of playfulness that was so prominent a trait of the man throughout his troubled career. She died in 1818, and the boy of 9 deeply mourned her loss. In later years he said: «All that I am, and all that I hope to be, I owe to my angel mother.»

In 1816 Thomas Lincoln sold his Kentucky farm and found a new home in a sparsely-settled district of Spencer County, Indiana. In his boyhood Abraham learned the use of fire-arms, and helped his father cut down trees. He got, all told, a year's schooling. His teachers were men who never went «beyond readin', writin', and cipherin' to the rule of three.» The boy eagerly devoured the few books that fell into his hands: the Bible, Æsop's 'Fables,' 'Pilgrim's Progress,' 'Robinson Crusoe,' and the lives of Washington and Henry Clay. After he grew up he kept on reading and studying, and gained what must be considered a fair education, including Euclid and the rudiments of surveying. In childhood he had a passion for re-stating, in clear language, the confused and not over-intelligible ideas of others. In this way he acquired his unusual power of «putting things.» When a youth he practised speaking in public on temperance and political subjects.

At the age of 20, Abe Lincoln, as he was called, had grown to extraordinary stature, nearly 6 feet 4 inches, and his great muscular strength was the talk of the neighborhood. He had developed his native vein of humor, which afterward made him famous. From the life of a woodman he turned to flatboating, making a voyage down the Mississippi to New Orleans and back with one companion.

In 1830 Thomas Lincoln, who had married an estimable widow, Sarah Bush Johnston, moved to Sangamon County, Illinois. From this home he departed in a short time to Coles County, where he died in 1851. Meanwhile his son had found employment as a farm hand and

ABRAHAM LINCOLN.
Sixteenth President of the United States.

railsplitter. With his rifle he supplied the family with game in the hard winter of 1830–1. In the spring of 1831 he made another flatboat trip down the Mississippi. After his return he clerked in a grocery at New Salem, and became known among his acquaintances as "Honest Abe." In 1832 he served in the Black Hawk war, part of the time as captain of a volunteer company, but saw no fighting. Later he became a storekeeper, postmaster, and at intervals worked at surveying. He was a Whig member of the Illinois legislature eight years (1834–42), and as a legislator he made a creditable record, and through his influence the State capital was removed from Vandalia to Springfield in 1839.

Having studied law, Lincoln was admitted to the bar in 1836, and the next year began his law practice in Springfield, as partner of John T. Stuart. Among his associates in the Illinois capital were men who afterward achieved eminence in law and politics. It is enough to say that Lincoln held his own in legal combats with the best of them. In these years he met the man destined to be his political rival, Stephen A. Douglas. In 1841 he formed a new partnership with Stephen T. Logan, and from 1843 to his death was senior partner with William H. Herndon, whom he generally called Billy.

While Lincoln earned and deserved the reputation of being an able lawyer, he was never a learned jurist. His leisure was spent in general reading, history, and political economy. English grammar he had mastered by himself, and he acquired skill in composition by writing out an epitome of each book he read. Thus the young lawyer laboriously schooled himself in thinking and in the art of expressing himself clearly and correctly. In the court-room it was characteristic of him to waste no time on unessentials, but to spend his strength on the one point that was really the heart of the case. Sometimes his pleas were surprisingly short. A good illustration of his terse manner of speaking is his address to the jury in the suit against a man known as "King" Hart for seizing a piece of land from the plaintiff, Lincoln's client. The trial was held at Metamora, Woodford County. During the trial he had little to say and the case was seemingly lost, but he gained a prompt verdict by this brief speech: "We don't believe in kings in this country. We refuted that doctrine almost 100 years ago, but we have a doctrine in this country that we do believe in. It is the Monroe Doctrine. When the kings of Europe attempt to seize land in this hemisphere we apply the Monroe Doctrine to them and they experience a change of heart. Why should we not apply the same doctrine to American kings? This little king is attempting to secure possession of land to which he has no claim, and you, gentlemen of the jury, stand in the same position as the government of the United States; you must protect a weak vassal by applying the Monroe Doctrine to this American king."

Lincoln's law practice grew and he prospered, although many of his clients were poor and fees were sometimes nothing. Success had come, but the death of his sweetheart clouded his life and deepened his melancholy. He married (4 Nov. 1842) Mary Todd, a woman belonging to an influential family of Lexington, Ky. Though a devoted wife, she was not his heart's choice. They had four sons, of whom only the eldest, Robert Todd, is living.

There is truth in the statement that Lincoln was too much of a politician to be a great lawyer. He took more than a passing interest in politics and he was quick to improve opportunities for political advancement. In the election of 1844 he "stumped" the State as the champion of the Whig party, making many speeches on the tariff question, which he had thoroughly studied. He spoke familiarly, mingling argument with anecdote and attempting no flights of oratory. His homely illustrations and striking utterances left a deep impression on his audiences. To enter Congress had long been his ambition, and in 1846 he was elected as representative from the central district of Illinois. He was the only Whig from his State, his six colleagues being Democrats. During his term (1847–9) he held with his party in favoring a protective tariff and in making appropriations for public improvements. Although opposed on principle to the Mexican War, he invariably voted for granting supplies needed by soldiers in the field. In 1858 he said (in debate with Douglas): "Whenever the Democratic party tried to get me to vote that the war had been righteously begun by the President, I would not do it." Already he had pronounced views on the question of slavery. When a member introduced a bill to abolish the slave-trade in the District of Columbia, Lincoln proposed an amendment for the abolition of slavery in the District. He always supported the Wilmot Proviso, voting for it about forty times. He was not a candidate for re-election, but applied for the office of commissioner of lands. This position he failed to get. Instead he was offered the governorship of Oregon, which he declined.

Returning to Springfield, Lincoln resumed the practice of law. Meanwhile he closely watched the signs of the times, foreseeing trouble with the slaveholders because of their manifest intention to encroach upon the soil of the Western Territories. He was deeply stirred by the repeal of the Missouri Compromise in 1854 and entered actively into the canvass of that year. In this memorable campaign he was pitted against Stephen A. Douglas, the "Little Giant." The first debate between the two men was at the State Fair (in October), before a vast multitude. Lincoln's speech on this occasion was regarded the ablest effort of this campaign. Its keynote is in the following passage: "My distinguished friend says it is an insult to the emigrants to Kansas and Nebraska to suppose they are not able to govern themselves. We must not slur over an argument of this kind because it happens to tickle the ear. It must be met and answered. I admit that the emigrant to Kansas and Nebraska is competent to govern himself, but I deny his right to govern any other person without that person's consent." The second meeting of the two champions was in Peoria, and after Lincoln had finished, Douglas (as a hearer remarked) "hadn't much to say." Thereafter the "Little Giant" kept out of the way of his antagonist. Through Lincoln's influence Lyman Trumbull, the candidate of the anti-Nebraska (afterward Republican) party, was elected United States Senator. The same year Lincoln declined the nomination for governor.

In the first Republican National Convention, held at Philadelphia in 1856, Lincoln received 110 votes for the vice-presidency on the ticket with John C. Fremont. When the choice of the convention fell upon Fremont and Dayton as the standard-bearers of the new party, Lincoln entered earnestly into the campaign. His name headed the electoral ticket of Illinois. In those years Lincoln had a great reputation as a campaign speaker, and was a tower of strength to his party. The common people recognized him as a diamond in the rough and he was admired and trusted even by his enemies. His speeches were masterly and held his audiences spellbound. No other orator of the period could equal him in the rare combination of wit, argument, and dramatic power. A contemporary who saw and heard him gave this word-portrait of the man: «At rest, his features, though those of a man of mark, are not such as belong to a handsome man. . . . His head sits well on his shoulders, but beyond that it defies description. . . . It is very large and, phrenologically, well proportioned, betokening power in all its developments. A slightly Roman nose, a wide-cut mouth, and a dark complexion, with the appearance of having been weather-beaten, complete the description.»

The Lincoln-Douglas joint debate of 1858 has become historic. It was more than a contest between two rival candidates for a seat in the United States Senate. The discussion was one in which the whole nation was deeply concerned. It was a critical moment in the long-drawn struggle between North and South over slavery, and public feeling ran high. Lincoln was the strongest man in the Republican party, and Douglas was the recognized leader of the Democratic party. Lincoln threw down the gauntlet in a letter asking Douglas to divide time with him and address the same audiences in the coming canvass. Douglas was reluctant to accept the challenge, but consented to make appointments to debate with Lincoln in the several congressional districts of Illinois. «I agree to your suggestion,» he wrote (30 July 1858), «that we shall alternately open and close the discussion. I will speak at Ottawa one hour, you can reply, occupying an hour and a half, and I will then follow for half an hour. At Freeport, you shall open the discussion and speak one hour; I will follow for an hour and a half, and you can then reply for half an hour. We will alternate in like manner in each successive place.» By this arrangement Douglas had four opening and closing speeches to Lincoln's three, a distinct advantage. They appeared together before tremendous assemblages of people, at Ottawa (21 Aug.), Freeport (27 Aug.), Jonesboro (15 Sept.), Charleston (18 Sept.), Galesburg (7 Oct.), Quincy (13 Oct.), and Alton (15 Oct.). Throughout this celebrated word-duel Lincoln kept his temper and treated his opponent with courtesy and fairness, indulging in no offensive personalities. Douglas was acknowledged to be the ablest debater in Congress, and he never spoke with greater eloquence. He took with the crowd and won much applause, while Lincoln left the deeper impression. He set his hearers to thinking on and discussing the absorbing question of the day. The great difference between him and Douglas was that he took higher moral ground, in holding slavery to be a wrong. He appealed to reason and conscience. The immediate result of these debates was Douglas' election as senator. The far-sighted Lincoln looked ahead to the contest for the presidency, assured that Douglas could not win in 1860.

From this time Lincoln's reputation was national, and he received invitations to speak in other States. In May 1859, the Republican party of Illinois declared Lincoln to be its choice for the presidential nomination in 1860. In September he addressed audiences in Columbus and Cincinnati. In December he spoke at several prominent points in Kansas, making a profound impression. On 27 Feb. 1860 he visited New York and delivered his famous Cooper Union oration, followed by speeches in New England. All his utterances had a bearing on the matter of the extension of slavery. He stood forth as the defender of the right of freedom. The development of events made him the nominee of the party of freedom, when the Republican National Convention met in Chicago (16 May 1860). Hannibal Hamlin, of Maine, was nominated for vice-president. The Democrats were divided, the candidate of the Northern wing of the party being S. A. Douglas, while the pro-slavery section nominated J. C. Breckenridge. Another candidate, John Bell, was put forward by old-time Whigs and others. A combination of circumstances gave Lincoln the victory at the polls. The electoral vote stood 180 for Lincoln, 72 for Breckenridge, 39 for Bell, and 12 for Douglas.

During the four remaining months of Buchanan's administration the storm of secession gathered in the South, and the movement was promoted by the treachery of John B. Floyd, then secretary of war. A number of United States arsenals and forts in the South, with many stands of arms, were seized by State troops. The Confederate Congress, representing South Carolina, Georgia, Alabama, Mississippi, Louisiana, and Florida, met (4 Feb. 1861) at Montgomery, Ala., and chose Jefferson Davis president and Alexander H. Stephens vice-president of the seceded States. On 18 Feb. Davis was inaugurated president. Lincoln watched the course of events in silence until the eve of his departure (11 Feb.) for Washington, when he took leave of his friends and neighbors in an address that was in parts deeply religious. «I go to assume,» he said, «a task more difficult than that which has devolved upon any other man since the days of Washington. He never would have succeeded except for the aid of divine Providence, upon which he at all times relied. I feel that I cannot succeed without the same divine blessing which sustained him; and on the same Almighty Being I place reliance for support.» After visiting Cleveland, Buffalo, New York, and other cities, he passed through Baltimore in disguise, because of a plot to take his life. He reached Washington (23 February) and was inaugurated 4 March. Although an untried man, unknown to the majority of the people outside of his own State, the new President made a favorable impression and inspired confidence in his ability to cope with a serious situation. According to his position, repeatedly stated, the nation could not permanently remain half slave and half free; he expected that sooner or later slavery as an institution would disappear. How and when, he left to be settled by the logic of events. He argued that «no

STATUE OF ABRAHAM LINCOLN, BY SAINT-GAUDENS.

IN LINCOLN PARK, CHICAGO.

State upon its own motion can lawfully get out of the Union." The members of his cabinet were: W. H. Seward, secretary of state; S. P. Chase, secretary of the treasury; Simon Cameron, secretary of war; Gideon Welles, secretary of the navy; G. B. Smith, secretary of the interior; Edward Bates, attorney-general; Montgomery Blair, postmaster-general. In January 1862 Edwin M. Stanton succeeded Cameron, and there were other changes in the cabinet later. Seward, Welles, and Stanton were continued in office in his second administration.

The story of Lincoln's life the next four years in involved in the history of the Civil War. Although the South was busy preparing for war, the people of the North were slow to act, hoping in vain for peace. The lull before the storm lasted several weeks until the firing on Fort Sumter (12 April 1861). War had been begun by the slaveholders of the seceding States, and President Lincoln issued a call (15 April) for 75,000 troops. On 19 April he proclaimed the blockade of all ports of the Confederate States. Volunteers for three years were asked for, and recruits for the regular army and navy. Meanwhile Texas, Virginia, Arkansas, North Carolina, and Tennessee had seceded. Congress met in extra session (4 July). In a memorable message Lincoln referred to the attack on Fort Sumter, saying that "no choice was left but to call out the war-power of the government, and so to resist the force employed for its destruction by force for its preservation." Congress passed measures for the energetic prosecution of the war, and the North was encouraged by several successes in the latter part of the year.

It was, however, a war to save the Union, not to destroy slavery. That was Lincoln's object in 1861. Fugitive slaves coming into the camp of General B. F. Butler were set to work for the Federal government, and a record was kept of them with the view of compensating loyal owners. The Confiscation Act (passed 6 August) affected only the slaves of rebel masters who "required or permitted" them to aid the rebellion. The President disapproved and countermanded General Fremont's remarkable order, freeing the slaves of active rebels. Time proved the wisdom of his policy of going slow in the matter of the emancipation of the slaves. In the Trent affair popular feeling was at first against Lincoln for surrendering Mason and Slidell, the Confederate envoys to Great Britain and France, but his common-sense course, though humiliating to national pride, was approved by the sober second thought of the people.

General Winfield Scott retired (1 Nov. 1861) and was succeeded as commander-in-chief by General George B. McClellan, who had organized and drilled an effective army but was slow to make an advance against the enemy. President and people grew impatient at his long delay and (11 March 1862) he was relieved from chief command, though retaining command of the Department of the Potomac. In the meantime General U. S. Grant, in co-operation with Commodore Foote, captured Forts Henry and Donelson, and the little Monitor had worsted the Merrimac. In the spring and summer the Federal armies were successful at Shiloh, New Orleans, Malvern Hill, and Antietam. The second battle of Bull Run and the battle of Fredericksburg were lost. On the whole, progress had been made, notwithstanding many blunders on the part of Northern generals. The President, not being a military expert, had also made mistakes of judgment in directing the movements of troops. The end of the struggle seemed far off.

On 1 Jan. 1863 the Emancipation Proclamation, freeing the slaves, went into effect. Congress had previously passed a bill abolishing slavery in the District of Columbia, and slavery had been prohibited in the Territories. Volunteers of African descent were enlisted, and on 22 Sept. 1862 the President's preliminary proclamation announced that in territory still in rebellion (1 Jan. 1863) slaves would be declared forever free. The act of emancipation was a military necessity. In his message to Congress (1 Dec. 1862) Lincoln recommended that loyal owners be compensated. Before the Thirty-seventh Congress adjourned (4 March 1863) it empowered the President to suspend the writ of *habeas corpus* and authorized the loan of $300,000,000 for carrying on the War in 1863. The number of Union soldiers on duty was about 700,000, and a call for 300,000 more was issued (17 October). From time to time more treasure and men were forthcoming, as the country gradually realized the magnitude of the conflict. The campaigns of 1863 resulted in great gains to the North, the most notable victories being at Gettysburg (1–3 July), Vicksburg (4 July), and Chattanooga (25 November). The battle of Gettysburg has been called the turning-point of the war. A portion of this field was set apart (19 November) for a national cemetery, and at the dedication Lincoln delivered an address so compact and felicitous in thought and statement that it has become a classic. His thanksgiving proclamation of this year was marked by lofty sentiment and rare beauty of language.

Henceforth the South waged a losing fight. Grant took chief command (10 March 1864) as lieutenant-general and won the hard-fought battles of the Wilderness (5–6 May), Spottsylvania (10 May), and Cold Harbor (3 June). Sherman took Atlanta (2 September) and Savannah (21 December). Decisive blows were struck by Farragut, Sheridan, Thomas, and other Federal commanders. At the National Republican Convention, which met at Chicago in June 1864, Lincoln was renominated on the first ballot; Andrew Johnson, of Tennessee, was nominated vice-president. The overwhelming majority for Lincoln on election day showed conclusively that the people were with him. His second inaugural (4 March 1865) justly ranks as the greatest of his public utterances. The war was all but ended, there being one more battle, Five Forks (1 April), before Lee's surrender at Appomattox (9 April). The rejoicing of the nation was suddenly turned to mourning when the President was shot in Ford's Theatre, Washington, on the evening of 14 April, by John Wilkes Booth. He lingered unconscious and died the next morning. His remains, after lying in state in the Capitol, were borne to Springfield and there buried (4 May). His tragic end as well as his public services had gained him a place in the hearts of his countrymen not second to that of Washington, and in the estimation of many he was and is regarded as the greatest of Americans.

Consult: Lincoln's complete works, edited by Nicolay and Hay (2 vols. 1894); lives by O. J. Victor (1864), L. P. Brockett (1865), H. J. Raymond (1865), J. G. Holland (1866), W. O. Stoddard (1884), I. N. Arnold (1885), Nicolay and Hay (1890), Carl Schurz (1891), J. T. Morse (1893), N. Brooks (1894), N. Hapgood (1899), I. M. Tarbell (1900), W. E. Curtis (1903); also reminiscences by A. T. Rice (1886), F. F. Browne (1886), H. C. Whitney (1892), W. H. Herndon (1892), and W. H. Lamon (1895).

EUGENE PARSONS,
Author and Editor.

Lincoln, Benjamin, American general: b. Hingham, Mass., 24 Jan. 1733; d. there 9 May 1810. Until the age of 40 he followed the calling of a farmer, holding also at different times the offices of magistrate, representative in the provincial legislature, and colonel of militia. He was also an active member of the three provincial congresses of Massachusetts, and as militia officer displayed an efficiency which procured his promotion in 1776 to the rank of major-general. In this capacity he became favorably known to Washington during the siege of Boston. In the beginning of 1777 he joined Washington at Morristown with a new levy of militia, and soon after, at the suggestion of the commander-in-chief, was transferred to the continental service with the rank of major-general. He was sent to join the forces assembled to oppose the progress of Burgoyne and during the battle of Bemis' Heights commanded inside the American works; and was severely wounded in the leg, and compelled for nearly a year to retire from service. In September 1778 he was appointed to the command of the southern army, and upon the arrivel of Count d'Estaing cooperated with the French troops and fleet in the unsuccessful assault on Savannah. From the unwillingness of his allies to continue the siege he was obliged to return to Charleston, where in the spring of 1780 he was besieged by a superior British force under Sir Henry Clinton. After an obstinate defense he was forced in May to capitulate, and retired to Massachusetts on parole. In the spring of the succeeding year he was exchanged, and subsequently participated with credit in the siege of Yorktown. In consideration of his merits and misfortunes Washington appointed him to receive the sword of Cornwallis upon the surrender of the British forces. He held the office of secretary of war 1781–3, and in 1787 commanded the forces which quelled the Shays' Rebellion in western Massachusetts, and in the same year was elected lieutenant-governor of the State, which office he held one year. He was collector of Boston 1789 till about two years before his death. He was a member of the commission which in 1789 formed a treaty with the Creek Indians, and of that which in 1793 unsuccessfully attempted to enter into negotiations with the Indians north of the Ohio. See life by Bowen in Sparks' 'American Biography' (2d series, Vol. XIII., 1847).

Lincoln, Charles Perez, American lawyer: b. Quincy, Mich., 7 Oct. 1843. He was educated at Hillsdale College; entered the Union army at the beginning of the Civil War, and served until mustered out of the service in June 1864. He was admitted to the bar in 1871; was consul at Canton, China, 1875–81, and then began to practise his profession in Washington. He was elected commander of the Department of the Potomac, G. A. R., in 1888; and was 2d deputy commissioner of pensions 1889–93.

Lincoln, David Francis, American hygienist: b. Boston, Mass., 4 Jan. 1841. He was graduated at Harvard University in 1864 and at its medical school in the same year; and served as acting assistant surgeon in the United States navy during part of the Civil War (1864–5). He has published 'Electro-Therapeutics' (1874); 'School and Industrial Hygiene' (1880); 'Hygienic Physiology,' a school text-book (1893); 'Sanity of Mind' (1900), etc.

Lincoln, Jeanie Gould, American novelist: b. Troy, N. Y. She was married in 1877 to N. S. Lincoln of Washington, D. C., and has published 'A Chaplet of Leaves,' verse (1869); 'Marjorie's Quest' (1872); 'Her Washington Season' (1884); 'A Genuine Girl' (1896); 'An Unwilling Maid' (1897); 'A Pretty Tory' (1899).

Lincoln, Mary Johnson Bailey, American household economist: b. South Attleboro, Mass., 8 July 1844. She was educated at Wheaton Seminary, Norton, Mass., in 1864, was married to David A. Lincoln (now dead) in 1865, and since 1879 has been prominent as a lecturer and writer on household matters. She was the first principal of the Boston Cooking School, and is the culinary editor of the 'American Kitchen Magazine.' She has published 'The Boston Cook Book' (1884); 'Peerless Cook Book' (1886); 'Carving and Serving' (1886); 'The Boston School Kitchen Text Book' (1888).

Lincoln, Robert Todd, American diplomatist: b. Springfield, Ill., 1 Aug. 1843. He is the eldest son of Abraham Lincoln, and was graduated at Harvard College in 1864. He entered the Harvard Law School, but left it for the army and served on the staff of General Grant as captain. On the close of the War he resumed his legal studies and was admitted to the Chicago bar in 1867. He was secretary of war 1881–85; and although mentioned as a candidate for the presidency in the last-named year declined to allow his name to be placed in opposition to that of President Arthur. He was minister to Great Britain in 1889–93, and became president of the Pullman Palace Car Company in 1897.

Lincoln, England, an episcopal city and civic county, the capital of Lincolnshire, on the Witham, at the junction of several railroads, 120 miles north of London. It dates from pre-Roman times, was the Roman 'Lindum Colonia,' and at the time of the Norman Conquest, a fortified town of considerable importance. The principal edifice is the cathedral, crowning a height, on the summit and slope of which the town is built, 200 feet above the river. The cathedral dates from the 11th century and is chiefly early English but with interesting transitional phases, which are also to be seen in the various parish churches, the majority of which have undergone modern restoration. Other prominent buildings are the mediæval guildhall, the remains of the Norman castle, the ancient episcopal palace, the fine old Roman gateway spanning Hermin street, a theological college, school of art, and several benevolent institutions. The manufacture of machinery and agricultural implements forms the chief branch of industry. Pop. (1901) 48,784.

Lincoln, Ill., city, county-seat of Logan County; on the Illinois Central, the Peoria, D. & E., and the Chicago & A. R.R.'s; about 28 miles northeast of Springfield and 135 miles southwest of Chicago. The place was settled in 1835 and incorporated in 1865. It is situated in an agricultural region, and extensive deposits of coal are in the vicinity. The chief manufactures are cellulose, horse-collars, flour, mattresses, caskets and coffins, excelsior. The farm and dairy products and the coal mines contribute to the wealth of the city. Lincoln is the seat of the State Institution for Feeble-Minded Children; and of the Lincoln University, opened in 1865 under the auspices of the Cumberland Presbyterians. It has a free public library, the building a gift from Andrew Carnegie; a Deaconess Home and Hospital, Saint Clara's Hospital and Odd Fellows' Orphans' Home. Pop. 1890) 6,725; (1900) 8,962.

Lincoln, Kan., city and county-seat of Lincoln County; on the Saline River, and on the Union Pacific railroad; about 155 miles west of Topeka and 105 miles west of Wichita. It is in an agricultural region in which are raised large quantities of wheat and corn and a number of cattle. Limestone quarries in the vicinity contribute to the industrial wealth of the city. The industries and trade are connected chiefly with farm and dairy products and with livestock. Pop. (1900) 1,262.

Lincoln, Neb., city, capital of the State and county-seat of Lancaster County; on the Chicago, B. & Q., the Chicago, R. I. & P., the Union P., the Missouri P., the Chicago & N. W., and other railroads; about 55 miles west of the Missouri River, and about the same distance north of the Kansas State line. The city, located in the midst of a fertile agricultural district, in the Salt Creek basin, at an elevation of 1,045 feet, rises gradually to the south and east, leaving the creek to the west and north. The location of the capital at this point was due in part to the numerous radiating branches of Salt Creek, but more especially to the saline springs which in early days furnished salt to the Indians and the buffalo, and later to the overland emigrants, and the early settlers of Nebraska. The site selected by a commission, 14 Aug. 1867, was surveyed the same fall; and, from the proceeds of lots sold at auction, the first capitol, the insane asylum, and the original university building were erected and completed by 1871.

Lincoln bids fair to fulfil the prediction of its founders by becoming a great railroad centre, as it already has 12 radiating lines, owned by five of the great corporations that now dominate in the West as already mentioned. With one exception each railroad has its own station and yard. The Chicago, B. & Q. repair and construction shops, employing 500 skilled mechanics, are located at Havelock, a suburb of Lincoln. Thirty-eight passenger trains enter, and the same number leave, Lincoln every 24 hours. Lincoln's railroad connections make it the great convention centre of the State.

The Name.— The names of Lincoln and Douglas are strangely associated in Nebraska history. The site selected for the capital in 1867 and named Lincoln is practically identical with the one proposed 10 years earlier to have been called Douglas. Thus the author of the law organizing the Territory of Nebraska failed to have his name perpetuated in its capital, but yielded that honor to his great rival.

Internal Appearance.— Lincoln is laid out, like most western cities, on the checker-board plan, with streets 100 or 120 feet in width. These broad streets are in general lined with trees and flanked with large lawns. The city contains an unusually large number of comfortable homes, excelling in this respect its development in business blocks. About 20 miles of the streets are paved — 12.2 miles with brick, 3 miles with asphalt, and 5 miles with nearly worn-out cedar blocks. The waterworks are owned by the city; 50 miles of mains distribute the water from two deep wells, from which about 1,500,000 gallons of the very purest water are pumped per day. There are 40 miles of sanitary and 6 miles of storm-water sewers in the city.

The Lincoln Traction Company operates 37 miles of tracks, furnishes heat through conduits to the central section of the city, electric power and lights to public and private consumers, employs 100 men, and is capitalized at $1,000,000. The following statistics suggest the character of the Lincoln Gas and Electric Light Company: 260,000 feet gas mains, 262,000 feet electric wire lines, 200 employees, and a capitalization of $2,250,000. There are two telephone systems: one — "the Nebraska," in operation with 3,500 phones in use, and 140 employees; the other — "The Lincoln" (automatic), begins service 1 Jan. 1904, with 3,000 subscribers, and an investment of $400,000. The city uses for municipal lighting 314 gas lights and 27 electric arcs.

Industries.— Manufacturing is of course yet in its infancy, but the total output per year will approximate $5,000,000; in 1900 by United States census, $4,105,951. A few industries are however well established. The making of leather goods, such as horse-collars, harness, etc., is not equaled west of the Missouri River. The production of oils and paints, mattresses and bed-springs, overalls and shirts, is large and developing rapidly. A large butter and creamery station is located at Lincoln. It receives cream from some 200 sub-stations, and makes two car-loads of butter per day. The jobbing and wholesaling industry is well under way, and in a few lines has reached creditable proportions. Lincoln, with 22 branch houses, is the largest distributing centre for farm machinery in the West. The jobbers in butter and eggs, fruits and groceries, are doing a good business. There is also a fair beginning in hats, hardware, drugs, furniture, coffins, paper, sash and doors, iron for plumbing, jewelry, crockery and queensware, lumber and coal. Two fair-sized grain elevators have recently been constructed. Total estimated business of jobbers and wholesalers for 1902, $18,000,000. Lincoln is also becoming quite a centre for insurance business. Two strong life insurance companies, two fire insurance, three fraternal companies, including the Modern Woodmen with headquarters here, and several mutual companies indicate the scope of development.

The banking capital is small for a city of its size: five commercial banks, capital $500,000, surplus $180,000, and deposits $5,115,000, and one savings bank, deposits $140,000, supply the business community.

Public Institutions.— The State fair grounds, the penitentiary, one of the insane asylums, and the Home of the Friendless are located in or near the city. The other public buildings are: the Capitol, costing $750,000; the county courthouse, $200,000; the United States post-office, $150,000. The post-office becomes the city-hall, at a cost to the city of $50,000, on the completion of the new Federal building for which Congress has appropriated $350,000. The Carnegie library, $75,000 and the grounds; 19 public school houses that cost from $15,000 to $50,000 each. Saint Elizabeth's Hospital, $150,000, the Catholic Orphans' Home, and the Tabitha Home,— private institutions,—aid in caring for the sick and unfortunate. The mineral waters are used in several private sanitariums.

Amusements.— Outdoor — one small public park, the university athletic field, the Epworth Assembly park, and the «Country Club» grounds afford meagre facilities. The city supports one theatre and an auditorium.

Government.— The charter, granted by the legislature, contains no marked elements of interest. A mayor with large powers, a council of one house, and an excise board of three members, with the usual executive officials, control the city's public affairs. Taxes are 10 mills on the dollar of assessment, the last valuation showing the wealth of the city to be $22,380,834. The total bonded debt is $1,169,100, excluding about $220,000 of paving bonds payable by abutting private property.

Education.— Lincoln is at present rather an educational than a business centre. Its population is largely American, representative of the North and Middle West. Neither great wealth nor extreme poverty is found. The public schools are efficient, and enroll 6,210 students. The high school employs 36 teachers, and registers 1,090 pupils, a number claimed to be unsurpassed by any city of its size. There are three musical conservatories, three universities, three colleges, one preparatory school and two parochial high schools, which tend to give a distinct educational tone to the public as well as private life of the city. The largest and most important educational institution is that of the State University and Agricultural College (q.v.). The campus contains 12 acres, and 8 buildings; there are two more under construction at cost of $110,000. The farm of 320 acres has barns, dairy buildings, recitation halls, besides new buildings in course of construction, at a cost of $100,000. (The legislature of 1903 appropriated in all $824,000 for the biennium.) The calendar of 1902–3 shows 2,560 students in attendance. The Wesleyan University (q.v.), situated in University Place, a suburb of Lincoln, ranks next in importance, and enrolled 1902–3, 650 students. A third building is in course of construction. Union College (q.v.), a Seventh Day Adventist school, with three buildings and over 400 students, and Cotner University (q.v.), controlled by the Christian Church, with one good building and 200 students, are prospering. The conservatories and other schools add several hundred more students to this list. The public libraries are: the University, 60,000 volumes; the State, 40,000; the City, 15,000; and the high school, 2,500. Lincoln's educational output is indicated in the second-class mail matter sent through its post-office. One per cent of all the second class mail matter of the United States originates in Lincoln. It requires 75,000 mail sacks to carry this matter for one year. In 1902 4,894,835 pounds of second class mail matter left the city. In all 66 publications are entered, one with 750,000 circulation, two others with about 150,000 each, and a fourth with over 100,000.

Religion.— There are 30 church buildings in Lincoln. The following organizations are represented: Methodists, 3 organizations; Congregational, 8; Presbyterian, 3; Christian, Baptists, Lutheran, Episcopal, Catholic, 2 each; United Presbyterian, Jews, Christian Science, Unitarian, Reformed, Swedish, Free-will Baptists, and several minor denominations, 1 each. There are 3 colored churches. The leading denominations all have exceptionally fine buildings.

Population.— Lincoln's growth has been somewhat irregular, yet counting decades gradual, Lincoln in 1867 — then called Lancaster — contained only one store and some half-dozen dwellings. By 1870 it contained 2,441 people. In 1880, 13,004. The padded census of 1890 gave the city 55,154 population — a number too large by at least 20,000. In 1900 it had 40,169, and has grown rapidly since.

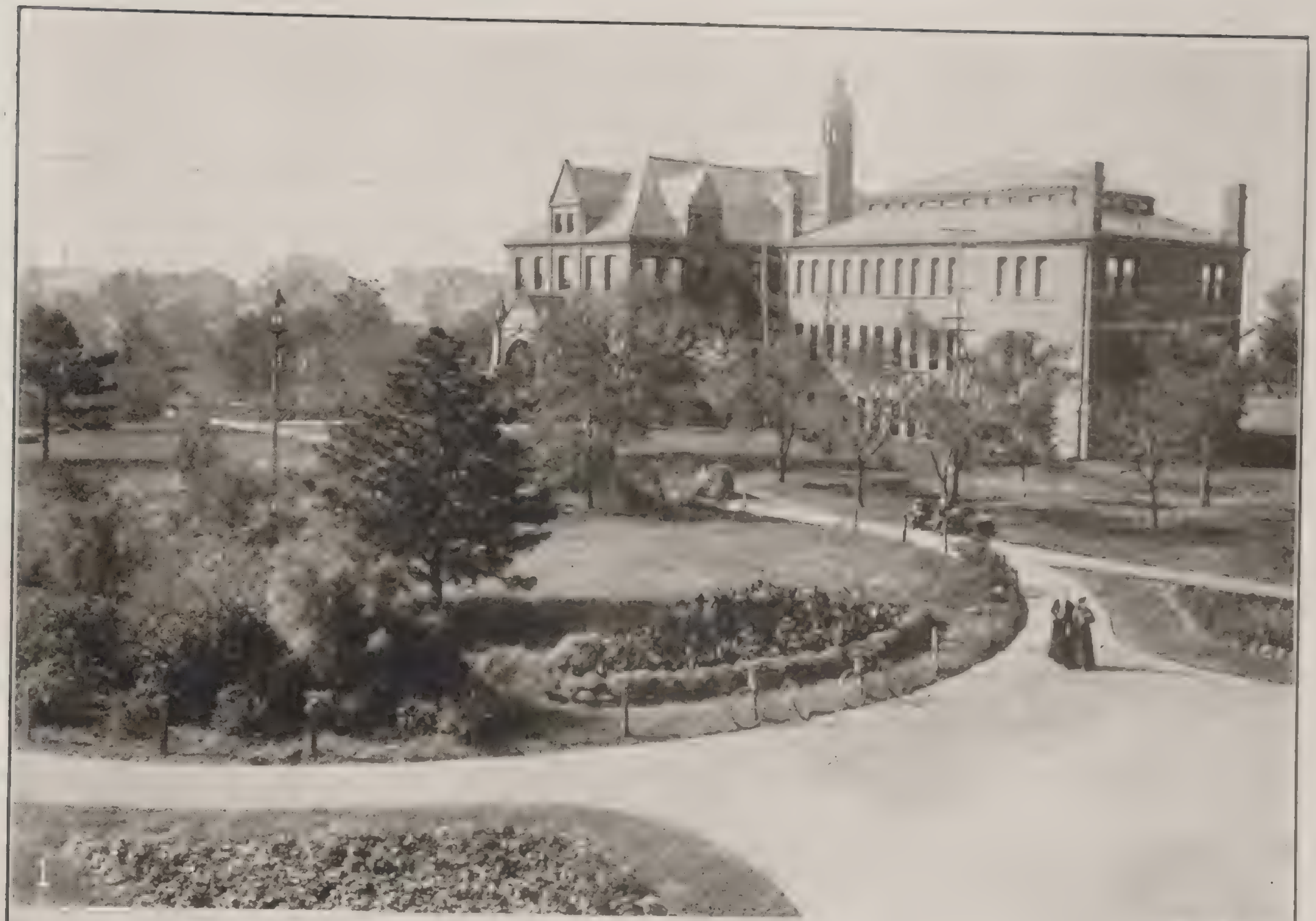
HOWARD W. CALDWELL,
Of the University of Nebraska.

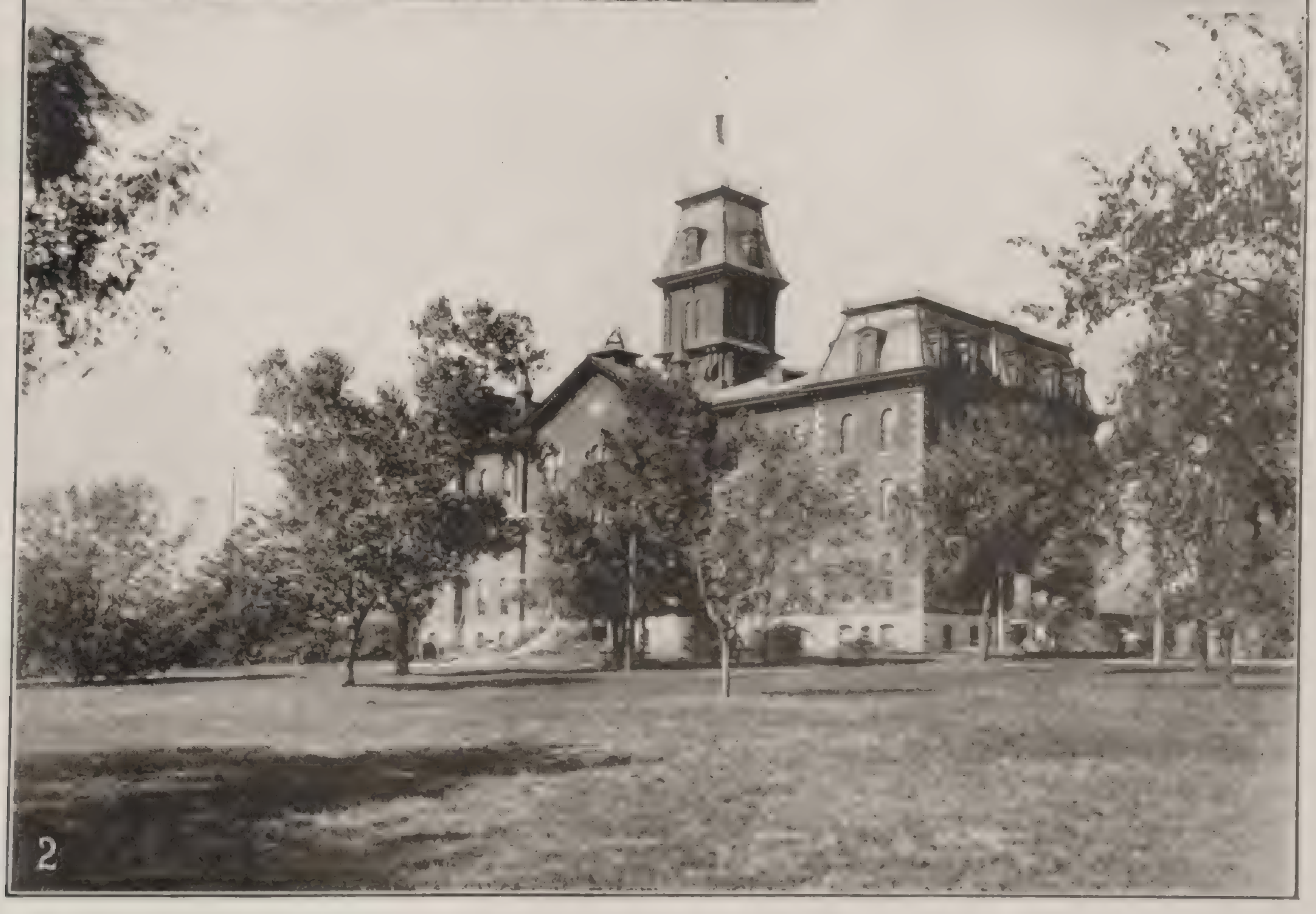
Lincoln, Mount, one of the peaks of the Rocky Mountains; about 8 miles northeast of Leadville. Its height is 14,297 feet. A meteorological station is on the summit, and another on the lower level (13,500 feet). A railroad has been constructed to the silver-mining works at the summit.

Lincoln College, established at Lincoln, Ill., in 1866, under the auspices of the Cumberland Presbyterians. It has a preparatory department, and the college courses lead to the degrees of A. B., B. S., and B. L. In 1903 there were connected with the college 12 professors and instructors and 200 students. The library had about 3,500 volumes; the grounds, buildings, and apparatus were valued at nearly $80,000; the productive funds were $65,000; and the income from productive funds, tuition, and other fees, amounted to about $6,000.

Lincoln Memorial University, a coeducational institution, at Cumberland Gap, in Claiborne County, Tenn. The university was chartered in 1897, but was not opened until the buildings were in such a condition as to accommodate pupils. The situation of Cumberland Gap (q.v.) makes it easy of access for students from Tennessee, Virginia, and Kentucky, and it is not far distant from West Virginia and North Carolina. Prior to the opening of this school there was within a radius of 50 miles fully 250,000 people without any well-equipped college, and except in a few places, no well equipped elementary school. The plan of the work is to maintain an institution which «shall promote research, investigation, and experiment for the ex-

LINCOLN.





1. Main Building, University of Nebraska. 2. Library, University of Nebraska.

tension and application of knowledge, and shall impart such instruction in the various branches of education as will tend to promote good society and good citizenship, and the ability to develop the abundant resources of the Southern States.» The plan of erecting such a school was first started by Gen. O. O. Howard, of Burlington, Vt., who desired to see a school established some place easy of access for the mountaineers of this locality, because of the great interest which Abraham Lincoln had in the people of this section. The institution comprises three departments: the academic, the normal, and the industrial. There are several grades in the academic department. In the normal department teachers are trained; and in the industrial department, agriculture, carpentry, masonry, typesetting, and other trades, are taught to the boys and young men, and domestic science to the girls and young women.

The university owns 600 acres, and the buildings cost $150,000. They include class rooms, saw-mills, shingle-mills, shops, etc. Andrew Carnegie contributed $13,800. The present endowment fund is $200,000. By working for the school in some of the industrial departments, the students can earn their tuition and board, or at least a part of the cost of their education.

Lincrusta-Walton. See LINOLEUM.

Lind, Jenny (MADAME GOLDSCHMIDT, gōld'-shmĭt), Swedish singer: b. Stockholm 6 Oct. 1820; d. Malvern, England, 2 Nov. 1887. In very early childhood she displayed the faculty of tune and of musical memory in such degree as to attract observation, and at 9 her voice was considered so remarkable that she was admitted to the Stockholm Conservatory of Music as a pupil of Crœlius and Berg. In spite of an apparent lack of individual attractions, which led the manager of the court theatre at first to demur, when he had heard her sing she was entered at the vocal school there, made rapid progress, and up to the age of 12 was frequently heard on the local stage. After years of thorough study and voice-building, in 1838 she made her debut, with great success, as Agathe in ‹Der Freischütz.› As operatic star in Stockholm and other cities in Sweden and Norway, she extended her fame, and in 1841 studied for the greater part of the year in Paris under Manuel Garcia. She went to Berlin in 1844, studied German, and in Meyerbeer's ‹Feldlager in Schlesien› appeared as Vielka. During the next year she made a Continental tour which established her in a position of supremacy, her great successes being won in Dresden, Leipsic, etc., and finally in Vienna. In 1847 she made her first appearance in England, which was followed by a succession of unprecedented triumphs. Her tour of the United States (1850–2) brought her not only fresh honors, but also large financial returns, and is remembered to this day by many who shared in the material and spiritual benefits which her noble womanhood and artistic genius conferred. In 1852 she was married in Boston to Otto Goldschmidt (q.v.), then conducting the Bach choir, and virtually retired from her profession, though subsequently reappearing on special occasions. She returned to Europe; at length settled in London; and made her last public appearance at Düsseldorf in 1870. In 1894 a bust of her was unveiled in Westminster Abbey. Consult: Rockstro and Holland, ‹Jenny Lind the Artist› (1891); Rockstro and Goldschmidt, ‹Jenny Lind, Her Vocal Art and Culture› (1894).

Lindau, lĭn'dow, **Paul,** German author: b. Magdeburg 3 June 1839. He studied philosophy and literature at Halle, Paris, and elsewhere, in 1872 established ‹Die Gegenwart,› a weekly literary and political journal, and in 1878 ‹Nord und Süd,› a monthly. Among his earliest works were pleasantly written books of travel, ‹Venice› (1864), ‹Paris› (1865), and later ‹The New World› (1884). But he is better known as a playwright and novelist, his subjects being taken almost exclusively from modern life. The most successful of his plays was possibly ‹Maria and Magdalena.› His novels include: ‹Herr und Frau Bewer›; ‹Toggenburg› (1883); ‹Mayo,› a romance cycle; ‹Berlin› (1886–90); and ‹The Brothers› (1894). In 1895 he became manager of the court theatre at Meiningen.

Lin'den, or **Basswood,** a genus of trees (*Tilia*) of the order *Tiliaceæ,* ordinarily known as basswoods in the United States. The species, of which there are about a dozen, are natives of the northern temperate zone, and more or less resemble each other in general appearance. They are characterized by alternate, usually heart-shaped, leaves with toothed edges; small yellowish, often fragrant, flowers in cymes; the peduncles of which are attached to membranous bracts; and globular nut-like fruits about the size of peas. The trees, in many horticultural varieties, are widely planted in Europe, where they are known to the English as limes, and have been introduced into America for their pleasing form and dense shade, and to some extent also because of their abundant yield of nectar, from which bees make one of the finest qualities of honey. They are also planted for their timber, usually called «whitewood,» which is highly valued on account of its whiteness, lightness, toughness, and durability, and is used for turned and carved ornaments, and for making honey-boxes and other light articles the whiteness of which is desired to enhance the appearance of the goods they contain; also extensively used for carriage bodies, cabinet work, and interior parts of furniture. It makes a high grade of charcoal, used by druggists, gunpowder-makers, and artists. The fibrous inner bark is made into mats and cordage, and strips of it are widely used for tying plants, etc. When stock-food is scarce in early spring the twigs and budding shoots are often fed to farm animals, being very mucilaginous and nutritive, though liable, it is said, to injure the quality of butter made from the milk of cows fed upon them. The best-known species are the American basswood (*T. americana*), a stately tree often exceeding 75 feet in height and 10 feet in girth. Its range extends from New Brunswick to Minnesota and southward to the elevated lands of Georgia and Texas. In the more thickly settled parts of this region it is becoming scarce as a timber tree because of the great demand for its wood. In America it is the most frequently planted species. Owing to confusion in nomenclature, the name «European linden» is applied to at least three species, *T. platyphyllos, T. vulgaris,* and *T. ulmi-*

folia. The first is most widely planted in America. The last is very late in blossoming and should be more extensively cultivated in order to extend the season of honey production. Lindens all thrive best upon good land. They are easily propagated from seeds, layers, and grafts, and by «stooling,» the small trees being cut down close to the ground, the sprouts covered with soil, and when rooted removed to nursery rows.

In some countries the fibrous inner bark of the linden is separated by soaking in water, and manufactured into fishing-nets, mats, shoes, and clothing; and the cordage made from it is said to be remarkably strong and elastic. (See BAST.) The wood is sometimes cut into thin strips and used in the manufacture of chip hats, which resemble those made of straw.

Lindley, lĭnd'lĭ, **John,** English botanist and horticulturist: b. Catton, near Norwich (Norfolk), 5 Feb. 1799; d. Acton 1 Nov. 1865. He became Belgian agent for a London seed merchant in 1815, later took up botanical studies, published in 1819 a translation of Richard's ‹Analyse du Fruit,› and was appointed assistant librarian to Sir Joseph Banks at London. Later, he was successively made assistant secretary to the Horticultural Society (1822–41), professor of botany in the University of London (1829–60), and lecturer in botany to the Apothecaries' Company (1836–53). In 1828 he was elected to the Royal Society, whose royal medal he received in 1857, and in 1853 became a corresponding member of the Institut de France. He was appointed editor of the ‹Botanical Register› in 1826, of the ‹Journal of the Horticultural Society› in 1846; and in 1841 was a founder of the ‹Gardeners' Chronicle,› whose chief editor he was until his death. He was an able lecturer, a constant opponent of the Linnæan as contrasted with the natural system of classification, and the author of several valuable works such as: ‹The Theory and Practice of Horticulture› (1842), and ‹The Vegetable Kingdom› (1846). He also wrote almost the entire descriptive portion of London's ‹Encyclopædia of Plants› (1822–9).

Lindsay, lĭn'zā, **Anna Robertson Brown,** American author: b. Washington 20 Feb. 1864. She was graduated from Wellesley in 1883, subsequently studied mediæval literature at Oxford University, and was married to S. M. Lindsay (q.v.) in 1896. She has published: ‹What is Worth While?› (1893); ‹The Victory of Our Faith› (1895); ‹Culture and Reform› (1896); ‹Giving What We Have› (1897); ‹What Good Does Wishing Do?› (1898); ‹The Warriors› (1903).

Lindsay, or **Lyndsay,** lĭnd'zā, SIR **David,** Scottish poet, usually described as «of the Mount» (an estate near Cupar in Fife): b. about 1490; d. 1555. He studied in the University of St. Andrews, and in 1509 became page of honor to James V., then an infant. In 1528 he produced his ‹Dreme,› and in the following year presented his ‹Complaynt› to the king. In 1530 he was inaugurated Lyon king-at-arms, and knighted, and in 1531 sent on a mission to Charles V. He published a drama entitled ‹A Satyre of the Three Estatis,› played at court in 1539, and followed in 1536 by his ‹Answer to the King's Flyting›; and by the ‹History and Testament of Squire Meldrum› (1538). His last work, ‹The Monarchie,› was finished in 1553. For more than two centuries Lindsay was the most popular poet in Scotland. His satirical attacks on the clergy in some degree paved the way for the Reformation.

Lindsay, Harry. See HUDSON, H. L.

Lindsay, Samuel McCune, American political economist and educator: b. Pittsburg, Pa., 10 May 1869. He was graduated from the University of Pennsylvania in 1889, and took post-graduate courses there and abroad. After his return to the United States he was appointed assistant professor of sociology at the University of Pennsylvania; he has also been editor of the department of sociological notes in the ‹Annals of the American Academy of Political and Social Science› (1895–1901), and associate editor of the ‹Annals.› In 1892 he was special agent of the United States Senate Finance Committee to report on wholesale prices in Europe; in 1899–1900 was expert of the Industrial Commission to report on railroad labor; and in 1902 was appointed commissioner of education to Porto Rico, being granted leave of absence from the University of Pennsylvania. He has written ‹Railway Labor in the United States› (1902); ‹Social Work at the Krupp Foundries›; ‹The Study and Teaching of Sociology›; ‹The Unit of Investigation in Sociology›; and other articles in the ‹Annals of the Academy of Political and Social Science›; ‹Report on Education in Porto Rico›; and other monographs.

Lindsay, William, American lawyer: b. Rockbridge County, Va., 4 Sept. 1835. He was educated in his native State; removed in 1854 to Clinton, Hickman County, Ky., where, after teaching school and studying law, he was admitted to the bar in 1858. Throughout the Civil War he served in the Confederate army, rising to the rank of captain and acting as a staff officer, and after the war returned to Clinton and resumed the practice of law. In 1867 he was elected State senator as a Democrat; in 1870 took his seat on the bench of the supreme court of Kentucky; and was chief justice of the State 1876–8, declining a renomination and returning to the practice of law at Frankfort. In 1889 he again entered the State senate; in 1893 served as commissioner of the World's Columbian Exposition; in the same year was elected to the United States Senate for the unexpired term of John G. Carlisle, who had resigned to become secretary of the treasury; and in 1894 he was re-elected, but differed from his party on the money question, and toward the end of his term usually voted with the Republicans. After leaving the Senate he went to New York city and once more resumed the practice of law. In 1901 he was appointed by President McKinley a commissioner for the Louisiana Purchase Exposition at Saint Louis.

Lindsay, Canada, the capital of Victoria County, Ontario, a town and port of entry on the navigable Scugog River, and on the Grand Trunk railway, 57 miles northeast of Toronto. The town is well built, chiefly of brick, has a large trade in lumber and grain, and is the seat of a United States consular agent. It has lumber- and flour-mills, foundries, tanneries, breweries, and manufactories of carriages, agricultural implements, sash, doors, and blinds, woolens, boots and shoes, woodenware, etc. Lindsay has fine county buildings, schools, and churches, banks, and weekly newspapers. Pop. (1901) 7,003.

Lindsey, lĭn'zĭ, **William,** American merchant and author: b. Fall River, Mass., 12 Aug. 1858. He has published ‘Apples of Istakhar’ (1895), a volume of poems; and ‘Cinder-Path Tales’ (1896), stories of athletic sports.

Lindsborg, lĭnz'bôrg, Kan., city in McPherson County; on the Smoky Hill River, and on the Missouri Pacific and the Union Pacific R.R.'s; about 115 miles southwest of Topeka, and 64 miles north by west of Wichita. It is in an agricultural region, and its trade is chiefly in live-stock, grain, broom-corn, flour, and dairy products. It has large brick and lumber yards and grain elevators. An important industrial establishment is the Bethany Book Concern, the Western publishing institution for Lutheran literature. There are a number of Swedish Lutherans in Lindsborg. It is the seat of Bethany College, opened in 1881 under the auspices of the Lutherans. Among its departments, that of music is well known for its annual concerts, when the students render the ‘Messiah.’ Pop. (1900) 1,279.

Lindsley, lĭnz'lĭ, **John Berrien,** American educator: b. Princeton, N. J., 24 Oct. 1822; d. 7 Dec. 1897. He was graduated from the University of Nashville in 1839 and received his degree in medicine at the University of Pennsylvania. Studying theology, he was ordained to the Presbyterian ministry in 1846 and preached for several years. He became professor of chemistry in the University of Nashville in 1850, and was chancellor of the institution 1853–73. He was likewise professor of chemistry in the University of Tennessee 1880–97, and of materia medica in the Tennessee College of Pharmacy 1896–7. He published ‘Our Ruin: its Causes and Cure’ (1868); ‘The Military Annals of Tennessee’ (1886).

Line, Mathematical. In geometry, a line may be defined (1) as the locus described by a moving point; (2) as a magnitude which, at each of its points, has extension in one direction only; (3) as the boundary which separates two contiguous parts of a surface; or (4) as the intersection of two surfaces, or of a surface with itself. Each of these definitions has its own merits, and geometers use one or another of them, according to convenience.

In physics, «lines» of various kinds are constantly referred to, the context usually indicating the sense in which the word is used. A «line of force,» in a field of electric or magnetic force, for example, is a line whose direction, at every point, coincides with the direction of the force at that point. In the mechanical theory of heat (see THERMODYNAMICS) the state of a homogeneous body, with respect to its temperature, to the pressure exerted upon it, and to the volume occupied by a unit of its mass, is often represented by means of a diagram in which two of these quantities are taken as abscissa and ordinate, respectively. In such a diagram an «isothermal» line is a line along which the temperature of the body remains constant; an «adiabatic» (or «isentropic») line is one which is so drawn that if the body should pass through the succession of states that the line represents it would not at any moment either absorb or emit heat. An «isopiestic» (or «isobaric») line is a line along which the pressure to which the body is exposed remains constant. An «isometric» line is one along which the volume of the body remains constant.

In steam engineering the various parts of the diagram that is drawn by an indicator are designated as «lines,» although they are but the several parts of a single line. Thus the «admission line» is that part of the diagram which the indicator draws while steam is being admitted to the cylinder; the «expansion line» is that part drawn while the steam in the cylinder is expanding; the «exhaust line» is that part drawn while the cylinder is in free communication with the atmosphere (or with the condenser); and the «compression line» is that part which the indicator draws after the exhaust valve has closed, and before the admission valve from the boiler opens again. The «atmospheric line» upon such a diagram is the line that the indicator draws when disconnected from the engine, and in free communication with the atmosphere.

Line of Beauty, in art, an ideal line frequently represented in the form of a very slender elongated letter S.

Linen, a cloth of very extensive use, made of flax, and differing from cloths made of hemp only in fineness. Hemp is in part now used in manufacturing cloths which are called linen. In common linen the warp and woof cross each other at right angles; if figures are woven in it is called damask (q.v.). The species of goods which come under the denomination of linen are table-cloths, plain and damasked, cambric, lawn, shirting, sheeting, towels, etc. Linen cloth, or cloth woven of combinations of cotton or other textile fabrics with linen, is printed in the same manner as calico. Fancy cloths are also made by weaving with yarns dyed of various colors, and sometimes with printed yarns. Linen is extensively manufactured in England, Scotland, and Ireland. It is also a staple in various parts of Europe.

The beauty of linen consists in the evenness of the thread, its fineness and density. The last of these qualities is sometimes produced by subjecting it to rolling, hence linen with a round thread is preferred to that with a flat thread. The warp or woof is not unfrequently made of cotton yarn, which renders such stuff, called union cloth, less durable. In a historical view linen is interesting from its use by several nations in their religious ceremonies. The Egyptian and Jewish priests wore it at all their religious ceremonies, hence the former are styled by Ovid and Juvenal, «linen-wearing.» Linen was an article of export from Egypt in the time of Herodotus. From Egypt the use and manufacture of linen probably passed to the Greeks and Romans, but the use of linen did not become common at Rome till late in the history of the republic. The Roman priests wore linen garments at that time. Among the Greeks a linen tunic was a regular part of the male costume as early as the Homer period. Linen was also used as a material for writing, as shown by the Roman *libri lintei,* «linen books.» The mummy bandages, covered with hieroglyphics, are also proofs of this use of linen. In the Middle Ages linen and woolen cloth formed the chief materials for dress, and fine linen was held in very high estimation. Germany and Brabant then carried linen manufactures to the greatest perfection.

The weaving of linen has been practised in Great Britain for a very long period, beginning with the Anglo-Saxon times, but though the manufacture has been much extended since the introduction of machinery, its expansion is limited by the greater cheapness and convenience in many respects of cotton. The English linen industry owed much to Flemish weavers, who settled in England at various times from the 11th or 12th century onward. The chief seat of the English linen manufacture is Leeds and its neighborhood, where spinning is carried on on a very extensive scale. A single room in one of the factories at Leeds is said to cover two acres. Ireland and Scotland, however, are much larger manufacturers of linen than England.

Linen was woven in Ireland as early as the 11th century. The manufacture was improved by the refugees who left France on the revocation of the Edict of Nantes, and it was patronized by the Duke of Ormonde. The manufacture never really flourished till it was carried on in mills, and by the aid of machinery. The value of linen goods now exported from Ireland to Great Britain is estimated at about $50,000,000 annually.

Dundee is the seat of the Scotch linen manufacture, and its progress there has been extraordinary. The manufacture appears to have been introduced into Dundee some time about the beginning of the 18th century. In 1745 only 74 tons of flax were imported without any hemp, the shipments of linen cloth during the same year being estimated at about 1,000,000 yards. In 1791 the imports of flax amounted to 2,444 tons, and those of hemp to 299 tons; the exports that year being 7,842,000 yards linen, 280,000 yards sail-cloth, and 65,000 yards bagging. From this period the trade began to extend itself gradually, though not rapidly.

The introduction of machinery in the linen manufacture is of recent origin. It followed the adaptation of machinery to the manufacture of cotton, but as there were some special difficulties to be overcome, an interval took place between the invention of the various cotton machines and their adaptation to the linen manufacture. The machinery used both in spinning and weaving linen is in general, however, the same as that used for cotton. See TEXTILE INDUSTRY, AMERICAN.

Lines, Edward Stevens, American Protestant Episcopal bishop: b. Naugatuck, Conn., 23 Nov. 1845. He was graduated from Yale in 1872 and after two years spent in the Berkeley Theological School, at Middletown, Conn., was ordained in 1874. He was rector of Christ Church, West Haven, Conn., 1874–9 and of St. Paul's Church, New Haven, 1879–1903. In November 1903, he was consecrated bishop of the diocese of Newark, which comprises the northern half of New Jersey.

Lines of Force. See FORCE.

Ling, a sea-fish (*Lota molva*), resembling a pike in shape and 3 to 4 feet long, but a member of the cod family (*Gadidæ*). It abounds around the British coasts; its fishery approaches in importance and resembles in methods that for cod. Great quantities are preserved by drying, salting, etc.; and an excellent oil is extracted from the liver.

The name is also given to the eel-pout or burbot, another species (*L. vulgaris*) so-called not only in Europe but in northern New York. See Burbot.

Linga, lĭng'ga̤, an emblem commonly used in the sectarian worship of the Hindus. It represents the male or generative power of nature. Originally of an ideal and mythical nature, it has degenerated into practices of the grossest description; thus taking the same course as the similar worship of the Chaldæans, Greeks, and other nations. The manner in which the linga is represented is generally inoffensive — a pillar of stone or other cylindrical objects being held as appropriate symbols of the generative power of Siva. Its counterpart is «Yoni,» or the symbol of female nature productive. See also SIVA.

Lingard, lĭng'gärd, **John,** English historian: b. Winchester 5 Feb. 1771; d. Hornby, Lancashire, 17 July 1851. He was educated for the Roman Catholic priesthood at Douay, was ordained in 1795 and was first stationed at Newcastle-upon-Tyne. Here he published in 1805 ‹Catholic Loyalty Vindicated.› His next work of importance was ‹Antiquities of the Anglo-Saxon Church.› His greatest work, the ‹History of England from the Invasion of the Romans to the Year 1688,› printed in 8 vols. (1819–30), reached a fifth edition in 1850, when it appeared in 10 vols. It has since been regarded as a valuable work of reference by historians of all parties. It possesses for Protestant historians the valuable quality of giving the views on controverted points of an able and well-informed Catholic writer. The 1850 edition of the history was elaborately revised by the author. Apart from the sympathies of the writer, the work is universally regarded as one of high authority. He refused a cardinal's hat offered him by the pope, but accepted a pension of £300 a year from the queen.

Lingayén, lĭn-gä-yān', Philippines, a pueblo and the capital of the province of Pangasinán, Luzon, situated on an island of the delta of the Agno River, formed by one of the outlets of the river and the Gulf of Lingayén. It has a fine parish church and the buildings generally are well constructed, many being of stone. The Manila and Dagupan railroad has a station within eight miles at Dagupan, and Lingayén is the converging point of several important highways and has frequent communication by water with Manila. It has therefore an important trade. Pop. 18,900.

Lingayén, Gulf of, an arm of the China Sea indenting the western coast of the island of Luzon, Philippines, north of Manila Bay. The width of the entrance from San Fernando Point to Santiago Island is 20 miles. The east coast is mountainous; the west coast is generally level and less elevated and is fringed by low wooded islands, the channels between which are navigable for native coasters. Typhoons are prevalent in September and October.

Lin'gula. See BRACHIOPODS.

Liniers y Bremont, Santiago Antonio Maria de, sän-tē-ä′gō än-tō-nē-ō mä-rē′ä dā lēn-ē-ārs′ ē brā-mōnt′, Spanish naval officer: b. Niort (Deux-Sèvres), France, 6 Feb. 1756; d. near Buenos Ayres, Argentine Republic, 26 Aug. 1810. After the French Revolution he entered the Spanish naval service, in which he attained captain's rank. He defended Montevideo against the British in 1806, and in 1807 forced them to relinquish Buenos Ayres, which they had occupied. The ruling viceroy was then deposed by popular demand, and Liniers selected for the post (16 May 1808). The British soon attacked Buenos Ayres, and, 1 July gained a battle under its defenses; but Liniers successfully managed the resistance and the enemy, after a retreat and large losses, withdrew from the country. He was succeeded in 1809 by Cisneros, whose rule was followed by the revolution of 10 May 1810. Liniers thereupon marched from Cordobá to Buenos Ayres for the purpose of quelling the revolt; but was captured, and shot.

Linley, lĭn′lĭ, **Thomas,** English composer: b. Wells 1732; d. London 19 Nov. 1795. He was a pupil of Chilcot at Bath and of Paradies at Naples, became one of the best English vocal instructors, and for several years directed the concerts at the Bath assembly-rooms. In 1774 he became joint director of the Drury Lane oratorios, in 1776 purchased Garrick's share in Drury Lane, and in 1776–91 directed the music there. His music contributed greatly to the success of Sheridan's «Duenna,» which was performed 75 times during the season. He also composed the much admired accompaniments to the «Beggar's Opera,» various other music for dramatic works, and glees, canzonets, and songs. He obtained high place among English composers through his simplicity and excellent taste.

Linlithgow, lĭn-lĭth′gō, Scotland, the county town of Linlithgowshire, 16 miles west of Edinburgh. It is an ancient royal burgh, with a fine 12th century Gothic church, and other historical edifices, chief of which is Linlithgow Palace (mostly rebuilt between 1425 and 1628), the birthplace of James V. and Mary Stuart. Pop. (1901) 4,279.

Linn, James Weber, American author and educator; b. Winnebago, Ill., 11 May 1876. He was graduated from the University of Chicago in 1897 and since 1899 has been instructor there. He has published ‹The Second Generation,› a novel (1902); ‹The Chameleon› (1903).

Linn, William Alexander, American journalist: b. Sussex, N. J., 4 Sept. 1843. He was graduated at Phillips Academy, Andover, Mass., in 1864, at Yale in 1868, and in 1883 was admitted to the New York bar. From 1868 to 1891 he was engaged in newspaper work, during part of that time being on the staff of the New York *Tribune,* and was managing editor of the *Evening Post,* 1891–1900, resigning to devote himself to literary work. He was a member of the New Jersey commission of 1899, by which, together with the Interstate Commission, of which he is a member, the passage and enforcement of laws for the prevention of the destruction of the Palisades were secured. He is a contributor to agricultural and horticultural papers, and has also written ‹The Story of the Mormons› (1902); ‹Rob and His Gun› (1902); and ‹Horace Greeley› (1903).

Linnæus, lĭ-nē′ŭs, **Carolus,** the Latinized form of the name of Carl von Linne, Swedish botanist: b. Rashult, Småland, 12 May 1707; d. Upsala 10 Jan. 1778. He showed an early interest in botany; entered the University of Lund, where his botanical tastes were encouraged by Kilian Stobæus, physician to the king, from whose library he was supplied with necessary books. In 1728 he went to Upsala, where he undertook the supervision of the botanic garden. Here he made the acquaintance of the botanist, Rudbeck, whose assistant he became, and assisted Olof Celsius in the preparation of the latter's ‹Hierobotanicon.› Aided by the Academy of Sciences at Upsala, Linne made a journey about 4,600 miles through Lapland, the result of which was shown in his ‹Flora Lapponica,› published 1737. In this year he went to the University of Harderwyk in Holland and took an M. D. degree, and later visited Leyden, where he published his first sketch of his ‹Systema Naturæ› and ‹Fundamenta Botanica.› In 1736 he visited England, and in September 1738, settled in Stockholm as a physician. He slowly acquired a practice, was made naval physician of Stockholm, and obtained some minor appointments. He became professor of medicine at Upsala in 1740, and of botany in 1741. He was ennobled in 1737. During his professorship of botany he drew students from all over the civilized world, increasing the number attendant on the university from 500 to 1,500. The importance of Linnæus' work can scarcely be overrated. It has been said that "he found biology a chaos; he left it a cosmos." He it was who established the systematic botany and zoology of modern times. He first announced the principles for the definition of genera and species, and established the binominal nomenclature of both. He was a careful observer, a methodical worker, and a clear and succinct writer. As a teacher he was of great influence in revolutionizing the methods of botanical study. He published more than 180 works, among which the most important are: ‹Systema Naturæ› (1735); ‹Fundamenta Botanica› (1736); ‹Genera Plantarum› (1737); ‹Flora Lapponica› (1737); ‹Classes Plantarum› (1738); ‹Philosophia Botanica› (1751); and, chief of all, ‹Species Plantarum› (1753).

Linnell, lĭn′ĕl, **John,** English painter: b. London 16 June 1792; d. Redhill, Surrey, 20 Jan. 1882. He began his artistic career as a pupil of West and Varley and was for some time a successful teacher of drawing, numbering among his pupils Mary Wollstonecraft Shelley. He had painted from his 15th year confining himself exclusively to landscape. Between 1824 and 1838 he produced a number of excellent pictures in this class. Originally an imitator of Gainsborough, he soon developed a brilliantly original style. He was particularly successful in portraying the insular sky scenery of England with its varied cloud forms, and changing play of sunlight, and his works combine delightful freshness with supreme skill in handling. In the South Kensington Museum is one of his pictures, «Girls Gathering Flowers,» and in the National Gallery are his «Wood Cutter,» and «Windmill.» Consult: Story, ‹Life of John Linnell› (1892).

Lin′net, a very common and attractive song-bird, one of the smaller migratory finches, of southern Europe and adjacent countries of Africa and Asia. In autumn and winter the plumage is brown-streaked and dull, but in the spring molt, on the approach of the breeding season, the breast and head of the mature male become bright crimson. This gay dress is assumed and put off gradually, and bird-catchers speak of brown, gray, red or rose linnets as if they were separate species, but there is only one — *Linota cannabina.* The name refers to the fondness of the bird for hemp, flax-seed, and the like, formerly called the «lint» crops, whence comes the Scotch names «lintie,» «lintwhite,» etc., and the English «linnet.» The habits of these birds in the fields are much the same as those of their relatives the American goldfinches, or of the redpolls, called «linnets» in Canada. These are among the most prized of cage-birds for the sake of their song, and are taken in great numbers in traps as well as extensively bred. They will interbreed with the canary and an interesting and valuable hybrid has thus been produced. The song is loud, flute-like and exceedingly agreeable; it consists of several connected strains, and is esteemed by connoisseurs in proportion to the frequency with which certain clear sonorous notes, or «crows,» recur. It sings throughout the year, except when molting, and may be taught various airs and melodies not its own — even to imitate well the complicated song of the nightingale. Such education is rarely given it, however, except in Germany. The care and feeding of a linnet should be the same as those given a canary. See CANARY; CAGE-BIRDS.

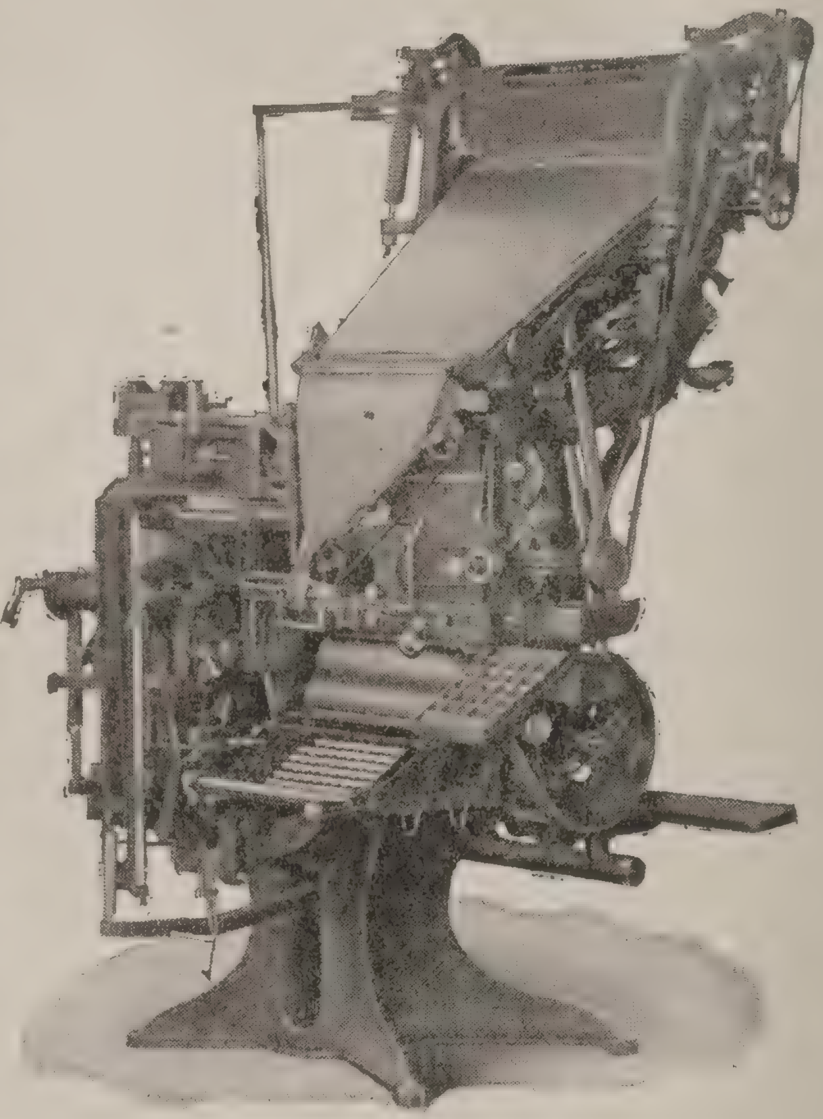
Linnet-hole, in glass making, a table connecting the glass-melting furnace with the arch.

Lino'leic Acid, one of the constituents of linseed oil, obtained by saponifying the oil with soda, separating the soap, and decomposing it with chloride of calcium. After washing, the soap is treated with ether, which dissolves the linoleate of calcium. This salt is next decomposed with hydrochloric acid, and the linoleic acid taken up by ether. After distilling off the ether the oily acid remains, which is converted into a barium compound which is purified by crystallization, and from this the acid is finally got by addition of sulphuric acid. It is a pale-yellow oil, insoluble in water, but readily soluble in ether. It is lighter than water, has a slight acid reaction and harsh taste.

Lino'leum, a kind of floor-cloth introduced in England in 1860. It consists of a mixture of oxidized linseed oil and ground cork spread in a uniform layer upon canvas, the surface of which may be printed in patterns of different colors as in ordinary floor-cloth. The oxidizing of the linseed oil, by which process it becomes a caoutchouc-like substance possessing a certain amount of elasticity, is effected by exposing it in thin films to the influence of air. Certain proportions of kaurigum, rosin, and pigments, according to the ground color desired, are added to the oxidized oil, which is then intimately mixed with the ground cork, and firmly squeezed on and rendered adherent to the surface of a rough canvas backing, which is afterward coated or waterproofed with oil paint. An embossed linoleum, washable, waterproof and warm, invented by Frederick Walton as a substitute for wall paper, is named after him «Lincrusta Walton.»

Linosyris, in botany; Goldylocks; a genus of *Composites,* sub-order *Solidagineæ.* The achenes are compressed and silky, the pappus in a double row pilose, the involucre of one row of scales, surrounded by several long ones, or imbricated; the florets all perfect, deeply five-cleft, yellow. Ten species known from Europe and the West of Asia.

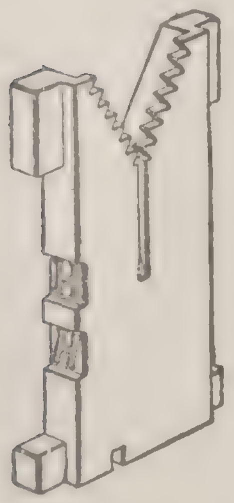
Linotype, The, a machine designed to do the work of both type setting and type casting, by substituting for lines of individual type, metal bars or slugs with raised letters on one edge. These bars, when arranged in page form, have the same appearance as pages of separate type and may be used either to print from direct or to produce stereotype or electrotype plates in the usual manner. The machine will produce type faces of any kind desired, from 5 to 12 point; requires but one operator, and gives a product equal to five or six hand compositors, furnished with ordinary type.



The linotype was invented in 1885 by Ottmar Mergenthaler, a German by birth, then living in Baltimore, and first put into practical use by the New York *Tribune* in 1886. Since then it has come into general use by newspapers and printing offices throughout the world. In the United States about 10,000 of them are employed on all classes of composition, including the finest books and magazines.

The machine contains as fundamental elements several hundred brass matrices. Each matrix consists of a flat plate having in one edge a female character or matrix proper, and in the upper end a series of teeth which are used for distributing the matrices to their proper places in the magazine of the machine. Matrices are also made having two characters, as for instance, a Roman and Italic letter, either of which may be used at will. There are in the machine a number of matrices for each letter, and also matrices representing special characters and spaces.

The general organization of the machine is shown in outline in Fig. 1. A represents an inclined fixed magazine, containing channels in which the assorted matrices are stored and through which they slide, entering at the upper and escaping at the lower end, one at a time. Each channel in the magazine has at the lower end an escapement B, connected by a rod C with a finger key D, representing the letter or character of the matrices in the corresponding channel. There is a key for each character, and also keys for quads and for the wedge spacers.



The operation of the various keys results in the selection of the matrices and spacers and their collection in assembler G, until it contains all the characters to be represented in one line of print. After the line is thus composed, it is transferred mechanically, through the path indicated by dotted lines in Fig. 1, to a position in front of a mold or slot extending through the wheel K, from its front to its rear face. This mold is of the size and shape of the slug or linotype required, and it determines both the measure and the body of the line. While the line is in place in front of the mold, the wedge spacers are pushed up through the line, which is instantly and exactly justified thereby.

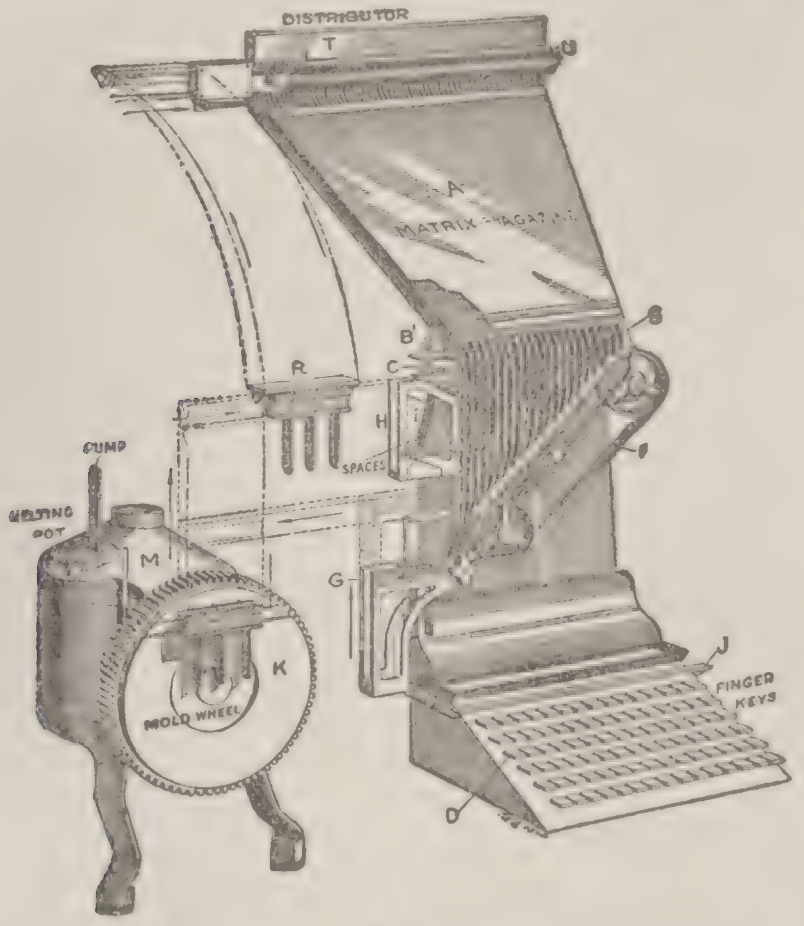


Fig. 1.

Behind the mold, there is a melting pot M, heated by a flame from a gas or oil burner. After the matrix line is in place against the front of the mold, as shown in Fig. 1, a pump forces the molten metal through the pot mouth into the mold, against and into the characters in the matrix line. The metal instantly solidifies, forming a slug having on its edge raised characters formed by the matrices. The slug is then automatically removed from the mold, being trimmed to the proper length and thickness by knives. The line is then lifted from the mold and shifted laterally, until the teeth in the upper end of the matrices engage the horizontal ribs on a bar which rises, as shown by dotted line at R, lifting the matrices to the distributer at the top of the machine. The matrices are then transferred to a second bar, still suspended by their teeth, and by screws made to travel along the bar and across the entrance to the magazine. By means of nick combinations of the bar ribs and matrix teeth each character is released over and slides into the proper channel.

It is to be particularly noted that the matrices pursue a circulatory course through the machine, starting singly from the bottom of the magazine, passing thence to the line being composed, thence to the mold, and finally back singly to the top of the magazine. This circulation permits the operations of composing one line, casting from a second, and distributing a third to be carried on concurrently, and enables the machine to run at a speed exceeding that at which any operator can finger the keys. See COMPOSING MACHINES.

WILLIAM T. WOODWARD.

Lin'sang, one of the beautiful spotted civets of the Oriental genus *Prionodon,* of which various species are to be found from northern India to Borneo. The West African linsang (*Poiana poensis*) is a rare species from the Fernando Po district, which is closely allied to the Malayan ones. They have the general characteristics and habits of the civets (q.v.) but are especially expert in tree-climbing and feed mainly upon birds.

Lin'seed, or **Linseed Meal.** See FLAXSEED.

Linseed Oil Industry, The. In the commercial world there are known at the present time a number of vegetable oils, which in the raw state and without the aid of chemicals are capable of absorbing the oxygen of the air to a greater or less degree, and commonly called "drying oils." By far the most valuable to commerce, both as to usage and results obtained, is the linseed oil expressed from the seed of the plant "Linum usitatissimum," the common term generally applied to this seed being "flax seed," and probably due to the fact that early in our history the plant was commonly referred to as the "flax plant," the object of its cultivation at that time having been principally for the flax fibre. Although the great commercial importance of linseed oil, due to the large increase of manufactured products in which it is used, has been of but comparatively recent years in this country, the seed or plant bears the hall mark of great antiquity. It is positively known that certain drying oils had been discovered prior to the Christian Era and probably in times of remote antiquity, and, though uncertain, it would seem reasonable to assume that linseed was among them. The first mention of linseed is made by Dioscorides, a mediæval writer on medicine, living in the time of Augustus; descriptions, however, of certain decoctions of linseed alone are given, and the resultant oil is not distinctly described. In fact, this applies to most writers of that and later periods. They were students of natural history and medicine, and undoubtedly gave little thought to the commercial value of the oil, especially as there was at that time very little use for it. For example, Hippocrates mentions only the use of bruised linseed as a medicine of astringent properties. Pliny speaks simply of the juice of the linseed. For centuries it appears that the oil's greatest characteristic, its wonderful drying properties, was given little attention. In the second century Galen speaks only of it as being «in its nature, drying,» and in the fifth, Aëtius, a medical writer, though distinctly describing it in connection with art, passes completely over this important point. For many years following this century, however, painting and medicine remained almost solely in the hands of the monks. Having plenty of leisure time, and guided perhaps by the expressions of former Greek writers, these monks experimented to some extent on the siccative qualities of linseed, which resulted in its limited use with other oils, principally as a preservative varnish for gilt and paintings in fresco and tempera. It was not, however, until the 12th century, when oil painting was discovered, that we may say a true appreciation of the essentially exclusive properties of linseed was felt, and from that day to this it is the only oil that has successfully satisfied all the requirements of oil painting; and, remarkable though it may seem, genius has for nearly seven hundred years sought for a substitute, either elementary or in combination, which would entirely fulfill all conditions of commerce, but without success. Whether a substitute will ever be found is extremely doubtful, and it is a well-known fact that there is no adulterant for linseed oil, inasmuch as the smallest admixture of any other oil is highly injurious to its peculiar qualities.

Manufacturing.—In its early history the uses for linseed oil were few and the quantity consumed insignificant, the growth of the industry being appreciable only within the past century. In earlier years the small amount required, principally by the artists, was produced by little, if any, apparatus, and often in the studio. Later, the oil began to find more enlarged fields of usefulness, and the crudest of mechanical apparatus was devised for its manufacture. With such appliances, however, oil could be produced only at an excessive cost, and its use on a broad commercial basis was not feasible. Indeed, up to within comparatively recent years the invention and improvement of linseed oil machinery has been slow, and in fact to the United States may be attributed the greater part of the advance made in this industry in the past 100 years. The early settlers of this country, coming, as most of them did, from the flax growing countries of Europe, brought with them the primitive press which had been used by their fathers and forefathers, and upon which no improvements worth mentioning had been made. In this industry, as in many others, the United States has taken the lead, and the machinery now in use is better adapted to the purposes than in the older countries of Europe, where to-day, in fact, one may see in places the ancient oil press used by our grandfathers. The earliest method recorded for the production of linseed oil is a receipt by Theophilus, a monk writing in the 12th century, and which becomes particularly interesting when we find that the treatment of the seed or method was almost identically the same as it is to-day. «Take linseed and dry it in a pan without water, on the fire; put it in a mortar and pound to a fine powder; then replace it in the pan, and pouring a little water on it, make it quite hot. Afterward, wrap it in a piece of new linen, place it in a press used for extracting the oil of olives, of walnuts, or of the poppy, and express it in the same manner.» It will be seen from the above that the seed was treated separately four times as follows: Dried, crushed, cooked and pressed. With the exception of the drying, which is not necessary, the plan of procedure to-day is the same. During the intervening years, however, many different methods have been used as well as different kinds of machinery.

In the making of linseed oil there are two very essential steps which must be carefully watched; the first is the crushing or grinding of the seed; the second, is the cooking or «tempering» of the ground seed. In the proper manipulation of these two processes rests a crusher's ability to make a good yield of oil. Years ago the present day yield of oil would have been deemed impossible. Although the contrivances for grinding the seed were in early years as primitive as the presses with which they were used, and although many improvements have since been made, yet the grinding was fairly well done, and it seems that the light yields of oil in former years were not due so much to the grinding of the seed as to the lack of, or improper, tempering. Heat and moisture are of the greatest importance in producing the best yields; we find, in fact, that many times the ground seed or meal was pressed entirely without cooking. Oil made in this manner was called «cold pressed» oil. That such oil, however, was made through any lack of proper cooking devices or ignorance, is extremely doubtful. In years gone by little was known about the chemistry of linseed oil, but it was noticed that in the cold process the oil expressed was beautifully light in color and heavy in body; furthermore, upon boiling to a high temperature the oil did not darken but became lighter, and after mixing with the varnishes was perfectly clear and without sediment. On the contrary, oil made from the tempered meal was thinner and darker in color; on boiling at high temperatures it darkened still more, and threw down a quantity of white and greasy precipitate. Such oil of course was looked upon with suspicion; it was considered by many unfit for most uses and was never used in good varnishes. Owing to the light yield of oil in the cold process, however, the price was excessive, and for this reason much attention was devoted to the refining of the oil made by the hot process, so that it might be used in high grade goods and for particular work. For many years, however, careful men remained strongly prejudiced against hot tempering; in later years this prejudice gradually disappeared, but it was only when practical and successful processes had been invented, whereby the objectional features could be removed from the hot pressed oil. During this period, however, many thousands of gallons of the hot pressed oil were manufactured, to be used where quality was a small consideration and price of the greatest importance; in fact, an insufficient quantity of the cold pressed oil was made to supply the demand, and Calcutta oil, which has the same properties as cold pressed oil, was imported in large quantities to make up this deficiency. In these days of sharp and bitter competition, a crusher depends almost entirely upon his yield to make his profit; consequently, all oil is made from the tempered meal, and the best equipped mills are supplied with chemical or mechanical apparatus which converts the hot pressed oil into refined oils almost equal in quality to the old time cold pressed oil. Small amounts of Calcutta oil are still imported, but the price is much higher than the domestic refined, which gives perfect satisfaction and which in the near future will undoubtedly be used to the exclusion of all others.

Probably the first attempt to manufacture linseed oil in quantities considerably in excess of that produced in the earliest times and by means of the crudest apparatus, was by the ancient screw and lever press. This was simply a modification of the old cider press and consisted of a barrel, sometimes of cast iron, perforated to give a free outlet to the oil, and fitted with a plunger which, when actuated by the screw, descended into the open barrel upon the mass of meal contained therein, and by means of slow pressure thus exerted expressed a reasonable amount of oil. This press was worked by a hand lever placed through an eye at the head of the screw, like a bar in a capstan. Little oil was secured, however, in comparison with presses actuated by machinery, where the pressure is many times greater than can possibly be secured by hand. On this account considerable oil remained in the dry residue known as oil cake; these weighed about 25 pounds each and were about 18 inches in diameter by 8 inches thick, resembling a cheese in shape and thus giving to it the name of «Cheese Box» press. The capacity of this press was small indeed, amounting to less than one barrel of oil a day. The date cannot be definitely stated when the screw and lever press was first used, although linseed oil was undoubtedly first made by it in this country. It was retained in use as late as 1848. Many years prior to that date, however, the improved Dutch mill or wedge press had come into vogue. These mills were imported early in our history from Holland, where in some places they may be still seen in actual use, and were at that time considered a great improvement over the old screw and lever presses. The wedge press as it was introduced to America consisted of a very heavy rectangular frame work of oak or iron, placed horizontally on its base. The ground seed was shoveled by hand into woolen bags and these were placed in the press so as to hang vertically between hinged partitions, consisting of wooden plates. The capacity of the press was about nine or ten of these bags, and giving a daily pressing of not over 15 to 20 bushels. The cake manufactured in this press weighed from 8 to 10 pounds each, after the raw edges had been trimmed. The pressure requisite for the expression of the oil was obtained by driving wooden wedges between the plates by means of sledges driven by wind or water power.

It is impossible to state at just what time the wedge press was discarded for the horizontal hydraulic press, the next step in the advancement of the industry and undoubtedly the most important. Linseed oil, however, was made by this process as late as 1853. In 1796 the first hydraulic press was built. This brought about great changes in many industries as well as in the manufacture of linseed oil. The first presses were indeed very small affairs in comparison with those now in use, but their invention was an epoch maker in the linseed oil industry. The earliest type used was similar to the old screw and lever press in shape, and of the cheese box variety. It is doubtful, however, in the absence of authentic records, that this variety was used in this country for linseed. Probably the first hydraulic presses used in the United States for linseed oil were of the horizontal type, having been installed in a New York mill shortly after the war of 1812. In these presses the plates were of iron instead of wood, and movable; the ground seed was shoveled into the woolen bags as before, but flattened by the hand of the workman and placed in mats of horsehair, which were folded in book form. After placing in the press vertically, one at a time, the iron plates were moved up against each bag, when the ram of the hydraulic cylinder moving horizontally compressed the eight or nine cakes contained in the press, the oil running into a trough or pan beneath. Very simple hydraulic pumps were used at that time to generate the pressure; the yield of oil, however, was very much increased by this method, it being practically impossible to secure a sufficiently high and steady pressure by the old wedge and screw process. The horizontal press, however, though an improvement over these methods, had its disadvantages. In 1851 the first patents for vertical hydraulic presses for linseed oil were granted. The capacity was not increased over the horizontal type at this time, the press holding only 6 to 10 cakes. The clumsy and unwieldy manner of packing the meal in the bags and filling the presses, however, was done away with. What is known as «boxes» were used, the ground seed being molded into soft cakes, packed in wrappers and placed in the press, one above the other, the boxes acting as shelves. A large saving was made here in labor and time, necessarily resulting in considerable increase of capacity and consequent reduction in the cost. With the improvements in the manner of pressing the seed came improvements in grinding or crushing. For many years undoubtedly the mortar and pestle of Theophilus was used on some basis; this, however, was very crude, and took an unnecessary amount of labor. Linseed was crushed first in this country by rolling through a mill worked by hand; the rollers in this mill consisted of one large and one small, the seed being passed through once or twice, according to the views of the crusher. This mill in the earliest time was probably used with the screw and lever press. The earliest method for reducing the linseed to meal by machinery was that used in connection with the Dutch mill or wedge press, and was called the «Tamper» mill. This was a mortar and pestle on a large scale. The mortars were of heavy cast iron, the bottom flat on the inside and holding a small amount of flax seed; the pestle was an iron-shod log, standing vertically in a frame, the foot resting on the bottom of the mortar; these logs, weighing from 150 to 200 pounds each, were raised, by means of cams on a horizontal log, by water or wind power, and falling of their own weight exerted a crushing or grinding force upon the seed. The tampers, as they were called, numbered one or more in the set, according to the size of the mill. As in the case of the screw and wedge press, however, this method was found entirely inadequate to the needs of the oil mill. The capacity of a mill was necessarily cut down very much by such a slow process, and rolls run by machinery were resorted to; these were of different design from the old hand rolls, and were designated in the trade as «cracker» rolls, for the reason that they cracked or opened the seeds. These rolls were arranged in pairs only and varied in size from 12 to 18 inches in diameter and 7 to 18 long, according to the views of the manufacturer. After being bruised in these rolls, the seed was placed in an edge-runner or chaser, also known as a «Muller» stone. This consisted of a circular trench of iron, several feet in diameter, placed horizontally on a firm foundation. Running around this, like a wagon wheel in a rut, were two ponderous iron shod wheels, 5 to 6 feet in diameter with steel tires 10 to 16 inches wide. These were sometimes made of stone and set opposite one another on a shaft and weighed about 7,000 pounds each. Around and around these wheels revolved, chasing one another until the meal was finely crushed and rolled, when water was added until the meal acquired the consistency of putty, or what was termed as «dobby.» It was then mixed or «mulled» for some 10 or 15 minutes and then tempered. These Muller stones proved very satisfactory as to results, but were clumsy and took a great deal of power; furthermore, the expense of two grindings was unnecessary. Nevertheless, no change was made for many years.

The tempering or cooking of the crushed seed having such an important bearing on the yield of oil, has also suffered many changes. In the earliest times many different devices of the crudest workmanship were used, often no more nor less than large cooking utensils; there was also considerable variation in the temperature used, from cold to hot, according to the manufacturer. Often the spontaneous heat of the crushing was considered sufficient. In the tamper of the Dutch mill water was played on the meal in the mortar, when vapors began to arise, in order to keep it from getting too hot and thus spoiling the oil. No further tempering was considered necessary. Later, however, and notably in connection with the Muller stones and wedge press, regular cookers began to be used; these were heavy sheet iron drums or tanks, slowly revolving over a charcoal fire until the proper temperature was attained. With the advent of the hydraulic press, however, improvements were made in cooking devices and stationary heaters began to be used in which the meal was cooked by steam. Up to the year 1856, and as related, the cooked meal was placed in the bags by hand; at this date, however, a device was patented to form the cooked meal into soft cakes or molds preparatory to placing them into the cloth or wrapper which was to take the place of the bags originally used. This was considered a great boon, saving as it did the laborious process of handling and molding the meal by hand to fit the press; though somewhat clumsy at that time, the «molder» or «former» has been much improved. Where in former years the molder was run by power from the shaft, now hydraulic pressure is utilized, and the «former» is in reality a miniature press, consisting of a square mold or box into which a plunger presses the required amount of meal. Very light pressure is sufficient, and it is so arranged that the cooked meal will not be compressed beyond the point where the oil is separated.

The tempering, crushing and pressing of linseed was carried on, with a few exceptions, substantially as related up to the year 1878, when the most lasting improvement to oil machinery was made, and which introduced practically the system in use at the present time; namely, the «Lawther» process. Greater economy was immediately secured and larger yields of oil. The old Muller stones and cracker rolls gave way to the stack of «four or five high» chilled iron rolls, by means of which the seed was bruised three or four times in one process. Apparatus for controlling and regulating the high pressure was introduced; kettles or cookers were steam jacketed and had larger heating area, and steam was fed into the meal to moisten as well as heat it. The plate press had also been given the preference over the box press, which was clumsy. Although the very best mills to-day have some improvements over the original Lawther process, they make rather toward greater economy than increase of yield. The modus operandi in the largest and most complete mill to-day is as follows: The flax seed is first thoroughly cleaned by separators and dust collectors until the original dirt, amounting to 10 or 20 per cent, has been reduced to less than one per cent, and which is considered as clean as it is practical to make it. This seed is now passed through the rolls, there being about one set of five rolls high to every three presses. The ground seed falling from these rolls is led by screw conveyors into the steam jacketed cookers of large capacity and holding a considerable quantity, where it is tempered. This consists of heating the ground seed to a temperature of from 120° to 180° F., according to the quality of the seed used, and moistened with live steam, all the time being kept in constant motion to prevent burning. When the temper is considered perfect a batch is made. This consists of drawing off the cooked meal on to the formers and molding the cake; these molders are the latest design and are very rapid in action. A piece of cloth somewhat wider than the molded cake is placed so that the tempered meal may be drawn out onto it. This cloth or wrapper, as it is called, is a substitute for the horse hair cloth and woolen bags of former days, but now made of pure camel's hair to stand the high heat and enormous pressure. By a single motion the former is now closed and immediately reopened, when the ends of the cloth protruding are wrapped around the soft cake and it is placed in the press. The batch consists of making 20 of these cakes, which fills one press. The pressure is now turned on by an automatic valve or change cock, which slowly increases the pressure up to about 4,000 pounds to the square inch. This enormous pressure is generated by very powerful hydraulic pumps, connected to what is known as the accumulator system. The accumulators are for two purposes; first, to act similar to a safety valve on a boiler, preventing the pressure from exceeding the limit; secondly, keeping the pressure at a steady level throughout the time the seed is in the press, and preventing the pressure from decreasing one pound. Before the adaptation of the accumulator and change cock, the oil was pumped directly into the press, causing an unequal flow and consequent reduction in the yield of oil. Six presses are generally grouped, one being emptied and refilled every ten minutes, the six thus completing one hour in time and allowing each press in the group to drain every 50 minutes. In some mills seven batches are made instead of six, and the weight of the cake is also increased from 11 and 12 to 14 pounds. This is done in order to increase the capacity of the mill, but generally at a sacrifice in yield of oil. As each batch is removed from the press, the camel's hair cloth wrapper is stripped off, the rough edges of the cake trimmed automatically, and the cake piled up in the cake house, where it is allowed to cure or dry for at least 48 hours. The raw oil, after having been run from the settling troughs at the back of the presses, is carefully filtered and placed in tanks ready for barreling.

The Oil and Its Uses.—Linseed oil as manufactured may be classified under three headings: raw, boiled and refined. Raw linseed oil is the term applied to oil as it comes from the press in its original state. The principal consumer of raw linseed oil is the paint grinder; as it was used as a vehicle for paint hundreds of years ago, so it is used now. Every year millions of gallons are spread on our houses and public buildings in the form of mixed paints, one concern alone using over 1,500,000 gallons yearly. Every 100 pounds of white lead contains at least 7½ gallons. Boiled linseed oil is, as the name denotes, raw oil boiled over a fire, chemicals being added, the object being to increase its drying properties. Many formulæ are used by the different crushers for making boiled oil, the oldest and most reliable, however, containing principally red lead and black oxide of manganese, the addition of these metals to the heated oil stimulating the linoline and increasing its affinity for oxygen. The uses for boiled oil are many and varied, but it is principally used as the drying oil in paints. The refined or varnish oils are many, and there is the greatest rivalry to-day among oil manufacturers as to the qualities of their respective varnish oils. Hundreds of thousands of gallons of these oils are used every year. While the different gums used in the manufacture of varnishes are the basis or foundation, some variety of refined oil is the most important component of the varnish. As stated before, raw linseed oil has certain component parts which must be removed; there are many ways of doing this. Descriptions, however, of these methods will not be attempted, as they pertain more particularly to the chemistry of linseed oil and not to its manufacture. The reliable varnish oils are few and are furnished only by the largest manufacturers. Linseed oil in some form plays a very prominent part in the manufacture of linoleum and oil cloths also. Varnish oils are used in the manufacture of patent leather, for shoes and other purposes, carriage tops, and all kinds of dressed leathers are finished with linseed oil. The oil clothing worn by sailors and fishermen is soaked with it. It appears by the thousands of gallons before our eyes in the printers' ink on newspapers, and smaller quantities are used in the manufacture of oil silks. Strange to say, linseed oil has no value as an edible oil, or as an illuminant or lubricant. In a few instances we find linseed oil used fresh from the press as a cooking oil and even as a substitute for butter, but mostly by foreigners, notably Russians or Poles; it is needless to say, however, that the consumption in this way is most insignificant. As an illuminant it is useless, burning only at high temperatures with much smoke and giving a poor light. As a lubricant it has no value, although sometimes used as an adulterant, but its drying qualities are obviously the reverse of those required of a good lubricating oil. While not very large in comparison with other industries, the consumption of linseed oil in the last few years as compared to former years has increased very rapidly, and at the present time the above industries consume annually an amount computed at nearly 62,000,000 gallons. The price of linseed oil is of course governed by the cost of manufacture and principally by the price of seed and cake. Large fluctuations in the price of a commodity are generally very injurious to the trade in such commodities. While the fluctuations in linseed oil have been very large at times, the growth of the industry has been such that no great apparent injury has been done. Probably the highest price ever obtained for domestic raw oil was $2.03 per gallon in 1867, the price having risen gradually from $1.00 per gallon in 1861. These prices were, of course, war prices, and after 1867 steadily declined, ranging from 60 to 70 cents as high, and 40 to 50 cents as low. It is a remarkable fact that in these days of great production, manipulation has succeeded in placing the price as high as 82 cents in 1901, the highest since 1870. Owing to the somewhat limited and narrow market for domestic linseed, such manipulation is often brought to bear, and it is the earnest desire of every crusher that this may be eliminated to some extent in the future. The lowest price at which linseed oil has ever sold in its history was in 1897, when actual sales were made on the basis of 24 cents per gallon in wooden barrels. This of course was due largely to the financial panic together with large crops at that time and prices rapidly recovered to a normal basis. The greatest fluctuations experienced in earlier years was in 1867, when oil went from $1.00 per gallon to $2.03, and in later years, in 1901, when it went from 50 to 82 cents per gallon. Linseed oil has always been subject to great fluctuations, and it will be seen by averaging that from 1876 the annual fluctuation has been about 14½ cents per gallon, the smallest fluctuation known being in 1883, when there was only 3 cents difference in price at any time during the year.

The Cake and Its Uses.— While really a by-product, the manufacture and sale of the cake is equal in importance to the sale of the oil, and although netting a smaller price per pound, the value has a very great influence on the course of oil prices and the policy of the business as a unit. Practically the only use for cake is as a food for live stock, principally cattle, for fattening and for results in the dairy. The actual protein in cake is about 36 per cent, of which about 85 per cent is digestible and the nutritive value is consequently several times that of hay, while the fat varies from 4 per cent to 8 per cent, according to the crusher. Although used extensively abroad, it is a singular fact that our farmers in the United States have little, if any, appreciation of its value. Our own country should be the largest consumer of this most valuable by-product; actual figures, however, show that only about 20 per cent is retained for home consumption. The first cost is somewhat greater than for other food stuffs, and our farmers as a general rule lack the knowledge of its value, which comes only by experiment and valuable experience. The manurial value alone of linseed oil cake has been estimated at over $16.00 per ton, whereas the first cost is only from $18.00 to $25.00 per ton Our farmers, it is true, are waking up to its value and more is being used in this country every year, but the bulk of our output is marketed in two very small countries, Holland and Belgium. It is impossible to ascertain the exact quantities of linseed cake exported in the early years of the industry, as all oil cake and oil cake meals were classified under one head. It is, however, fairly safe to assume that by far the larger part of the output each year in the proportion of about 38 to 40 pounds of cake per bushel of seed crushed was sent out of the country; this from the fact that only in recent years has our farmer become educated to its use.

While the two little countries of Holland and Belgium take at the present time about 67 per cent of the cake consumed in all the other countries of Europe, this demand has been of but comparatively recent years. The United Kingdom in years gone by was considered the only market, and Holland and Belgium used only small quantities. For instance, in 1895 only 20,000 tons were shipped to Belgium and 9,000 tons to Holland, whereas in 1896, 115,000 tons were consumed in the United Kingdom. The United Kingdom, however, has reduced her demand ever since that time, while Holland and Belgium have taken rapid steps. From 20,000 tons in 1895, Belgium has increased to 100,000 tons in 1902, and Holland from 9,000 tons to 86,000 tons, while the United Kingdom dropped to about 50,000 tons. As stated, the exportation of cake has grown with the industry and the proportion of export remains practically the same, with the exception that each year a little more is retained for home consumption. The total exports in 1895 were about 120,000 tons, and in 1902 about 290,000 tons. A glance at the figures will show that of the total 290,000 tons the three countries above mentioned consumed 242,000 tons, the balance being divided largely between France and Germany with 18,000 tons each, Canada and West Indies 5,000 each, and Norway, Sweden and Denmark insignificant amounts. It is quite remarkable that so much of our cake finds its way to foreign markets, as the competition is severe, Russia, Germany and England together crushing many millions of bushels of seed annually. In England at least, however, the explanation is simple; more attention is paid to the richness in oil of the cake than in America. The oil is the most valuable product; consequently, with characteristic aggressiveness the Americans proceed to express all of it, or nearly all, leaving only about 6 per cent to 8 per cent in the cake. The result is a much harder cake with considerably less oil in than in that made by our English cousins. This accounts in a great measure for the decrease in the United Kingdom consumption of our cake, and also owing to larger importation of the cheaper cottonseed meal which contains a greater percentage of oil. For some reason, however, the dry, hard American cake seems to be just the correct thing for growing, fattening and feeding cattle for the dairy. The quiet Dutchman prefers our cake above all others, and one need only to look at the figures to prove this statement. It is a very peculiar thing that the use of oil cake is not as general as it seems it should be. Like the American farmer, the Dane for instance will hardly touch it. He claims it spoils the flavor of the milk when fed for this purpose, and although good for fattening is too high priced as compared to cottonseed meal. How it is that Denmark holds the opposite opinion from Holland and Belgium is difficult to explain; it would seem, however, that the immense quantity used by the above mentioned countries, and the world-wide reputation of their dairy products, should conclusively settle the question, and it is altogether probable that on the basis of digestive economy, linseed oil cake is the best food of its kind on the market to-day.

Growth of the Industry.— As stated before, the early settlers brought with them the knowledge of making linseed oil. As the uses then were but limited, very little attention was given to the oil; the flax plant was grown for the flax and not for the seed and oil. In 1719 the spinning wheel was first introduced in New Hampshire by the Protestant Irish who settled there, and flax was grown more abundantly. The seed was for the most part exported, a few thousand bushels only being necessary to fill the home oil wants. The first impetus to the growth of flax for linen fabrics and consequent increase in seed and oil was given in 1722, when bounties for its growth were granted. The increase was immediate, and the plan worked so well that the bounties were continued, and in fact increased, until in 1751 we find it reported that sixty wagon loads of seed were exported at Baltimore. In 1752 a further increase was noted, 10,000 hogsheads or 70,000 bushels of seed being exported from Philadelphia. Twenty years later, 110,000 bushels were sold to the foreigner, and in 1791 292,000 bushels, or upwards of one half of the total crop of the United States in 1860, which was 567,000 bushels. Some idea of the rapid growth after the Revolution will be gained from the fact that in 1791 only 450 gallons were exported, while in 1795 nearly 50,000 gallons were sent abroad, an amount which was not again equaled until sixty years later. In 1792 the invention of the cotton gin placed a severe check on the growth of flax for the fibre, cheapening as it did cotton and cotton fabric. Undoubtedly at this time closer attention was paid to the flax seed for its oil bearing seed; the business was a profitable one, as had been shown by the small export business done. From 1795 the export steadily decreased, showing ever increasing home consumption, and in fact considerable quantities were now being imported. From about 80,000 gallons in 1825, they increased to 3,200,000 gallons in 1867. Short crops and high prices during the war of 1861–5 undoubtedly affected the importation of oil to some extent, but the indication is that there was a heavy demand for the oil which had to be filled. As the case in many other industries, the protective tariffs had a great effect on the production of linseed oil. In 1861 a duty of 16 cents per bushel was placed on flax seed, and 23 cents per gallon on linseed oil. Owing to the fact that very short crops of seed had been grown during the War of the Rebellion, and to the fact that business started up with a boom soon after, large quantities of oil were imported regardless of the duty,— 1,150,000 gallons in 1866 and 3,200,000 gallons in 1867. Immediately after this, however, the imports dropped to an insignificant quantity, and have continued so to this day, a certain quantity of Calcutta oil only being imported each year at high prices, for special uses, it being a well known fact that the finest oil in the world is made from East Indian seed. It should also be noted that from 1861 to 1892 practically no seed was exported; it is also interesting to note that though in 1871 a duty of 20 cents per bushel, and in 1897 of 25 cents per bushel was levied, this country continued to import seed in respectable quantities, having reached as high as 4,166,000 bushels in 1895. The conclusion is obvious. The tariff on oil effectively eliminated the foreign competition; the crops of seed grown could not supply the demand; the price of seed goes up and the farmer is encouraged to plant it, while the duty on the seed for import holds that quantity down to an amount necessary to fill our shortages only. By glancing at our statistics, we are surprised to note that although a high duty has been levied on incoming flax, the growth of the industry has been such that until very recent years we have been obliged to call on the foreigner for some of our supplies. In 1839 the first cargo of flax was imported, and from 1854 to 1891 we have been obliged to call for from one to three million bushels annually, with the exception of 1882 and 1883. In 1895 we needed 4,160,000 bushels to fill our consumptive needs. It is useless to make any estimate, which would approach with any degree of accuracy, the amount of flax seed grown in this country from year to year; this is due to the fact that the figures on record are sometimes estimated in one way and sometimes in another. It will be sufficient to say, however, that from 1880, when the crop grown in this country aggregated some 7,000,000 bushels, we have increased to at least 30,000,000 bushels in 1903. In 1902 the crop grown was estimated at about 25,000,000 bushels; prior to that time, however, and as far back as 1880, the average was about 10,000,000 bushels each year. By taking an average of the available crop used for crushing, after adding the imports and deducting the exports, we find that the average consumption amounted to eight to ten million bushels of seed up to about the year 1892. From that time the statistics seem to show a steady increase in the consumption, until at the present time it would appear that from 22,000,000 to 24,000,000 bushels are crushed, or in the neighborhood of one and one-half million barrels of oil.

Price of Seed.—While at times the fluctuations of seed prices has been caused by heavy speculation and manipulation, the law of supply and demand has generally fixed the value. The earliest quotations of which we have an authentic record are for the year 1855; at that time Cincinnati was the principal centre for the sale of the seed. From about 1870 Chicago became the great market, its location being more central and better adapted for its marketing. Ten years later, however, Chicago lost its prestige, and Duluth, the wonderful city of the Northwest, has become practically the only market, located as it is at the head of the Great Lakes, which gives splendid shipping facilities for the large crop grown in the large states of North and South Dakota and Minnesota. The highest price obtained for linseed in modern times was in 1862, when sales were made on a basis of $3.25 per bushel. From 1862 to 1874 seed never sold under $2.00 per bushel but averaged about $2.50; after 1874, however, prices steadily declined until 1886, when $1.03 was reached. The lowest price ever obtained was in 1897, when seed went to about 63 cents. The greatest fluctuation was in 1862, seed going from $1.25 to $3.25, or a difference of $2.00. Flax seed has never fluctuated less than four or five cents a year, and this condition has prevailed but seldom. In speaking of the great increase in the crops of seed grown, it is interesting to note in a general way its peculiar migratory nature. In earlier times, almost all the seed was grown in the Eastern States; large amounts were grown in New York, whereas now scarcely any is grown there. Ohio long held a good share of the crop; from Ohio it traveled to Indiana and Illinois; then Kansas, and from there to Minnesota and Dakota, and finally, in the last few years, almost the entire crop has been grown in the great States of North and South Dakota, Minnesota, and Manitoba. The historical records furnish us with very meagre data as regards the number of mills in operation at different periods. In 1810, the census tells us there were 383 mills in 14 States, 171 in Pennsylvania alone. These mills of course were very small affairs, but the number is conclusive of the healthy growth and the large interest taken in this industry. These mills made 770,000 gallons of oil, valued at about $900,000. No better index of the growth of the industry can be had than a comparison of the following figures: In 1860 there were 94 mills, turning out nearly $6,000,000 worth of oil and cake; in 1870 the number of mills was reduced to 85, but the value of the products had increased to $9,000,000 worth of oil and cake, and in 1880, 81 mills produced $15,400,000 worth of products. The number of mills was still further reduced in 1890 to 62, making $23,500,000 worth of oil and cake, and in 1900 it is estimated that 48 mills were producing the splendid total of nearly $30,000,000. The steady decrease in the number of plants in operation is due of course to the weeding out of plants with poor and old fashioned machinery and those unable to work on the lowest basis of cost manufacture for various reasons. There are at the present time not over 30 mills in actual operation, and combining in the aggregate some 730 presses. In measuring capacity, the unit is generally a hydraulic press. Each press of standard size, containing 20 cakes, is capable of handling in the best managed mills about 40,000 bushels annually, if run 300 days in the year. As in many other industries to-day, there are two controlling interests concerned in the production of linseed oil, the combine and the independents. Between these two elements the annual crop of flax seed is crushed and placed on the market. The number of presses computed for the combine is about 360. The independents number about 410 presses, out of which number the three largest independents operate 236 presses, or about 60 per cent. A comparatively small number only of the above presses, however, are equipped with the full number of 20 plates; every mill, therefore, if run full could not crush the maximum of 40,000 bushels per press. Many mills have only 16 plates, and for the purpose of approximating the correct figures it will be safe to estimate that fully 60 per cent of the total number of presses operated have a capacity 80 per cent of the standard size. It will be seen, therefore, by computation, that on this basis the actual crushing capacity of all the presses in actual condition to run is over 27,000,000 bushels. As some few mills run a larger quantity by operating seven batches or more and running heavier cake, it is probable the actual capacity of the machinery in use is nearly 30,000,000 bushels, or from 6,000,000 to 8,000,000 bushels in excess of the amount required. Necessarily, such condition of affairs causes many of the mills to run only part of the year and some of them to shut down entirely. Not over ten years ago a mill containing 12 presses was considered a good size, and 24 presses was considered very large; in fact, there are very few mills in operation to-day that number more than the latter figure. The largest mill in the world is located in Buffalo, N. Y., and operating steadily the large number of 138 presses, having a capacity of 6,000,000 bushels of flaxseed, and turning out about 15,000,000 gallons of oil annually. The four principal crushing points, as shown by the number of mills and amount of crushing capacity, are Buffalo, Chicago, Minneapolis and New York, the number of presses in operation in Buffalo being 203, with a capacity of over 8,000,000 bushels of seed. Minneapolis is second with about 120; Chicago next with 113, and New York fourth with 108, or a total of 544 out of the entire number of 770 presses, the balance being scattered over the country at various points. See also FLAXSEED; OIL.

SPENCER KELLOGG,
Of Spencer Kellogg, Buffalo, N. Y.

Linsey, the name of an English country-made fabric of linen warp and worsted filling.

Linsey-woolsey, a mixed fabric made of linen and wool.

Linsley, James Harvey, American naturalist: b. Northford, Conn., 5 May 1787; d. Stratford, Conn., 26 Dec. 1843. He was graduated from Yale College in 1817, and became a Baptist clergyman, but on account of increasing ill-health resigned from the pulpit and devoted himself to the study of natural history. Many catalogues of mammalia and birds from his pen may be found in the ‹American Journal of Science.›

Linsley, Joel Harvey, American clergyman: b. Cornwall, Vt., 15 July 1790; d. Greenwich, Conn., 22 March 1868. He was graduated from Middlebury College in 1811, and was tutor there for three years; afterward studied law, but in 1822 was licensed as a Congregational clergyman and went to South Carolina as a missionary. During the years 1824–32 he was pastor of a church in Hartford, Conn., and was at Park Street church, Boston, 1832–5. In the latter year he was elected president of Marietta College, Ohio, which post he held 10 years, raising a considerable fund for the institution.

Linstock, a gunner's forked staff to hold a match of lint dipped in saltpeter.

Lint, in surgery, the scrapings or ravelings of fine linen, made into a sort of cloth, and used by surgeons in dressing wounds. It is made into various forms, which have different names, according to the difference of the figures. Lint made up in an oval or orbicular form is called a pledget; if in a cylindrical form, or in shape of a date or olive-stone, it is called a dossil. The advantages of this material are very great, owing to its softness of texture, the ease with which it can be folded or rolled into any shape required, its capacity to absorb discharges, and its cheapness, on account of which it may be thrown away when once used. For modern surgery, it is rendered antiseptic by steeping in carbolic acid, perchloride of mercury solution, etc., and subsequent drying.

Lint-doctor, a sharp-edged ruler on the delivery side of the calico-printing cylinder, to detain any lint or fibres which may come off the cotton cloth.

Lin'tel, in architecture, a horizontal timber or stone over a door, window, or other opening, to discharge the superincumbent weight.

Lin'thicum, Richard, American journalist: b. Libertytown, Md., 30 March 1859. He was educated in Baltimore schools and at Liberty Academy. From 1877 to 1880 he served as an observer in the United States Weather Bureau, and since 1883 has been engaged in writing for newspapers and magazines, to which he has contributed short stories, etc. He has also published ‹Rocky Mountain Tales› (1892); ‹Boer and Britisher in South Africa› (1900); ‹Best Recitations› (1902); and ‹Educational Encyclopedia of Common Things› (1903).

Lin'ton, Eliza Lynn, English novelist: b. Keswick, Cumberland, 10 Feb. 1822; d. London 14 July 1898. In 1858 she married William James Linton (q.v.), but they separated in 1867, though continuing to retain friendly relations until his death. She was connected with the press for nearly all of her literary career, writing for the ‹Saturday Review› the celebrated ‹Girl of the Period› papers. She sometimes dipped her pen in acid, but in private she was warm-hearted and self-sacrificing. Among her numerous works are: ‹The World Well Lost›; ‹The One Too Many›; ‹In Haste and at Leisure›; ‹The Girl of the Period›; etc. Her best novels are: ‹The True History of Joshua Davidson: Christian and Communist› (1872); and ‹Autobiography of Christopher Kirkland.›

Linton, SIR **James Dromgole,** English painter: b. London 26 Dec. 1840. He was educated at Cleveland House, Barnes. He afterward studied art, and has done much to promote the interests of the English school of water-color painting. He was elected a member of Institute of Water-color Painters (1867). When it was reorganized, its title being henceforth the Royal Institute of Painters in Water-colors, and its exhibitions being thrown open to everybody, not confined, as hitherto, to members, he was chosen president (1884). In the following year he was knighted. His pictures in oil include the «Marriage of the Duke of Albany» painted in 1885, and a series of panels illustrating 16th century history for a private mansion at Nottingham.

Linton, William James, Anglo-American wood engraver and author: b. London 1812; d. near New Haven, Conn., 29 Dec. 1897. As a wood engraver he took very high rank, and some of his finest work may be found in the pages of the 'Illustrated London News,' to which he frequently contributed from its commencement till he came to the United States in 1867. As an author, in which capacity he was more widely known than as an engraver, the zealous Chartism of his youth tinged much of his earlier work. Among his works may be cited: 'The Plain of Freedom' (1852); 'Claribel and other Poems' (1865); 'The English Republic'; 'Some Practical Hints on Wood Engraving' (1879); 'Life of Thomas Paine' (1879); 'A Manual of Wood Engraving' (1884); 'Poems and Translations' (1889); and 'The Masters of Wood Engraving' (1890).

Linz, lĭnts, Austria, the capital of Upper Austria, on the Danube, 98 miles west of Vienna. It is defended by detached forts extending over a circuit of 9 miles, and has an old cathedral, a new cathedral, provincial parliament house, castle, town-house, bishop's palace, etc. The manufactures include woolen, linen, silk, and cotton goods, machinery and hardware, and there is an extensive trade on the Danube. Pop. (1900) 58,788.

Lion, the largest and most celebrated of the cat tribe, forming the widespread species *Felis leo.* The outward form and appearance of the lion are familiar. The apparently excessive size of the head, due chiefly to the great mane which covers the head, neck and shoulders of the males; the uniform, unmarked, tawny color of the skin; the great development of horny papillæ upon the rasp-like tongue; the growth of long hair on the elbows and along the middle line of the belly, and the tuft at the extremity of the tail (hiding a horny spine) are distinctive external characters. The length of the lion from nose to tip of tail, rarely, if ever, exceeds 10 feet, and that of the lioness 9 feet, of which the tail forms a third. The older books separated a supposed species of maneless lion, especially one in India designated the maneless lion of Gujerat; but the development of the mane varies greatly, some lions in all regions having this feature much more abundant than others, and in all cases it is a product of age, appearing fully only when the animal has reached full maturity at the age of five to seven years, so that no distinction of this kind is valid; nor can any be made upon color, the mane in certain specimens being very much darker than in others without regard to locality, dark and amply maned and scantily maned individuals belonging sometimes to the same litter. The period of gestation in the lions is five months. Only one brood is produced annually, and from two to four young are produced at a birth. The mother nourishes the whelps for about a year; their size at birth being about that of a pug-dog. In their young state the whelps may be marked with various markings; brown bands upon a tawny body color and a stripe along the spine, being most frequently observed. As they grow older, however, the markings disappear, and the uniform tawny hue of the adult is reached. The probable limit of age of the lion has been differently stated by different writers. Buffon fixed it at twenty-two years. But a lion which died in the Tower of London in 1760, had lived in captivity above seventy years. The habits of lions have been observed and described by more writers than in the case, perhaps, of any other animal; and they are known to vary constantly with circumstances, locality and the kind of prey available. In general this heavy animal, which is entirely unable to climb into trees, and frequents open rather than forested regions, gains its food by stealth and power rather than by agility and speed. Lions often go abroad by day, wandering and hunting widely; but are chiefly active at night. Then this great cat goes to some accustomed lurking place near a spring or by the side of a river, where, concealed among the brushwood, he lies in wait for the animals coming to drink. A single powerful leap generally lands him upon his prey which is crushed down by the weight of the attack and mauled and bitten about the head until the neck is broken by a wrench, or the veins and arteries are torn open. If no rivals are near, and the animal is very hungry, the prey may be devoured on the spot to the extent required to satisfy appetite; and then, after drinking copiously, the beast will usually go away to his lair, leaving the remains for his family, if they have come near (as often happens), or to hyenas and jackals. In most cases, however, the lion, like other great cats, chooses to take his quarry to some retired spot where he may feed upon it unobserved; and amazing stories are told, with apparent truth, of the strength displayed in carrying or dragging the carcasses of large antelopes, cattle and horses; it is not to be believed, however, as sometimes has been asserted, that a lion is able to «fling a bullock over its shoulder» and run away with it. Such a feat is limited to goats and small animals, if, indeed, it ever occurs. The lioness hunts by herself, especially when her kittens are young, at which time the father of the family is wandering alone, or with other males, and would be resisted if he attempted to join his spouse. The young remain with the mother until they are full-grown. The lion alone among cats is regularly polygamous, each male having three or four lionesses whose allegiance he gains by prowess in battle over rivals, and keeps by killing or driving off all newcomers. The result of these constant encounters in the arena of the desert is not only a scarcity of males but the continuous selection of the best to become progenitors of the race. One peculiarity of the lion developed by this incessant warfare among the males is the development of the defiant and terrifying voice which elevates the growl, and enlarges the scream, of other cats, into a tremendous roar — a volume of noise beyond that made by any other animal. The statement that the lion roars at stated periods appears to be almost wholly without foundation; in summer alone, and especially before storms, the lion roars before dawn. In rage the lion beats his sides with his tail, agitates his mane and facial muscles, protrudes the tongue and claws, utters the peculiar sharp, frequent growl, and altogether presents a very terrific appearance, all of which, primarily, has reference to the savage rivalry of males above described.

The natural disposition of all animals to get their food as easily as possible, has led lions everywhere to prey upon domestic cattle which, in a region where they are numerous, suffer nightly despoliation. Lions that have discovered this comparatively easy method of supplying their wants, soon learn that mankind is equally, or even more, readily obtainable. and become «man-eaters.» Beasts so sophisticated must be put out of the way; and barbarians organize great bands of men who learn the lair of the animal, surround it and effect the animal's death by any rude means possible. Some savage hunters boldly and skilfully overcome the lion almost in single combat, with rude weapons; and white hunters face him with no greater fear than attaches to encounters with many other large animals; yet the might of the beast makes him an exceedingly formidable foe. The incessant persecution to which the lion is subjected whenever a region begins to become civilized, has exterminated it over a large part of the former domain of the species. When men began to hunt in Europe in the Stone Age, they found there lions, whose remains, entombed in the floors of caves, are called those of «cave lions» (*F. spelæus*), but which present no important differences from the modern species. Within the time of written history lions dwelt in the mountains of southwestern Europe, and many of those seen in Rome in the time of the earlier Cæsars were obtained from the Danube Valley and Asia Minor. The supply was soon exhausted, however, and the later demand was met by importations from the Caucasus and southward, but mainly from northern Africa. In the arenas of ancient Rome, large numbers of lions were frequently exhibited. Sulla, the dictator, once exhibited 100 of these animals, and Pompey presented 600 in the circus; Hadrian caused 100 to be destroyed at one exhibition, and others of the emperors and consuls were equally prodigal. In order to provide these great quantities laws were promulgated protecting the beasts in the Carthaginian provinces, to the great detriment of agriculture there, and risk of the peasantry; and breeding establishments were created to produce enough lions to meet the imperial demand. The taming and training of lions have continued ever since, and to-day this great shaggy cat is the most impressive, if not the most intelligent, of the troupe which the menagerie showman gathers about him. For a long period almost all the lions exhibited in zoological gardens and shows have been those born in captivity, where the species breeds freely.

At the present day, few lions exist north of the Soudan and Abyssinia; and they have become extinct or scarce in the civilized regions of South Africa. They no longer exist in Asia Minor, but are numerous in the extensive marshes along the lower Euphrates and Tigris, and thence occur at intervals to the valleys of the Indus, where a few still remain in the wilder deserts of Cutch and Gujerat. Formerly they were known over all northern and western India.

Books of special value relating to lions and lion hunting are Flower and Lydekker's ‹Mammals, Living and Extinct›; Blanford's ‹Zoologies› (of India. Persia and Abyssinia); Anderson's ‹The Lion and the Elephant›; Porter's ‹Wild Beasts›; and the hunting narratives of Gordon Cumming, Gerard, Harris, Holub, Baker and Selous.

Lion, lē-ôṅ, or **Lyons, Gulf of,** a large bay of the Mediterranean on the south of France, extending from the Spanish frontier eastward to the Hyères Islands.

Lipa, lē-pä′, Philippines, a pueblo of the province of Batangas, Luzon, situated southwest of Lake Taal, 18 miles north of Batangas city. It is the junction of three important highways, all of which are old military roads, in excellent condition and always passable for heavy wagons. The town is therefore the seat of an important trade; sugar, corn and tobacco are produced, and there are drug stores and fine markets. It is one of the largest towns in the province; the people are very intelligent and progressive, and have established excellent schools; at one time a weekly newspaper was published. Pop. 14,000; municipality, 40,700.

Lipari, lē′pä-rē, or **Æolian Islands,** a group of volcanic islands in the Mediterranean, about 24 miles from the north coast of Sicily, situated between lat. 38° 20′ and 38° 55′ N.; lon. 14° 15′ and 15° 15′ E.; and comprised in the department of Messina. Pop. about 22,000. These islands called by the ancients Æoliæ, Vulcaniæ, and Insulæ Liparæorum, were supposed to be the residence of Æolus and Vulcan. Lipari, the largest, is populous and well cultivated, producing great quantities of corn and fruit, especially figs, grapes, and raisins; it likewise produces alum, sulphur, nitre, and cinnabar. It is about 15 miles in circumference; the air is healthful, the inhabitants industrious, and the males good sailors. On the eastern coast is situated a town of the same name, containing a castle built by Charles V., a cathedral, a college, several convents, and a hospital. A considerable trade is carried on in the principal produce of the island. The other islands are Stromboli, Panaria, Vulcano, Salini, Alicudi, and Felicudi, with two or three smaller ones. Volcanic eruptions ceased in the 6th century; but Lipari is composed of pumice-stone, lava, volcanic glass, and black sand; and the warm baths and heated vapors of the stoves (excavations which emit hot sulphurous exhalations) prove the activity of the subterranean fires.

Li″pogrammat′ic Compositions, are those in which certain letters are purposely omitted. Lope de Vega wrote a novel without an *l* or an *a*. Kotzebue wrote one without *r*.

Lipoma. See TUMORS.

Lip′pard, George, American novelist: b. Yellow Springs, Pa., 10 April 1822; d. Philadelphia 9 Feb. 1854. His most noted work was ‹The Quaker City› (1845), modeled on Sue's ‹Mysteries of Paris,› and implying that Philadelphia was a modern Sodom, though he disclaimed the inference when threatened with legal consequences. Other works by him were ‹Mysteries and Miseries of Philadelphia›; ‹The Empire City: New York — Its Upper Ten and Lower Million›; ‹Paul Ardenheim,› a Rosicrucian romance; ‹Legends of Mexico›; ‹Legends of the Revolution› (1847); ‹Washington and his Generals.›

Lippe, lĭp′pê, or **Lippe-Detmold,** Germany, a principality, bounded north, west, and south by Rhenish Prussia, and east by Hanover, Schaumburg-Lippe, and Hesse-Nassau; area, 438 square miles. It lies on the Teutoburger Wald, and is covered almost throughout by mountains and well-wooded hills, drained by the Werra, Bega, Exter, Ems, and by the Lippe. The climate is mild, but humid. Some parts of the surface are waste, or fit only for pasture, on which considerable numbers of cattle are reared; but others are fertile, producing corn, rape, hemp, and flax. The principal metal is iron, and there are quarries of limestone and gypsum, and valuable saline springs. Weaving is the chief industry, though there are also glass-works, several paper and numerous saw mills. The principal exports are wood, thread, linen, and wool. For administrative purposes it is divided into twelve bailiwicks, of which Detmold is the capital. The other chief towns are Lemgo and Horn. Since 1836 the government has been constitutional; it is a member of the German empire, and sends one member to the Bundesrath, and one to the Reichstag. Pop. chiefly Protestants (1900), 139,238.

Lippi, Fra Filippo del Carmine, frä fē-lēp'pō dĕl kär-mē'nä lēp'pē, Italian painter: b. Florence 1406; d. Spoleto 9 Oct. 1469. In his 15th year he entered the Carmelite monastery at Florence and early formed his style on the example of Masaccio, but was later influenced by Masolino, and Angelico of Fiesole (Fra Giovanni). In 1432 he left his convent, but without release from his vows. His relations with Lucrezia Buti, whether a nun or not, are largely unverified romances of Vasari, and modern biographers are not inclined to believe them. In his best work he united with the spiritual feeling of Fra Angelico of Fiesole, the strong historic imagination, energetic modeling, and unconventional loveliness of form and face, characteristic of Masaccio. His greatest masterpiece is in the parish church of Prato, and consists of a series of frescoes illustrating the life of St. Stephen, John the Baptist, etc. Many of his altar-pieces are now in the Florentine Academy. His last frescoes in the Cathedral at Spoleto were executed with the collaboration of Fra Diamante. Examples of this painter are also to be found in the galleries of Berlin, Munich, and Rome.

Lippi, Filippino, fē-lē-pē'nō, son of the preceding by Lucrezia Buti, Italian painter: b. Prato 1457 or 1458; d. Florence 18 April 1504. He was a pupil of Fra Diamante, but seems to have closely followed the artistic example of his father and Sandro Botticelli. Among his wall paintings, which show a wonderful advance beyond his predecessors, are those in the chapel of the Brancacci family at Florence, in which is portrayed the history of SS. Peter and Paul, and the decoration of the walls of the Church of Santa Maria Sopra Minerva, at Rome (1448–93) illustrating the life of Saint Thomas Aquinas. His masterpiece, however, is to be found at Florence in the Strozzi chapel of Santa Maria Novella, where his frescoes portray the legendary life of the Apostles Philip and John (1502). Some of his smaller canvases are in the galleries of Florence, Bologna, Berlin and Copenhagen.

Lippi, Lorenzo, lō-rĕnd'zō, Italian poet and painter: b. Florence 1616; d. there 1664. He published a comic epic poem in 12 cantos, ‘Il Malmantile racquisdato’ under the anagrammatic pseudonym, «Perloni Zipoli» (1676). The poem abounds in rare humor and is written in light, swift verse. The language, however, abounds in Florentine provincialities, and is unintelligible without such a commentary as is furnished to the edition of 1688 by P. Munucci. As a painter he was an imitator of Santi di Tito's manner. There is a ‘Crucifixion’ of his in the Uffizi gallery at Florence; and ‘The Triumph of David’; and ‘Christ and the Woman of Samaria’ are in the Imperial gallery at Vienna.

Lippincott, lĭp'ĭn-kŏt, **Joshua Ballinger,** American publisher: b. Juliustown, N. J., 1816; d. Philadelphia 5 Jan. 1886. He was a bookseller in Philadelphia 1831–6 and in the last named year founded the house of J. B. Lippincott & Co., which by 1850 was at the head of the book trade in Philadelphia. After his death, in 1886, the firm was converted into the J. B. Lippincott Company. ‘Lippincott's Magazine’ was established in 1868.

Lippincott, Sara Jane Clarke, «GRACE GREENWOOD,» American writer: b. Pompey, N. Y., 23 Sept. 1823; d. New Rochelle, N. Y., 20 April 1904. She was married in 1853 to L. K. Lippincott of Philadelphia. She first became known as writer for young people over the signature «Grace Greenwood.» She edited for many years ‘The Little Pilgrim,’ a paper for juvenile readers, lectured on anti-slavery and other reform movements, and corresponded for various New York journals. She published ‘Greenwood Leaves’ (1850); ‘Poems’ (1851); ‘Merrie England’ (1855); ‘Records of Five Years’ (1868); and ‘New Life in New Lands’ (1873); ‘Victoria, Queen of England’; ‘Recollections of My Childhood’; etc.

Lippincott, William Henry, American artist: b. Philadelphia, Pa., 6 Dec. 1849. He began his art studies in the Pennsylvania Academy of Fine Arts, and his first professional appearance was as a book illustrator and later as a scene painter. In 1874 he became the pupil of Bonnat and for the eight years he remained at Paris exhibited annually in the Salon. The wide range of the work which he has done since he took up his residence in New York includes portrait, genre, landscape and scene painting, and he appears regularly as an exhibitor in the annual American art exhibitions. His most important pictures include ‘The Duck's Breakfast’; ‘Un Jour de Congé’; ‘Pink of Old Fashion’; ‘Helena’; ‘Infantry in Arms’; ‘Love's Ambush’; and ‘Pleasant Reflections.’

Lip'pitt, Charles Warren, American manufacturer and politician: b. Providence, R. I., 8 Oct. 1846. He was graduated from Brown University in 1865 and in 1869 entered his father's woolen establishment. He has held various local posts of honor, such as president of the Providence Board of Trade, 1881–2, and has been president since 1896 of the Rhode Island National Bank. He was governor of Rhode Island, 1895–7.

Lippmann, lĭp'man, **Julie Mathilde,** American author and critic: b. Brooklyn 27 June 1864. She received an academic education and began writing at an early age. She has contributed to the leading American magazines; and has written verse and juvenile stories. Her publications include ‘Through Slumbertown, and Wakeland' (1891); 'Jock o'Dreams' (1891); 'Miss Wildfire' (1897); 'Dorothy Day' (1898); 'Sweet Ps' (1902); 'Dearie, Dot. and the Dog' (1903); 'Del's Debt' (1903); also the plays 'A Fool and his Money' (1897); 'Cousin Faithful' (1897); and 'The Facts in the Case' (1897).

Lipsius, Justus, the Latin name of the famous scholar, Joest Lips: b. 1547 at Issche, near Brussels; d. 1606. He was a professor successively at Jena, Leyden, and Louvain. Lipsius, Scaliger, and Casaubon were known as the great «Triumvirate.» Although his most important works were his editions of Tacitus (whom he claimed to know by heart) and of Seneca, his editions of 'Velleius Paterculus' and 'Valerius Maximus' and his works on Roman antiquities are still of value.

Lip'ton, Sir **Thomas Johnstone,** Irish merchant and yachtsman: b. Glasgow, Scotland, 1850. He came to America as a steerage passenger in 1865, for two years worked in the South Carolina rice fields, later in various northern towns, opened a provision shop in Glasgow, attained great business success and finally organized the «Lipton, Limited,» the largest commercial establishment in the United Kingdom, where it controls 420 shops. This business is capitalized at $200,000,000, with tea, coffee, and cocoa estates in India and Ceylon, fruit-orchards in Kent and elsewhere, and a packing-house and refrigerator-car line in Chicago. Lipton has given largely for charitable purposes, including $125,000 in Diamond Jubilee year (1897) for a dinner fund for the poor, and $500,000 toward the Alexandra trust for supplying working-people with cheap dinners. He is best known, however, for his efforts as a representative of the Royal Ulster Yacht Club to obtain the America's Cup in the international yacht-races of 1899, 1901, and 1903. His three British-built yachts were in each contest defeated in three straight races. He was knighted in 1893, and made a baronet in 1902.

Liquefaction of Gases. See Gases, Liquefied, Use of.

Liqueur, lĭ-kėr' (the French name), a palatable spirituous drink composed of water, alcohol, sugar, and some aromatic infusion extracted from fruits, seeds, etc. The great differences in the qualities of the different liqueurs are owing principally to a variation in the proportions of the sugar and alcohol. The French distinguish three qualities: the *ratafias* or simple liqueurs, the oils, or the fine liqueurs, and the creams or superfine liqueurs.

Liquid Air. See Air; Gases, Liquefied, Use of; Tripler, C. E.

Liquidambar, lĭk'wĭd-ăm"bạr, **Sweet, Red,** or **Star-leaved Gum,** a tree (*Liquidambar styraciflua*), also called bilsted and alligator-tree, of the witch hazel family widely diffused through North America, from lat. 43° to Florida, and along the shores of the Gulf into the provinces of Mexico. The leaves are five-lobed, and the lobes are pointed, and serrated on the margin, giving them a very distinct and elegant form, and in autumn they turn rich purplish red. The flowers are inconspicuous. The fruit consists of a hanging ball of woody pointed pods which open and release the seeds,—a most singular and characteristic fruit, suggesting the globular spiked head of the mediæval war-club called «morning star.» The usual diameter of the trunk is from 1 to 3 feet. The wood is compact, capable of receiving a fine polish, and has been used for articles of furniture. The bark has a habit of forming wing-like projections on the twigs, unlike any other American tree, on being wounded yields a small quantity of a fragrant resin (storax or styrax), which contains benzoic acid. Most of the liquid storax used in pharmacy, however, is obtained from Trieste, and is collected from *L. orientale,* the «lord-wood» of the Cypriots, which grows throughout the Levant.

Liquids, Compressibility of. It was long supposed that liquids were perfectly incompressible. In the Florentine experiment a hollow globe of gold or lead was filled with water and the hole soldered. When the globe was crushed, so that its volume was diminished, some water forced its way through the metal and appeared like dew on the outside, and it was hence concluded that water was not susceptible of compression. Oersted, however, disproved these conclusions. His piezometer, which was a bulb at the end of a graduated capillary tube, was nearly filled with water, a small thread of mercury being at the end of the column of water in the tube. The relative volumes of the bulb and tube were known. The piezometer, along with a small air manometer, was surrounded with water inside a strong glass vessel. The water filled the vessel, and might be subjected to great pressure by means of a screw. When the screw was turned, the position of the mercury thread showed the water in the piezometer to be compressed; and comparison with the manometer enabled the compressibility to be found. Oersted's method is not exact enough. The following results are those of Grassi, who employed Ragnault's improvement on Oersted's method. The pressure of one atmosphere caused

Mercury at 0° C. to shrink	3	millionths	of its volume.
Water at 0° C.	50	"	"
Water at 41.6° C.	44	"	"
Ether at 0° C.	111	"	"

Liquor Laws and License. See Internal Revenue; Local Option.

Liquor Traffic. The use of alcoholic beverages in the United States has increased 100 per cent since 1880. In 1902, the consumption of liquor amounted to 19.48 gallons per capita. The use of the milder stimulants has not grown so fast, that of coffee rising from 8.78 pounds per capita to 13.37 pounds, a little over 52 per cent, while tea dropped from 1.39 pounds to 0.94 pound, a decrease of nearly 48 per cent. The supplanting of the milder for the stronger stimulants does not indicate greater national regard for better social and higher physical conditions.

The total bill of the American people for stimulants in 1902 was $1,396,098,276; the average yearly expenditure for the previous five years, $1,239,108,955. The record for 1902 represents a per capita expenditure for stimulants of $17.33 for the 79,003,000 inhabitants of the United States, or 4.7 cents per day. The users of alcoholic stimulants are estimated to form one fourth the total population, on which basis the per capita cost of alcoholic beverages is $69.32, or 19 cents per day.

Bringing together into one group the cost at retail of all beverages, we find that the United States consumed in 1902 alcoholic and non-alcoholic stimulants to the value of $1,369,098,276, as follows:

Alcoholic drinks		$1,172,565,235
Non-alcoholic stimulants —		
Coffee	$149,891,030	
Tea	39,642,011	
Cocoa	7,000,000	
		196,533,041
Total, 1902		$1,369,098,276
Total, 1901		1,273,212,386
Total, 1900		1,228,674,925
Total, 1899		1,146,897,822
Total, 1898		1,177,661,366

The quantities of the four leading beverages consumed for the year ending 30 June 1902, were as follows:

	Gallons
Coffee	1,498,910,304
Beer	1,381,875,437
Tea	396,420,115
Spirits and wines	157,206,554

The latest report of the United States Bureau of Statistics shows the per capita consumption of liquors in this country:

	Spirits Gallons	Wine Gallons	Beer Gallons	Total Gallons
1892....	1.51	.44	15.17	17.12
1893....	1.52	.48	16.20	18.20
1894....	1.34	.31	15.32	16.97
1895....	1.13	.28	15.13	16.54
1896....	1.01	.26	15.38	16.66
1897....	1.02	.53	14.94	16.50
1898....	1.12	.28	15.96	17.36
1899....	1.17	.35	15.28	16.80
1900....	1.27	.40	16.01	17.68
1901....	1.33	.37	16.20	17.90
1902....	1.36	.63	17.49	19.48

Coffee continues to hold first place in the affections of the American people. Its low cost stimulates demand and makes it a formidable competitor of alcoholic liquors and malt beverages. The use of beer, wine and spirits shows considerable gain over 1901 — a notable fact in view of the great prosperity of the United States. See BEER; COFFEE; TEA; WHISKEY; WINE; ETC.

Liquorice. See LICORICE.

Liquors, a term applied to alcoholic or spirituous fluids whether distilled or fermented. Alcoholic liquors are usually divided into three groups, viz., the fermented, the malt liquors, and the distilled liquors. The first of these include those wines and liquors which are made from the juice of fruits and in which the natural sugar is converted into alcohol by exposure to the open air. The second class includes such as ales, porter and beer in which the starchy ingredients are by certain processes changed into sugar before fermentation can take place. The third division includes brandies, whiskeys and gin, and whether these be derived from fruits or grain the distillation process is carried on further by condensation and vaporization.

Wine Manufacture.— Wine needing no machinery for its manufacture is the oldest of beverages. It was early made by the Greeks and Romans who exercised the greatest care in its preparation, often flavoring it with spices and herbs. The early settlers of this country naturally set about its manufacture almost simultaneously with their landing, but it was not until about 1880 that the wine industry received any impetus, and since that time it has rapidly increased. The California wine industry which is little more than fifty years old gives employment to 60,000 persons and represents a combined capital of $72,200,000. The largest vineyard in California and also the largest in the world was owned by the late Senator Leland, founder of the Leland Stanford Junior University. It comprised nearly 5,000 acres.

Manufacture of Malt Liquors.— The consumption and manufacture of malt liquors in America increased very slowly principally on account of the introduction of tea and the household manufacture of ciders and fruit brandies. The manufacture of beer in the United States began about 1840, and the number of breweries for making of malt liquors has increased from 431 in 1850, to about 1600 in 1903. The development of this branch is due chiefly to the energy of the Germans. The chief cities for its manufacture are Milwaukee, St. Louis, Cincinnati, Rochester, Pittsburg and Kansas City.

Manufacture of Distilled Liquors.— The steady growth of this industry is not so marked as is that of wine and malt liquor manufacture. The distilleries are scattered about 28 different States, among which Illinois produces the largest amount, with Kentucky, Indiana, Ohio, Pennsylvania and Maryland following in order named. For statistical information see U. S. government reports 1903.

Lira, lē'ra̤, an Italian silver coin valued at about 18 cents in American money. It is the basis of the Italian monetary system; the gold coins are pieces of 100, 50, 20, 10, and 5 lire; the silver coins, of 5 and 2 lire, besides 1 lira and a half lira (50 centesimi); also lower coins in nickel and bronze.

Lir''ioden'dron. See TULIP TREE.

Lisaine, lē-zān, **Battle of**, an engagement of the Franco-German war, 15–17 Jan. 1871, on the banks of the Lisaine River near Belfort (q.v.). See BOURBAKI CHARLES DENIS SAUTER.

Lisbon, lĭz'bŏn, Ohio, village, county-seat of Columbiana County; on the Beaver River, and on the Erie Railroad; about 130 miles northeast of Columbus. It is situated in an agricultural region with extensive coal-fields in the vicinity. Sheep and cattle raising, the cultivation of grain and vegetables, and mining are the prominent occupations in this section. Lisbon is the trade centre for a large portion of the county. The village owns and operates the waterworks. The public library has about 4,000 volumes. Pop. (1890) 2,278; (1900) 3,330.

Lisbon, Portugal, the capital and principal seaport on the right bank of the Tagus, about 9 miles above its mouth. It is built on a succession of hills, rising from the quays in the form of an amphitheatre. The streets of the olders parts, more especially in the east, are steep, narrow, crooked, badly paved, and dirty; the houses, with a few exceptions are old-fashioned and mean. The modern portion, however, which lies on even ground, in the valley between the Monte do Castello on the east, and the hills of San Francisco and Do Carmo on the west, consists of several parallel streets crossed by others at right angles, and is regular, well built, clean, traversed by street railways, electrically lighted, and provided with a telephone service. Of these the D'Ouro (Gold), Do Prato (Silver), D'Augusta, Do Chiado (Cloth) streets extend about one half mile, north to south, having at their southern extremity the Praça do Commercio, a large and handsome square, surrounded on three sides by the naval arsenal, the exchange, custom-house, and other public buildings, and having the Tagus on the south. At the northern extremity of these streets are the Praça da Figueira, a picturesque square, used as a public market, and a handsome square called the Rocio or Praça de Dom Pedro IV., with a fine bronze statue of Dom Pedro IV., surmounting a tall marble column. To the northwest extends, for nearly a mile, a broad avenue, the Avenida da Liberdade, lined with handsome houses, and planted with shrubs, etc. Besides this the finest open spaces are the Estrella Gardens, the Botanic Garden, the Praça do Principe Real and that of Pedro de Alcantara. The western quarter called Buenos Ayres, is airy and pleasant, and here foreigners chiefly reside. The town of Belem, on the west, beyond the river Alcantara, forms a sort of suburb to Lisbon. It has a well-known tower, forming one of the defenses of the harbor. The principal residence of royalty is the Ajuda Palace, built of white marble on the summit of a hill. The castle of St. George is remarkable for the beauty of its situation. Other noteworthy buildings are the cathedral, once a Moorish mosque, on the slope of the Castle Hill, on the east; the church do Coração de Jesus, surmounted by a splendid dome; the church of the Martyrs, erected on the spot where Alphonso I. mounted the walls of the city and rescued it from the Moors; the handsome church of Santa Engracia; the church and monastery of Belem; and the church of San Roque. The numerous convents which crown the hills, and appear like palaces and fortresses, are for the most part massive and imposing structures. But unquestionably the most remarkable specimen of architecture is the aqueduct which conveys water to the city from springs rising near the village of Bellas, about 6 miles distant. It is partly conducted underground, but on approaching Lisbon it crosses the deep valley of Alcantara, which is spanned for nearly 2,500 feet by a bridge of thirty arches, the loftiest of which is 240 feet high and 110 feet wide. An additional supply is brought in by another series of works from a distance of 18 miles. The scientific and literary institutions comprise the Royal Academy of Sciences, founded in the latter part of the 18th century; the well equipped Polytechnic School, with a museum, botanic garden, and observatory; an academy of medicine and surgery; institute of agriculture and veterinary medicine; Royal Marine Academy; Royal Military College, School of Music, National Library, containing about 300,000 volumes, and that of the Academy of Sciences, numbering about 80,000 volumes; the Royal Schools of Vicente de Fora; Royal School of Drawing and Architecture. The harbor, or rather the roadstead, is one of the finest in the world; and the quays, which extend between two and three miles along the bank of the river, are elegant and commodious. The exports consist chiefly of wine, oil, fruit, cork, fish, onions and other vegetables, and salt; and the principal imports are grain, silk, linen, cotton, and woolen cloths, iron, steel, hardware, dried fish petroleum colonial produce and coals. An aggregate of about 6,000 vessels of over 7,000,000 tons enter and clear the port annually. The manufactures include various textile goods, tobacco, paper, chemicals, and soap; there are also sugar-refineries, iron-foundries, and potteries.

Libson was anciently called Olisipo. Felicitas Julia was its name under the Romans. It was captured by the Moors in 716, and remained in their possession till 1147. In 1755 it was visited by the historic and terrible earthquake, which threw down a considerable portion of the city, and destroyed above 30,000 of its inhabitants. It was taken by the French in 1807, but resisted an attack by Masséna in 1809. Pop. (1900) 357,000.

Lisburn, lĭs'bėrn, Ireland, a market-town in the counties of Antrim and Down, 8 miles southwest of Belfast, on the river Lagan. It is in general well built, and has a clean and thriving appearance with a market-house and court-house; the episcopal cathedral church of the united dioceses of Down, Connor, and Dromore, containing a monument to Jeremy Taylor, who died here in 1667; a Roman Catholic church and other places of worship; county infirmary; new people's park, etc. Flax spinning and weaving, and the manufacture of thread, muslin and damask, employ the greater number of inhabitants. Pop. (1901) 11,459.

Lissajous's (lē-sä-zhooz') **Figures.** A ray of light is reflected from the limb of an upright tuning-fork to the limb of a horizontal tuning-fork, and thence to a screen, a point of which it illuminates. When the tuning-forks vibrate, if they are perfectly in unison the spot on the screen describes a straight line, or a circle, or an ellipse, but if not, various complex curves are described. See ACOUSTICS; VIBRATION.

Lis'ter, Joseph, English surgeon: b. Upton, Essex, 5 April 1827. He was graduated M. B. of London University in 1852, becoming in the same year a fellow of the Royal College of Surgeons. For a few years he lectured on surgery in Edinburgh, and from 1860 to 1869 was professor of surgery in Glasgow University. He was professor of clinical surgery in the University of Edinburgh, 1869–77, and filled the corresponding chair in King's College, London, 1877–92. His name is especially connected with the successful application of the antiseptic treatment in surgery, which inaugurated a new era in this branch of medical science. He received the prize of the Academy of Paris, and the medal of the Royal Society in 1880. In 1883 he was made a baronet, and in 1897 was raised to the peerage. He has published papers on surgical pathology, etc.

Liszt, Franz, fränts lĭst, French pianist and composer: b. Raiding, near Odenburg, Hungary, 22 Oct. 1811; d. Baireuth 31 July 1886. He was scarcely nine years of age when he made his first appearance as a pianist and improvisator in Odenburg and Presburg with such success, that several noblemen undertook the expenses of his training at Vienna under Czerny the pianist, and Salieri the composer. In 1823 he made a great sensation as executant and improvisator on the piano in Vienna, Munich, Paris and other cities. His father thereupon traveled with him through France, Switzerland and England for further study of his art. While yet a boy he composed the operetta 'Don Sancho' (1824) and the following year launched out into grand opera at Paris. His hearing of Paganini in 1831 affected him greatly and had a most stimulating influence on his cultivation of virtuosity. At this time he experienced the conflict, between his religious predilections and his father's wishes for his musical success, which resulted in his yielding to the latter's advice and adopting the profession of music instead of studying for the ministry. In 1835 he had completed his studies as composer for the piano, and in company with the Countess d'Agoult, who afterward became the mother of his children, he began his travels, during which he gave a series of concerts in Switzerland, Italy, and Hungary, winding up with some remarkable performances in Vienna. From 1839 to 1847 he made a triumphal progress through the whole of Europe. His success was due less to the astounding power of execution with which he rendered the masterpieces of every age, than to the sublimity, the noble feeling, the depth of expression with which he rendered every number of his programme. Honors now were showered upon him; he was made Kapellmeister to the Grand Elector of Weimar; Frederick William IV. knighted him, and he was decorated by every court in Europe. From this time (1848) to 1861 he worked at Weimar as the teacher and «inspirer» of a large circle of young musicians. He then settled in Rome. In 1870 he was made president of the Royal Musical Academy at Budapest and henceforth lived in turn there, at Rome and at Weimar. The villa in the last city which he occupied now contains the Liszt museum.

In the career of Liszt as a composer there are three distinct periods. The compositions of his first period consist partly of 'Transcriptions' for the pianoforte (a department in piano music inaugurated by him); partly of piano pieces, songs and choruses for male voices. In the second period, during his residence at Weimar, he applied himself to purely instrumental music, in accordance with the principles which he had learned of Berlioz. He sought on the piano to express by a symphony familiar poetic objects and by means of this to adumbrate ideas of a lyric or dramatic order. To this class of compositions belong his twelve 'Symphonic Poems,' namely, (1) 'Ce qu'on entend sur la Montagne' known also as 'The Mountain Symphony'; (2) Tasso's 'Lamento e Trionfo'; (3) Preludes, after Lamartine's 'Notre Vie est-elle autre Chose qu'une Serie de Preludes'; (4) 'Orpheus'; (5) 'Prometheus'; etc. Later in this period appeared 'Missa Solennis' and 'The Hungarian Coronation Mass.' In his third period, from his residence in Rome to his death, he is chiefly remarkable as a composer of sacred music. He produced the oratorios 'Christus'; and 'The Legend of Saint Elizabeth'; a 'Requiem,' for male voices and the organ; besides 'Cantatas,' 'Psalms,' 'Paternosters,' and short pieces for the church choir. In all these works he followed the method inaugurated by Berlioz and Wagner, and his works indicate the high water mark of the North German school. What perhaps won him most renown were his 'Symphonic Poems' and his sacred compositions, in which latter he strove to blend the liturgical and dramatic elements of music. He was also a musical critic of considerable power. Among his published works may be enumerated: 'Frederic Chopin' (1852); 'Lohengrin et Tannhäuser de R. Wagner' (1851); and 'Les Bohemiens et leur musique en Hongrie' (1859). Consult: Ramann, 'Franz Liszt als Künstler und Mensch' (1893); Voegel, 'Franz Liszt' (1888); Von Lenz, 'Great Piano Virtuosos' (1899); and Fay, 'Music Study in Germany' (1880).

Lit de Justice, lē dė zhüs-tēs, formerly a solemn proceeding in France, in which the king, with the princes of the blood royal, the peers, and the officers of the crown, state, and court, proceeded to the parliament, and there, sitting upon the throne or lit, caused those commands and orders which the parliament did not approve to be registered in his presence. The parliament had the right of remonstrating in behalf of the nation against the royal commands and edicts. Louis XV. held such a lit de justice in 1763, in order to introduce certain imposts, but on account of the firm resistance of the parliaments he was finally obliged to yield. The last lits de justice were held by Louis XVI. in 1787 and 1788.

Lit'any (from the Greek *litancia,* supplication, prayer), a form of prayer or song, first especially used on occasions of public calamity, and introduced according to Zonaras and Nicephorus, by Proclus, about the year 446, at Constantinople, in the reign of Theodosius; according to Paulus Diaconus, under Justinian, at Antioch, in consequence of the following circumstance: An earthquake, says the legend, having driven the people into the fields, a boy was suddenly taken up into the air in their presence, but was again let down unhurt, on the people crying out «Kyrie eleison!» (O Lord, have mercy). The boy related he had heard the song of the angels, «Holy God! Holy and Mighty, Holy and Immortal! have mercy upon us!» and this gave rise to the Litany. This kind of common prayer was perhaps not unusual among the Jews, and Psalm cxxxvi. seems to have been adapted to this purpose.

The litanies in general use in the Roman Catholic Church are the «Litany of the Most Holy Name of Jesus,» the «Litany of the Saints» and the «Litany of Loreto.» The «Litany of the Most Holy Name of Jesus» is composed of a series of addresses to Jesus Christ, using the different names by which He is called. Like all the litanies it begins with «Kyrie eleison» (Lord have mercy) and ends with an entreaty to the «Lamb of God who taketh away the sins of the world.» This litany is said aloud in the churches by the members of the «Holy Name Societies» on general communion days. The «Litany of the Saints» is composed of supplications to God for favors and to return thanks, and a number of petitions to saints asking their intercession. This litany is a part of the special church service for Saint Mark's day, the rogation days, the rubrics for the consecration of churches and cemeteries, for ordinations and for other church services. The «Litany of Loreto» receives its name from being sung on Saturdays and feasts of the Virgin Mary, in the Santa Casa of Loreto. It consists of a number of petitions to the Virgin Mary using her different titles as found in the Scriptures and in sacred writings, and asking her intercession.

Litanies are found in the old hymn-books of the Lutherans, but are no longer used by Protestant Germans. In the Anglican prayer-book the litany is retained, and though it adheres in many respects to the ancient forms, it differs from that of the Roman Catholic Church, and contains no invocation of the Virgin or the saints. Since 1661 it is no longer a distinct service, but, when used, forms part of the morning prayer, after the third collect for Grace.

Litchfield, lĭch'fēld, **Grace Denio,** American novelist: b. New York 19 Nov. 1849. She has lived in Europe for a number of years, but since 1888 has resided in Washington, D. C. Her works are: ‹Only an Incident› (1883); ‹The Knight of the Black Forest› (1885); ‹Criss Cross› (1885); ‹A Hard-Won Victory› (1888); ‹Little Venice› (1890); ‹Little He and She› (1893); ‹Mimosa Leaves› (1895); ‹In the Crucible› (1897); ‹The Moving Finger Writes› (1903).

Litchfield, Conn., borough, one of the county-seats of Litchfield County; near Bantam Lake, and on the Shepaug, Litchfield & Northern railroad; about 15 miles northwest of Waterbury and 28 miles west of Hartford. The first settlement was made in 1719, and the place was called Bantam, but after a few years the name was changed to Litchfield. During the Revolutionary War the place was used for storage of supplies. The women of Litchfield melted and made into bullets the statue of George III. which the people of New York city had torn down from Bowling Green on 9 July. Sarah Pierce opened here, in 1792, a school for the higher education of women. Judge Tapping Reeve, in 1784, opened here the first law school in the United States. It was patronized by many young men who afterward became prominent in the affairs of the nation. It was the birthplace of Ethan Allen and of Henry Ward Beecher and Harriet Beecher Stowe. Lyman Beecher was a pastor here for 16 years beginning with 1810. Litchfield is situated in a region where grazing and dairying are the prominent industries, but valuable deposits of nickel ore are found in the vicinity. The beautiful scenery, beautiful and mild climate and places of historic interest, make it a favorite pleasure resort. The chief industrial establishments are creameries. Bantam Lake, nearby, is the largest in the State. Pop. (1900) 1,120.

Litchfield, Ill., city, in Montgomery County; on the Illinois Central, the Cleveland, C., C. & St. L., the Wabash, the Chicago, P. & St. L., the Chicago & A., and the Jacksonville & St. L.; about 50 miles northeast of Saint Louis, Mo., and 45 miles south of Springfield. It is in a good farming section, with oil, coal, and natural gas in the vicinity. The chief industries are mining and manufacturing. The principal manufactures are railroad cars, foundry products, glass, briquet ornaments, mine engines, brick, tile, flour, and lumber. The trade is in the manufactures, coal, oil, and some farm products. It has good schools, a public library, and several prominent buildings. The government is vested in a mayor whose term of office is two years, and in a council, with administrative officials appointed by the mayor and approved by the council. Pop. (1900) 5,918.

Litchfield, Minn., village, county-seat of Meeker County; on the Great Northern railroad; about 63 miles west of Saint Paul. It is situated in an agricultural and stock-raising region. Its chief industries are connected with farm products and the shipping of live stock. It has machine-shops, flour and lumber-mills, wagon and carriage factory, a foundry and brick yards. Pop. (1900) 2,280.

Litchi, lĭch'ĭ, or **Lee-Chee,** a tree (*Nephelium litchi*) of the horse-chestnut family, native to southern China. It is of moderate size, with brown bark, large leaves, and fruit produced in bunches, which are pendant from the extremities of the twigs. Each berry, known in trade simply as «litchi,» is 1 to 2 inches in diameter, with a tough, thin, leathery coat, and a colorless half-transparent pulp, in the centre of which is a single brown seed. The fresh fruit is pleasantly sweet and reputed to be one of the most delicious known. It is sold extensively in America and Europe in a dried state, and though the pulp is much diminished in size it retains a considerable portion of its original flavor. Attempts have been made to cultivate it in the United States with some success in southern California and at Key West, but the tree seems extremely susceptible to chilling. Other species of *Nephelium,* as the longan tree (*N. longanum*) of the East Indies, yield similar fruit, and seem better adapted to American cultivation; its nuts are smaller and less sugary than those of the litchi, but are regarded by the Chinese, by whom they are also cultivated, as having useful medicinal qualities.

Liter. See LITRE.

Literary History, the history of books, treating therefore the attainments and progress of the human mind in every department, and the characteristic tendencies and opinions of every age. Political and ecclesiastical histories deal chiefly with events; literary history, with thought; each merges into the other, and they are necessarily connected in any complete narrative. Bibliography, biography, and even special criticism are but the subordinate parts of literary history; its main object is to show the general progress and phases of intellectual development and of æsthetic and moral culture. The ancients left no example of this species of history. It consists in large part of generalizations from literary phenomena, of which Paterculus gives one early instance. He shows by a historical review that the great men of antiquity seem often to have come in clusters, appearing almost contemporaneously in particular places. Quintilian also introduces the principal authors of Greece and Rome together in a single chapter. But the classical and mediæval authors rendered scarcely any service to this department, except by leaving materials. The principal attempts in the 17th century were the ‹Prodromus Historiæ Literariæ› of Lambecius (1659), in which the design of a universal account of literature is completed only as far as the times of Moses and Cadmus, and the ‹Polyhistor Literarius› of Morhof (1688), a work of erudition and judgment, which was enlarged by Fabricius, and remained long in esteem. From the 16th century many more or less comprehensive histories of European literature have apeared, and the 19th century especially produced valuable synoptical views both of European and Oriental literature.

Literary Labor-savers, Library Utensils, and Mercantile Office-fixtures. Man goes from barbarism to civilization by learning to do things better, quicker, easier, or more cheaply. Some labor-savers combine two or more of these improvements. America leads the world in prosperity because it led in adopting standard sizes for parts of machinery and in other labor-saving methods and devices. Obviously by as much as services of high salaried men who work at desks are more valuable than those of mechanics, by so much are literary labor-savers worth more to the world than the highly prized machines of manufacture and commerce. Yet it was not till a library supply bureau was founded in Boston in 1876 that this was practically recognized. Since then there has been marvelous development, till now a device for saving money, time or labor in office, library or study is valued as highly as one for factory, shop or farm.

This article aims to be practical, not historical, and to call attention to a few less prominent things useful to those aiming to accomplish most intellectual labor with their time and strength. Space allows only dogmatic statements when convincing reasons based on long tests and special studies could easily be given. These experiments are constantly in progress in connection with the New York State Library School, at Albany (see LIBRARY SCHOOLS), which has in its museum of labor-saving methods and appliances the entire collections and World's Fair exhibits of the American Library Association organized in 1876, the aim being to give information as to which of the countless devices and new methods are really worth adoption.

Hundreds of ingenious, practical labor-savers for technical uses will be brought to attention of those needing them by their promoters. Electric and other tabulating and computing machines illustrate immense savings made possible by such devices, which are as important to desk workers as sewing-machines to seamstresses or improved tools to mechanics. If the principle is admitted that time and labor should be saved for brain work as for hand work, it follows that the minutest saving is worth attention. Many factories make their entire profit by using an improved method or machine, or by utilizing waste in some by-product. In offices with many clerks, a method by which four motions do the thing formerly taking five, saves a considerable aggregate in salaries each year.

Writing and Printing.— Writing is easily the greatest of human inventions. All nations recognize this in their traditions by attributing to it divine origin. Some 5,000 years ago Egyptian priests evolved pictures of things into ideograms or pictures of abstract qualities and ideas, then pictures for sounds of words or syllables (where some Eastern languages still stop); and finally pictures for sounds of final elements or single letters. The surfaces on which these were written were evolved from stone, horn, clay, metal, wood, wax, bamboo, and birch-bark, skins, and papyrus, till we reached that wonderful product, paper. The first writing implement, of flint, was followed by the stylus, fine brush of hairs, split reed, quill, steel and gold dip pens, which in turn are now being superseded by fountain pens and typewriters. After inventing writing, the ancients devised abbreviation systems as labor-savers. Then came the faster forms of letters for cursive writing which we call small or lower case. Taking less space and being both written and read more quickly, they have already largely displaced capitals, with a growing tendency to displace them still farther. The next step was a combination of greater abbreviation and greater simplifying of forms by stenography, which was revolutionized and systemized by Isaac Pitman. (See STENOGRAPHY.) The greatest invention after writing was printing, followed by telegraph, cable, and telephone, which, in universal use, suggest what the human mind has already done and possibilities of farther growth.

Model Office or Study.— A southeast corner room is best; north light is most uniform; west least desirable. Health forbids carpets in public rooms. Use hardwood floors, or corticine, which is cheap, durable, easily washed, deadens noise, and is warm. Hot water is best for heat, being free from the quick changes and annoying cracking usual in steam. For ventilation, have both inlet and outlet flues, with open fire if practicable. If not, insure circulation through flues by gas jets, pipes, or motors. Desks should stand with windows at left. The popular roll-top darkens the desk top. The roll, if needed, is better over pigeonholes, which are best for space in front of the chair if one has many papers, as they allow the largest number of boxes to be reached most quickly. Pigeonholes are best where quick work is the chief end, but catch more dust than drawers and take more space than vertical files which hold on edge papers, pamphlets, and clippings, and are cleanest, cheapest, and best for most storage. Space not needed for pigeonholes in front of the desk is best used for vertical files or drawers. Telephone and desk light (with green porcelain shade to protect the eyes) should be on arms, to swing out of the way when not in use, and save desk space. Standard size pigeonholes, drawers, trays, and shelves should fill all blank wall space at left and behind, within reach from the swivel-and-spring desk chair. Some find a chair with curved spring back a help. Upholstery is heating and sometimes dangerous for constant use.

A model desk is 78 cm high, not 75 as is common. Drawers run to floor without baseboard and clear through to back and have side runs with no cross pieces. At no extra cost this gives easier action and maximum storage. All drawers are at least 9 cm deep inside to hold standard card trays. The centre opening for the feet is at least 60 cm wide with a centre drawer large enough for 50x60 cm standard large sheets often needed for charts and tables. Rows of drawers each side the chair have slides above them, as long as possible. On small desks extension leaves supported by folding brackets may be added to either end. Tops are 60 to 100 cm wide. The usual length, 150 cm [60 in.] is the largest top easily reacht from the chair.

Office bells should be single stroke, not buzzers, to allow simpler codes of time-saving signals. Barometer or fountain sponge cup and mucilage stands save labor. If inkstands are used, the Perfect or some other pattern that prevents evaporation and so requires no refilling till ink is all used, is important. Self-inking rubber stamps for any words or dates often written save much time and give more distinct entries. If several are used they must be kept in racks plainly labeled or it takes as long to find the right one as to write the words. A metal straight edge exactly P size is much quicker than shears and ruler in fitting clippings and parts of sheets for trays. Printed blanks for everything much used, with alternatives both printed so that instead of filling in words, a single stroke crosses out those not wanted, reduce labor immensely. Printing is cheap, clerical labor costly. A letter sheet with months at the head of 12 columns, ruled with 31 numbered lines, gives a square for each day in the year and is invaluable for statistics or records.

Vertical writing, disjoined, is more like print and can be written as fast as the sloping hand which is so much less legible that libraries prohibit it on catalogue cards. Blotting blurs the sharp lines of writing and takes away some color. Ink should dry naturally. Odd size envelopes are a nuisance and go less safely in mails than standard sizes, as they project and are torn or crumpled in the post-office when tied in bundles. For notes and P cards use No. 5½, for 4P sheet (15 x 25 cm) No. 6¼, for letter-sheet No. 8½. Never use for manuscript a sheet wider than 20 cm. Science proves this line twice too long for easiest reading, the best width of paper being 12.5 cm.

Typewriters.— No one tolerates pen work for letters written by clerks since it is known that typewriting is more legible, easier, faster, and cheaper, thus combining all four labor-saving elements. Many high salaried men have now learned that ease and speed make it well worth while to type such writing as they do with their own hands. If one writes at all, by as much as his time is more valuable than a $10 clerk is the typewriter worth more for his personal use. The visible writers rapidly coming into use remove a serious objection, as each letter is in sight as written. By the touch system in growing use the operator never looks at the keys but strikes the right ones by touch, like a skilled pianist (See TYPEWRITER.)

Fountain Pens are now as practical as dip pens, which are as absurd for the penman's constant tool as a muzzle-loading rifle for a modern soldier. Thousands have tried fountain pens and discarded them as failures, when they would have found them invaluable by observing these rules: (1) Select from a full line a pen exactly suiting the hand. More than 100 varieties of each first-class pen are regularly made. (2) Keep the gold pen bright by cleaning it often on a wet sponge. (3) Use a free-flowing standard ink, preferably filtered, and never mix inks or fill from a bottle open to air and dust. If clogged by poor or mixed inks or dirt, soak barrel and feeder thoroughly in water or wash out with alcohol. (4) To avoid top-heavy effect for sensitive hands, do not put cap on top of holder when writing.

Duplication.— Copying by hand was costly and untrustworthy. The copypress banished it. In turn this is largely superseded by the rubber roller copier, worked as easily as a clothes wringer and giving, with copying ink, five or more good copies if needed. The carbon sheet, usable with pencil or stiff, smooth-pointed pen, but best with typewriter, gives, with the one writing, 10 good copies on thin paper, or on cobweb paper 20 to 30. The best duplicator is the stencil cut on wax paper with typewriter and printed from a simple press up to several hundred copies, if needed, as permanent as other printing. As the wax costs 8 cents a sheet, many have for temporary uses pans of composition on which anilin ink from pen or typewriter ribbon offsets. These use only common paper, are cheapest and quickest for temporary use if more than carbon copies are wanted, but anilin ink soon fades.

Card System.— This is easily greatest of labor-savers for literary and business use. With the modern library movement dating from 1876, its growth has been phenomenal and the saving effected more than money can measure. Instead of bound books, separate cards or sheets are used, on edge with frequently projecting guides, which enable one to find any item almost instantly. Matter may be added or removed at any point without recopying or disarrangement, so that the material is always up to date, and the plan is invaluable for every growing record, and has been adopted successfully for thousands of different applications. Its usefulness is diminished or destroyed unless the cards are cut to more exact height than common machines allow. A minute variation results in «bridging,» that is, a low card between two higher ones is missed by the finger in turning. Equally important is it to have the best patterns of trays, supporting blocks, and locking rods to give the greatest possible speed in reference. Most patent devices for these purposes are useless. Libraries have by long experience found what gives best results. The international standard size card is 7.5 cm high, 12.5 wide, and is known as P or postal size. The United States Government prints its postcard, size K, and all its catalogue cards on this size, and the National and International Library and Bibliographic societies use this standard, which has in 25 years established itself beyond possibility of change. It is enough smaller than 3 x 5 inches, for which it is often mistaken by the inexpert, to make inch cards worthless in a standard index. They must be cut down to standard size or serious trouble will result.

This size is often found better to use in place of larger sheets for short bills, receipts, bank checks, etc., as they can be handled much quicker. The saving of space occupied seems trifling, but grows serious. Originally cards were over three times as large and were kept in a single row of covered boxes. The gain in number of cards stored on a given floor space was threefold when three rows of drawers replaced these boxes and 15-fold for the standard case 15 rows high; twofold more when cards were made half the thickness, twofold more when trays were made twice as long. Thus a library now stores 200 times as many cards on a given floor space, yet many are still embarrassed for lack of room. Single column trays with sides cut down to give more light and with label-holders in the pull have largely replaced the heavier two-column drawers. The best standard unit case is 2 to 3 pigeonholes wide and 15 high, each pigeonhole 9 x 29 cm and 50 cm deep, just holding 2 standard trays. Between the 6th and 7th rows of trays should be slides on which to rest drawers from pigeonholes too high or low to allow convenient reading. Short desk trays are 25 cm long with sides and partitions, if any, only 5 cm high, thus giving better light and easier handling than if full height of cards. All desk drawers should be full 9 cm deep to hold these trays. All cards should have an 8 mm hole near the lower edge, in the middle. For private use locking rods needed in public indexes may be omitted, but the hole is often needed to tie cards together or for special uses. Rods are to prevent removal and loss, so that a notch in place of a hole is bad, as cards can be bent a little and readily removed without tearing. A pocket binder with eyelets opposite the card holes and a tie cord and bar is the handiest way to carry cards. The best card stock, weighing 200 grams to a square metre, is as good as the older 300 or 400 gram stock which took twice the space. Heavier cards are needed only for guides. These with projecting tabs more than double usefulness. Cards as well as guides can be had with these tabs, affording immense possibilities of double, triple and quadruple classification by tab, card color, ink color, and number or heading. For lighter cards 133 gram stock, two-thirds the weight of the light standard, is best. With it 300 times as many cards can be put in a floor space as with the simplest combination of old outfits. The 100 gram stock, which is ordinary five-pound commercial note-paper, is also used where space saving and cheapness are more important than ease of handling.

The largest standard card index is L size, for cards 25 cm high by 20 cm wide. The drawers are 21.5 wide and 28 cm high inside, and outside are 27.5 x 30 cm by 50 cm long. They have rods and blocks with sides cut away like the P size, but drawers are on extension slides so that they can be opened to their full length. The unit is four drawers high from the floor, the highest that can be readily consulted standing. The best low unit is two L drawers high with a P drawer and an extension slide and table top above, making a case 78 cm high, 32 cm wide and 50 cm long. This stands at the end of a desk as an extension, or better at right angles, so all cards may be read without rising from the chair. Heavy manila guides 27 cm high have tabs 4 cm wide projecting 1 cm higher. Another projection from the middle of the bottom runs in a groove in the drawer bottom and has a stout eyelet through which the locking rod runs, a necessity for so large cards. For these large sheets two folios not used in P size are needed. A manila envelop 20.5 x 25.5 cm, open at the top and right side, holds together stiffly enough to hold thin papers on edge. The long folio is of manila 20 cm wide, 51 cm long, folded with front 24 cm, back 27 cm high. In the top smaller subdivisions than indicated in the projecting tabs of the guides are written and closer classification of papers is maintained. Manila, white, blue, buff and other colors are used for these folios when more than one classification is wanted in the same series, for example, personal papers mingled with office or firm papers on the same subject. Thus papers belonging to a half-dozen different parties can be closely classified together by subjects without confusing ownership which is instantly recognized by the folio color. This L size index fits most magazines, pamphlets, letters and typewritten documents and is the best working unit for all papers too large for P trays. It is much preferable to filing on the long edge because papers may be read in the drawer with letterheads, titles of articles, etc., at the top in the best light, exactly like library catalogs. The commercial vertical files, 12 in. wide, 10 in. high are slower in use because folios must be lifted out and opened before consultation. So many use objectionably large sheets with a line twice too long for easy reading that the larger file will be used for commercial purposes till business men learn the advantages of never using a sheet larger than 20 x 25 cm. For all other uses the L size is vastly better and when letters or papers on larger size come in they are quickly folded once and dropt into regular place.

Intermediate sizes are seldom needed. B or billet (10 x 15 cm), N or note (12.5 x 20 cm) are largely used, but a single size, D or double P (15 cm high by 12.5 cm wide), is best and has the great advantage that a single fold makes a card from this exactly fit standard P trays now universally used. The standard large sheet for card index stock is 50 x 60 cm and to save waste aliquot parts of this should always be chosen. Ninety-nine times out of one hundred P, D or L size will be better than any other, and odd sizes are more expensive and often wasteful when indexes are combined or rearranged. If other sizes must be had for special use, they should be chosen from this full series:

Symbol	Name	Size in cm.
V	Visiting card	5 x 7.5
H	Half P	6.25 x 7.5
I	Index	5 x 12.5
P	Postal	7.5 x 12.5
B	Billet	10 x 15
D	Double P	12.5 x 15
N	Note	12.5 x 20
3P		12.5 x 22.5
4P		15 x 25
L	Letter	20 x 25

Arrangement in any card system is either A to Z, like a dictionary, or 1, 2, 3, or classified, both numeric and classed plans having alphabetic indexes on P cards. The numeric system is best for correspondents writing many letters or for special contracts or other business distinct but not obviously classed under any subject or name. For this use the short numbers 1 to 9 or 99 should be reserved for the heaviest correspondence. The rest are assigned and indext as subjects arise, the folios being kept in 1, 2, 3 order. They can be filed or found much quicker than by any other than Arabic notation, which is the simplest known to the human mind. The numeric file is very bad in scattering by accidental order matter on allied subjects which ought to stand side by side. Every system should have an alphabetic supplement for miscellaneous correspondents who write few letters, since it is self-indexed and its few papers are put away and found again more quickly than if classified or numbered and indext. A great file of papers is like a library in miniature. Experience the world over has proved that while alphabetic and numeric systems are invaluable for many purposes, usefulness demands close classing as material grows. The best plan is to combine simplicity of numeric and utility of classed as in the 'Decimal Classification and Relative Index' used by most libraries. The simplest possible printed index of 20,000 headings tells instantly by what number to mark or to find any paper, for example, bees are marked 638. This means sixth class Useful Arts, third division Agriculture, eighth section Bees. Every paper about bees is marked 638 and goes in the drawer in numeric order where it can instantly be found by the printed index. Twenty-five years' use in a score of countries has proved this numeric system, with its relativ index, a marvelous labor-saver. Classification is a necessity if all material on any given subject is to be readily found. The labor of making one's own classification is usually prohibitive if well done. By adopting the scheme in general use by libraries this labor is saved and numbers are in harmony with those of thousands of other catalogs and indexes in which the same number has the same meaning; for as was pointed out at a recent international congress, these numbers are an international language of perfectly definite meaning among all civilized nations, and also cheapest and quickest in application.

Individuals like libraries may often wisely separate «dead» from «live» material. Correspondence and topics no longer often consulted are transferred to duplicate drawers, which for storage may be of cheaper construction. Working drawers and trays near the desk will thus be filled with matter oftenest used, while that removed is not tied in bundles or packt in boxes, but is kept best and most cheaply in P and L drawers, in a single series, so that matter removed at different times is all found in its exact numeric or alphabetic order regardless of date of removal. The index entry shows by an underscore topics removed to storage, so that no time is lost in double reference. This system has had a marvelous growth as people learn its economy of time and space. Formerly papers were folded, endorsed and tied in bundles. Flat filing in cabinets, minutely self-indext without labeling, drove out this costly system. Vertical filing, like a library catalog, is in turn rapidly driving out flat filing cabinets. The loose leaf system is only a variation of the card index of which the essential is indefinite intercalation. Instead of standing on edge in drawers, loose leaves are put in a Unimatic or some other binder by a device which holds them like a book, opening flat but allowing leaves to be added or removed at any point almost instantly. For certain desk uses this is preferable to trays, but the tendency grows to put business ledgers, bank records and everything else in regular trays. The fear of losing detached pieces proves practically groundless and the saving over books is very large.

Colors.— These may be given mnemonic values in binding, paper or ink. Languages, not subjects, should guide in bindings if books are arranged, as almost universally, by subjects, for variety of color is important in finding and replacing books quickly. The language scheme used for 20 years by some libraries is:

1. American, light brown
2. English, dark brown
3. German, black
39. Minor Teutonic, dark blue
4. French, red.
5. Italian, maroon.
6. Spanish, olive.
7. Latin, light green.
8. Greek, dark green.
91. Minor Aryan, light blue.
92. Semitic, yellow.
93–99. Hamitic, etc., light drab.

Colors beginning with the same letter as the subject are easier remembered, but should not be chosen if a distinctly better color is available. Libraries use blue for bibliography, canary for criticism, green for biography. Slips are often arranged by days or months:

Sunday	sage green	Thursday	turquoise or manila
Monday	melon	Friday	fawn
Tuesday	terra-cotta	Saturday	straw
Wednesday	white		

January	white	July	blue
February	fawn	August	apple green
March	melon	September	straw
April	azure	October	orange
May	manila	November	nile green
June	jonquil	December	dove

The checklist below of paper colors for 26 letters omits most of those too dark to be written on or often confused. The second colors named often confuse with others first in the list elsewhere and so are seldom used. Letters with no available color are assigned the best unused, so as to give colors to all 26 letters if needed:

A	azure, apple green, amber
B	blue, buff, brown
C	canary, cherry, carmine, cream, café-au-lait
D	dove, drab
E	ecru
F	fawn
G	green, gold, gray, granite
H	heliotrope, hazel
I	ivory, indigo
J	jacqueminot, jonquil
K	corn
L	lilac, lavender, lemon
M	melon, mauve, marigold, manila
N	nile green
O	orange, old gold, olive
P	pink, primrose, pearl gray, purple
Q	Quaker drab
R	red, rose, robin egg
S	sage, straw, salmon, sky blue, steel
T	terra-cotta, turquoise, tea, tan
U	ultramarine, buff
V	violet, mauve
W	white
X	granite
Y	yellow
Z	zenith, manila

The favorite distinct colors to write on are white, buff, blue, canary, green, cream, manila. Melon or salmon soils worst from handling. As cards must be of uniform size to fit trays and drawers, the distinction of various circulars and blanks often made by shape is best made by color.

Ink Colors.— The best colors in order are: Black, red, blue, green; and least permanent, violet or lilac. Colors are used chiefly for figures or other short entries or for checking lists. Two, three or four pens or pencils can be carried between the fingers so that a check mark may be made instantly in either of four colors. Red is used for receipts, returns, income, renewals; blue for the reverse, payments, outgo, issues; green for gain; lilac for loss. Special meanings are assigned to check marks for each case and should always be written at the beginning of the list for future reference. Different colored inks or pencils are often assigned to different people working over the same lists so that color shows who made each mark. Where classification may change, color is better in ink than in paper as recopying can be saved by underscoring the first words in the new color which supersedes the old.

Exact Reference.—In indexes and other exact work indicate by superior figures the particular ninth of page or column in which the passage referred to begins; for example, $5:34^3$ means vol. 5, p. 34, beginning in third ninth of the page (about one-third the way down). Of superior figures, odd numbers 1, 5 and 9 denote top, middle and bottom of pages; 3 and 7, points half way between top and middle or middle and bottom, while even numbers are mere modifiers of these positions, 2 denoting a point a little below the top, 8 a point a little above the bottom; 4 and 6, points just above and below the middle. If there are several columns on a page, use two superior figures, the first denoting column and the second position in the column; for example, $7{:}89^{13-28}$ means vol. 7, p. 89, beginning in the third ninth of column 1 and ending near the bottom (in the eighth ninth) of column 2. In condensed matter use the library date system: (1) Day of week, (2) day of month, (3) month, (4) year.

Months				Days	
Ja	Ap	Jl	O	Su	Th
F	My	Ag	N	M	F
Mr	Je	S	D	Tu	St
				W	

For Wed. 9 Sept. 1885, write W 9 S 85.

Numbers for months are dangerous. As usage is about equally divided, no one can tell whether 6–7 means July 6 or June 7. The L. B. dates above are exact and average fewer marks.

Numbers.— Use only Arabic numerals and letters and avoid the clumsy and easily misread Roman numerals; for example, Vol. 88, not Vol. LXXXVIII.

Newspaper Clippings.— These are almost useless unless closely classified. Plain manila sheets 20 x 25 cm are better than any patent scrapbook. They are classed like other papers with subject number on left upper corner and are kept laced in binders or much better in L drawers like thin pamphlets, thus bringing clippings, circulars, letters and notes on each minute topic all together in one folio.

Metric System.— John Quincy Adams reported to Congress that if metric weights and measures could be generally used they would be a greater labor-saver to the human race than steam. Since then nearly all civilized nations have adopted these measures, and America and England are both nearing such adoption. The international decimal system, agreeing perfectly with our arithmetic, stands near the head as a labor-saver. Computation showed that a single railroad could save $50,000 a year in clerical labor by its use.

Colon Forenames.— In library catalogs where space is important, the most common full names are indicated by initials followed by a colon or double period, thus C: H: Smith is known to be Charles Henry Smith, while C. H. Smith may have any names beginning with C. or H. With no extra space or cost the full name is accurately given by adopting C: A. Cutter's library list below:

A:	Augustus.	A. .	Anna.
B:	Benjamin.	B. .	Beatrice.
C:	Charles.	C. .	Charlotte.
D:	David.	D. .	Delia.
E:	Edward.	E. .	Elizabeth.
F:	Frederick.	F. .	Fanny.
G:	George.	G. .	Grace.
H:	Henry.	H. .	Helen.
I:	Isaac.	I. .	Isabella.
J:	John.	J. .	Jane.
K:	Karl.	K. .	Kate.
L:	Lewis.	L. .	Louisa.
M:	Mark.	M. .	Mary.
N:	Nicholas.	N. .	Nancy.
O:	Otto.	O. .	Olivia.
P:	Peter.	P. .	Pauline.
R:	Richard.	R. .	Rebecca.
S:	Samuel.	S. .	Sarah.
T:	Thomas.	T. .	Theresa.
U:	Ulrich.	U. .	Ursula.
V:	Victor.	V. .	Victoria.
W:	William.	W. .	Wilhelmina.
		Z. .	Zenobia.

Nine tenths of matter usually kept flat in drawers is better kept on edge in L size vertical files which are handiest and cheapest except for papers in constant use in open pigeonholes; cards in P trays and books and pamphlets on shelves. The best library shelf is 75 cm long, 20 cm deep and 25.5 cm high, thus taking all books up to octavo 25 cm. Cases should be seven or eight shelves high with 15 or 20 cm ledge, if wished, above the three lower shelves. The best pamphlet case is a plain wood box covered with marble paper, open only on the back. This is handier and more durable than costly patent boxes. Shelves, pigeonholes and blanks should all be read from top to bottom and from left to right like the columns of a newspaper, never jumping over the upright.

The most practical, cheapest and oftenest needed labor-saving is to use the fewest words and marks that will convey meaning readily and accurately.

MELVIL DEWEY,

Formerly Director New York State Library.

Literary Property. See COPYWRIGHT.

Literature. Literature may be loosely defined as the result of the operations of the human mind embodied in written language. This definition, however, is open to the objection that it includes too much and excludes too much. To apply it literally would be to include everything that is written, a palpable error, in view of the restricted sense in which the term is generally accepted. The trivial, the ephemeral, and the commonplace, which do not merit consideration, would, under such a broad definition, be entitled to a place. It would, moreover, exclude the great body of tradition, although that objection might be met with the assertion that tradition does not become literature until it has been reduced to writing. A narrower and more specific definition of the term is obviously necessary. It may well be limited to the best utterance of the human mind, as handed down in writing; the written expression of the advanced thought and culture, the result of the learning and imagination of all ages reduced in the crucible of time and purified of all dross and worthless matter.

A survey of the field of literature, which is intended within a limited space, to show its growth and development from its very beginning, with a glance at the forces and the conditions that made for that growth and development, must of necessity be in the nature of a mere sketch. In view of this, little more than a brief glance will be necessary at those phases of the world's literature which have not affected the literature of modern Europe, for that is the matter which is of chief concern. A study of that in its causes brings us inevitably back to Greece, and the beginning of Greek literature marks the departure of Occidental from Oriental traditions and life and manners of thought. The literature of the Orient was a thing apart and for many centuries exerted practically no influence. Before the birth of letters this separation had occurred. The tide of migration from the cradle of the race in Asia to the fertile plains of Greece had brought the wanderers into a new environment. Under its influence the gloom and pessimism of the Orient had been sloughed off and a new aspect of the world opened up. The old traditions were forgotten and a new order sprang into being.

The culture of Greece, and therefore of the entire western world, was a spontaneous growth. It was indigenous to the soil. It is true that for the invention of letters and the art of writing the world is indebted to the Orient. The Phœnicians were the first to devise an alphabet, and by them its use was spread throughout the world. But beyond this original debt European literature owes little to the East. With the adoption of this art by the Greeks the indebtedness ceased. When it was introduced Greece had passed through centuries of literary development, the period of epic poetry was drawing to a close and she was on the threshold of the second, the period of lyric poetry. Her literature was already a reality and she lacked only the means of perpetuating it. It had come into being without model, without precedent; it was the spontaneous expression of a keenly intellectual and highly imaginative people for many years isolated and self-centred, and it shows no trace of impulse or influence from without.

As Greek literature is the parent stream from which flows the literature of all modern Europe, so are the Homeric poems the fountain in which rises the stream of Greek literature. They are the record of the struggle between Orient and Occident, fought out on the plains of windy Troy. They are the earliest expression of the nationality of Greece. Whether or not there is a basis of reality for the deeds there recorded is of little or no moment to the student of literature. It is sufficient for him to know that this imaginative, art-loving people, seeking an outlet for pent-up feeling, found it in the songs of their rhapsodoi, and in finding it evolved a new art-form. Whether the events recorded in that new art-form were historically correct, or were figments of a lively imagination, or something compounded of both elements, is a matter of little concern. It was a vehicle for the expression of national feeling; it was the means of keeping alive an inspiring tradition; it was instrumental in systematizing a national theogony, and, more than all, it furnished an intellectual pleasure to a people preternaturally keen and alert. For all these reasons it flourished. The very exigencies of its existence evolved the means of perpetuating it. The absence of a system of writing necessitated the invention of versification as an aid to memory and an assurance of the permanency of the tradition.

For about 500 years Greek thought and its expression were unaffected by any influence save that of the Homeric poems. The stream flowed on, increasing in volume, but unvarying in character. The Homeric spirit was the bond which united a Greece otherwise disunited and subject to narrow, local prejudices and interests. The national religion, the fruit of this tradition, was the direct and immediate force which made for national unity. But the simplicity of the Homeric conception gave little scope for the expression of Greek genius. It was narrow. Greece, huddled in her own complacency, required other conditions to awaken her to a consciousness of her possibilities. Those conditions presented themselves in the impending danger from the East.

During all these centuries of her isolation Greece had blinded herself to conditions and events beyond the limits of her own shores, and it was not until the peril of the East and the imminent danger from the countless hordes of the great empire of Persia loomed up at her very gate that she awoke. Then she buckled on her armor for a supreme and desperate struggle and hurled the threatened danger back. The experience was enlightening. It awoke her to the realization that there was a world beyond her borders. Hitherto she had lived a calm and placid life, self-centred and self-contented. She broadened with the experience. And with the wider life came a wider and a greater literature. Then came Herodotus, the «Homer of history,» to chronicle the events of that great world without, which heretofore Greece had so tranquilly ignored. And not merely did he chronicle those events, but through his chronicle he sang the praises of his native land. The world without was subject to the great king of Persia, and Greece had humbled that great king. This was the burden of his tale as that other great triumph over the Orient had been the burden of Homer's song five centuries before.

But with the enlargement of the Grecian horizon came a corresponding broadening of mind. The experience through which she had passed had stimulated her mental activities and awakened her to the imminence of dangers to which she had for centuries deliberately blinded herself. Hitherto, around and about, encompassing her universe, gods and men alike, hung an impenetrable darkness. Fate, which blindly ruled all things and to which the deities of the puerile Homeric theogony were as helplessly subject as the mortals whom they ruled, ever threatened them from afar. She had fought off the recognition of it until the danger of the Persian invasion, coming as a concrete figure of the greater moral danger, had aroused her. Suddenly awakened from its dream the Greek imagination, lively and susceptible, was quickened into action. Its gaze was turned inward. The problem became a thing of the present.

The fruit of this introspection came in the philosophy by which the Greek intellect strove to solve the riddle of the universe. Brought face to face with the great problem, its keenness and activity were taxed to the uttermost. Nowhere did unassisted reason advance so far toward the solution of the problem of human destiny as in the Greece of Plato and Aristotle. But still the dark cloud of fate overhung their horizon. Infinitely broader as it was than the Homeric conception, it was still bounded by darkness and awesome mystery. Fate was as inscrutable and insoluble to the maturity and enlightenment of the philosophic age as it had been to the childishness of the epic period, and philosophy struggled in vain with the problem from which ingenuous imagination had turned in fear.

While Greek philosophy was wrestling with the mystery of fate, Greek imagination was not idle. With the larger growth had come the necessity for a wider field for the expression of imaginative literature. Greece had outgrown the limitations of the epic narrative, and to meet that necessity her fertile invention evolved the drama. And here in this new field imagination was grappling with the same problem that engrossed the attention of reason. Rooted in religion, having its beginning as a part of the religious ceremony, it was naturally involved with that which dominated all religious thought, the grim spectre of fate. Man, as pictured in Greek tragedy, was helpless in the hands of fate. Do what he would he was powerless against the grim, relentless power that acted blindly and without discrimination. Freedom was unknown either to the passive victim or to the pitiless force that crushed him.

Three commanding figures stand out among the makers of Greek drama, figuring successive stages of its development—Æschylus, Sophocles, and Euripides (qq. v.). They record in their works the struggle of the Greek mind with the tremendous problem and its final defeat. Fate is inscrutable and the end is despair and skepticism. In Æschylus we see fate pictured as the problem of the universe. Humanity struggles hopelessly with a blind and unreasoning destiny and succumbs. In Sophocles the situation is narrower, for here fate is set forth as the problem of a Greek nation. It is a picture of a nation, a race battling with the awful power that crushes it out of existence. In Euripides the combat is still further narrowed. Here fate is treated as the problem of the individual. Here inexorable destiny is brought into conflict with the individual and the individual succumbs, withered and crushed. In the day of Euripides faith in the gods was a thing of the past. Skepticism had rooted itself firmly in the hearts of the people and was destroying the power of those gods. With Euripides began the period of decadence. After him came only a procession of grammarians and rhetoricians preserving the outward show of genius which they had inherited, but wanting the spirit. And when the conqueror arrived he found Greek literature a mummy, still possessing the contour but without the informing spirit of its former self. See Classical Literature.

Meanwhile the seat of empire was shifting. Rome was advancing as Greece declined and her legions were carrying her standards abroad and extending her boundaries. And from Greece Rome brought back what remained of Greek literature. It was but the formula, for the spirit had departed, but it served its purpose. It gave a new direction to Roman thought; it set a standard for the expression of that thought, and thenceforward Roman literature became a mere echo, an imitation, and in many respects a feeble, paltry imitation of the literature of Greece.

It must not be believed, as has been freely and carelessly asserted by some writers, that Rome had no literature distinctively her own. That a native poetry existed, prior to the introduction of Greek models, has been proved beyond question. Ennius, one of the earliest Latin poets whose work has survived, prided himself on having rooted out the old native minstrelsy and introduced the new poetic form furnished by Greece, and other authentic allusions abundantly establish the fact that there was an ancient literature — rude and undeveloped, in all probability, but still a literature. It was a crude, ballad literature and concerned itself, presumably, with the early legends and traditions of the race. Authentic Roman history goes back no further than the liberation of Rome from the Gauls. Beyond that is legend or fabulous narrative so mingled with record of fact as to be undistinguishable — fit matter for the minstrelsy of a people to whom patriotism was the supreme virtue. These legends furnished the themes of the native songs. But while these rude ballads themselves have been lost, the subject-matter has been preserved, embodied by the early chroniclers in their histories. There it remained and until modern research winnowed fact from fancy, and established the point at which real history began, it was generally accepted by the world as history.

It must not be supposed that the new culture was accepted without a struggle and that the native literature was without its partisans. All Rome did not share the view of Ennius, that to have supplanted one with the other was a glorious achievement. Twice the Senate decreed the banishment of Greek philosophers, rhetoricians, and other innovators, and stern patriots like old Cato fought bitterly against the departure from old standards. But the struggle was futile. The influence of Greek literature was too powerful to be resisted. Greek was the common language of the civilized world, and Rome, rapidly becoming mistress of that world, found a knowledge of the universal tongue a necessity. With the knowledge of the language came a knowledge of the literature, beside which her own looked poor and rude and provincial. So her own was abandoned and in its stead grew up a new literature, great, but a mere echo of an older and a greater. Virgil in his great epic followed closely the model of Homer, and although his bucolics in their genial atmosphere reflect a love of nature and the outdoor life that is distinctively Roman and Italian, yet they, too, proclaim the influence of Greece. Horace sang in Grecian measure, and Ovid, Tibullus, and a host of other lyric poets set their thoughts to the same melodious strains. One only literary form—the satire (q.v.), in which Horace and Juvenal excelled — is original with Rome. It may be said to take the place of comedy, for dramatic literature never flourished there. Plautus, Terence, and others slavishly copied the Greek dramatic models but the drama never acquired a hold on the Roman people. But it is in its prose that the chief excellence of the Latin literature is to be found. The clear, direct, simple narrative of Cæsar, the polished rhetoric of Livy, the eloquence of Cicero, the strength and vigor of Tacitus — these are the chief glories of Latin letters. They are the characteristic expression of the Roman mind.

That Roman literature was an exotic and not a spontaneous native growth is evident from the meagreness of its fruitage and its comparatively brief existence. For 600 years Rome had practically no literature. Then, following closely on the conquest of Greece, came a period of about 180 years, or from the consulate of Cicero to the death of Trajan, of productions modeled closely on the Greek, and then, with a few brilliant exceptions like Tacitus, the age of the classic writers ceased. Tacitus was the last of the great classic writers, as Trajan, during whose reign he flourished, was the last of the Cæsars who can be measured by the highest Roman standard.

But, side by side with the expiring paganism was growing and developing a new influence. Christianity was gathering strength, and to combat it we find during the next period, from Hadrian to Justinian, a recrudescence of Greek philosophy. In this Neo-Platonic movement the influence of Egypt and the Orient was felt. The deepest thinkers, despite a strong national pride, looked toward Egypt as the primitive source of their own mythology and traditions, while India was to them the original home of speculative thought. So the dead literature of Egypt and the mysticism and sensualism of India were pressed into service with this new compound of Platonic and Aristotelean doctrine for the last struggle against the growing power of Christianity.

But this was not the only element which the Orient furnished to this supreme struggle between truth and error. Still another and a far greater force was operating, and operating for the cause of truth. Paganism, turning to the Orient had found much that conformed to its tenets, but found also two phases of intellectual development — the Hebrew and the Persian — that offered absolute antagonism. The Hebrew literature, embodying the revealed Word of God, a literature divinely inspired and reverently preserved, was the very antithesis of Greek thought. And of all the nations of the East the nearest to the Hebrew in religion and in traditions was the Persian. Its dualistic doctrine of two contending and equally powerful elements of good and evil ruling the universe was far removed from the pure truth of Hebrew teaching, but it was equally far removed from the errors of Greece and Egypt.

The Hebrew literature, the books of the Old Testament, was that other force that entered into the intellectual struggle now going on in the world's arena. It was the groundwork on which the structure of Christianity was raised. For the Old Testament (q. v.) must not be looked upon merely as the record of the operations of the Hebrew intellect. Viewed even as such, it is unique, inasmuch as it forms a more complete unit than the literary product of any other nation in the world's history. Its four parts, Genesis, Thora, the historical books, and the Prophets, all refer to a common centre — the Church of the old Covenant. But it is more than that. It is more than the mere literary expression of a peculiar and an isolated people. It is a book for all time and all people — it is the first part of the Divine Word, that unifying force which gives to all literature its significance.

It was on this groundwork that the structure of Christian literature was erected. And as it arose the decaying walls of pagan literature cracked and toppled. Pagan letters practically expired with Epictetus and Marcus Aurelius. And as the ancient structure was crumbling into an impressive ruin the foundations of the new were being laid in the early writings of the Fathers. Saint Jerome, Saint Ambrose, Saint Augustine, were the pioneers of the new order and they brought a new light — the light of faith — to illumine the path they were blazing. The pagan literature had no light to penetrate the gloom that overshadowed it. From the earliest days of Greece to the end the riddle of the universe was insoluble. A blind, unreasoning destiny dominated everything and man was impotent. In the new order, with its doctrine of freedom of will and a Divine Providence, the gloom was penetrated. In the Roman conception the State was the dominant consideration; the individual was of no consequence. In the new order the situation was reversed and the individual with a soul to save was exalted to an eminence which hitherto he had never known. Saint Augustine was the culmination of the patristic literature. The 'City of God' was the climax of this first period of Christian literature. It was the first philosophy of literature, the first comprehensive conception of a universal higher law governing the world.

With the disappearance of the old literature came the crumbling of the material empire. Rome fell a victim to her own corruption. While there were still worlds to conquer and before the luxurious tastes and tendencies which were the fruit of her earlier conquests had begun to undermine her rude vigor she was irresistible. But now, with the whole civilized world under her sway and the work of corrupting influences accomplished, her strength and vigor were decaying. The barbarians swarmed into her dominions from all sides completing by the overthrow of her rule the work which had been so thoroughly begun by her own barbarism. The Visigoths in Spain, the Ostrogoths in Italy, the Franks in Gaul, the Angles and Saxons in Britain followed the retreating eagles and planted the seeds of new nations.

For four centuries after the beginning of the Christian era paganism had been decaying. For four centuries after the fall of the Roman Empire the world was in a state of upheaval. The barbarism within under the guise of culture had sapped the strength of the people and now it came in contact with that other barbarism, fresh from the wilderness and strong with the physical strength of untutored savagery. The conflict was brief and vigorous savagery triumphed over corrupted civilization. During the four centuries from Saint Augustine to Charlemagne the world was in a continuous state of unrest. The unsettled tribes kept it in a ferment and in the turmoil of predatory warfare the light of learning was well-nigh extinguished.

It was by a strange and — unless one believes in a Providence overseeing such things — a fortuitous destiny that the lamp of learning was kept alight during those four centuries of darkness. Practically the whole of Europe, except Ireland and the Highlands of Scotland, was in a state of upheaval. Ireland was inhabited by the Gaels, a Celtic people who, according to a vague national tradition, had come in some remote age from the far East by way of the Mediterranean and Spain. From their isolated position and their warlike character they had successfully resisted invasion and worked out their destiny independently. Unaffected by Greek or Roman civilization they had developed a system of jurisprudence peculiarly their own, a national music, and a rich and varied literature. This literature had passed through three successive cycles of development centuries before the other languages of Europe had been formed, and was rich in saga and song and prose tale when Christianity was introduced in the 5th century. Rome had never secured a foothold on the island so the crumbling of the Empire in no way affected its inhabitants. They had promptly accepted Christianity, and monastic schools sprang into being in every quarter of the island. And hither, to the one peaceful spot in Europe, scholars flocked during the centuries of violent transition on the Continent. And from these island schools they returned to spread the light and combat the powers of barbarism, and to hoard in their monasteries for more propitious times the learning of the past. Christianity as a unifying force was at work, and when the race eventually emerged from that period of darkness it operated for the generation and development of a new learning. See Gaelic Literature.

With the passing of the period of darkness came the birth of a new literature, curious in its twofold character. For the use of the learned the Latin tongue was universally employed. It was a common language for scholars of all nations and, moreover, it seemed to offer a greater assurance of permanency than the colloquial speech. But the idiomatic tongue of each of the nations had its literature, too, a literature poetic and imaginative and full of a vigorous life. The tribes, emerging from savagery, had brought, each its own traditions, its folk-tales, its popular minstrelsy, and these were now developing under the new conditions into the literature of imagination. The early patrons of learning, Theodoric, the Goth, Alfred, and Charlemagne strove to maintain and encourage both. The one they felt would preserve for all time the inheritance of learning; while the other would perpetuate the heroic memorials of the past.

This period of European literary history was rich in material for song and story, and in impulse to poetic expression. The spirit of chivalry was the spirit of poesy, and in the days of chivalry courage and love and the nobler virtues were celebrated. And here in these songs of love Christian influence was again felt. Love in the pagan conception was erotic. It was known only in its carnal aspect, and all the love-songs of ancient literature breathed this spirit. But Christianity, by lifting woman to a higher plane and investing the sentiment of love with a spiritual significance, superinduced a similar quality in the poetry that sang that love. The Crusades (q. v.), by stimulating both the religious fervor and the love of adventure, did much to foster the spirit of chivalry, and with it the love of song and romantic story that was inseparable from it. The Norman influence, too, was all-powerful in keeping alive the literature of the period. From the time they came out of the North into touch with the civilization of Europe they gave again and again a fresh impulse to European fancy. Their temperament, their adventurous spirit, and their achievements in England, in Sicily, in the Holy Land, were a constant inspiration.

With the passing of the centuries came the growth and development of the tongues of modern Europe. The trouvères and the troubadours, the minnesingers and the hosts of poets who made songs for the pure love of song, were unconsciously shaping and fixing the languages for all time. In the 9th century High German took definite form, and in the 11th and 12th centuries the Romance dialects settled into a language which was later differentiated into Provençal, Italian, Spanish, and Northern French. The *Gay-Savoir* of Provençe, and the *Minne-gesang* of Germany were familiar forms, and Petrarch sang in the Italian that he despised. The three great mediæval epics — the Niebelungen Lied, the story of Charlemagne and his twelve Paladins, and the history of King Arthur and the Round Table — were given a definite literary form, and around them gathered a great number of tales of lesser importance, but similar in spirit and purpose. The returning Crusaders brought with them tales from the East, traditional stories from Persia and Arabia, and the rich imagination of the Orient contributed to the already plentiful store of European literature.

The drama which had languished and degenerated and finally disappeared in the later Roman era was revived in the early middle ages under conditions remarkably similar to those under which it originated in Greece. The Greek classic drama began in the choral songs of the religious festivals, and the mediæval drama had its origin in the religious ceremonies of the Christian Church. The mystery plays and miracle plays were essentially religious, and where they have survived to the present day, at Oberammergau and in the remote parts of France, they still retain this characteristic. They were designed to impress on a simple, unlettered people the truths of religion which were likely to fall on unheeding ears from the lips of a preacher. They were originally performed in the church, at one or other of the great festivals, forming practically a part of the ceremonies. The mystery play presented in dramatic form some doctrine of the Church, while the miracle play depicted an incident, or series of incidents, in the life of a saint or patriarch or prophet.

It has been maintained by some that the mediæval drama was a spontaneous growth, having no connection with the drama of antiquity. This theory is based on the fact that the older drama had completely disappeared before the newer came into being, and the additional fact that the new drama, despite the high degree of perfection attained by the classic stage, had its beginning in such crude form. The connection, however, can be traced. The monks and nuns, who were the authors of these mediæval plays, were the custodians of the ancient learning, and while the drama, as a popular entertainment had fallen into disuse, there is no evidence that the plays of the ancients were not used as models. Hroswitha, the learned nun of Gandersheim, among others, wrote in the 10th century several religious closet dramas in imitation of Terence. It is, moreover, possible that the form could have been preserved without any exhaustive study of the models.

These plays were acted in the church until about the 10th century, when they ceased to form a part of the ceremonies and were presented on platforms erected in the churchyard. Later they passed from the control of the clergy into the hands of the guilds and other associations of laymen. They lost much of their religious character and became vehicles for buffoonery. Out of them grew a third form of play, the morality, which aimed to teach, by means of allegory, not religious truth, but a simple moral lesson. Some of these dramas, still extant, show a high degree of perfection within their limited compass. They flourished until the 15th century, and after that shared popular favor with the interlude, the masque, and other minor forms, until in the 16th century a highly developed drama seemed to spring suddenly into being, reaching its highest development in Calderon in Spain, and Shakespeare in England.

The period from the 12th to the 14th century was rich in achievement. It brought the fruitage of the preceding centuries in every field of art and letters. In the speculative and imaginative fields it was especially fruitful. Saint Thomas Aquinas, the greatest of the scholastics, and Dante, the greatest of mediæval poets,— the one in his 'Summa Theologiæ,' the other in his 'Divina Commedia '— voiced the most complete expression of Christian truth. These were the crowning achievements of the period, it is true, but they were not all. The nations, each speaking its own tongue, were pouring forth a stream of poetry and song. German minstrelsy began practically in the 12th century under Frederick I. and other lesser German sovereigns. Wolfram von Eschenbach, Walter von der Vogelweide, and many another bard sang the traditional ballads and hero-tales, and in their hands German poetry developed and took on a distinct national form. It flourished through the 13th and the early part of the 14th, when its bloom passed away. The literature lived, it is true, but it was no longer the inspired song of the preceding century. Political satire and didactic poetry and prose narrative took the place of ballad and hero-tale.

France contributed less to the popular poetry of that time, although in the 13th century she gave to the world one great and important work, the famous 'Romance of the Rose.' This notable allegory, commenced by Guillaume de Lorris and completed 40 years after his death by Jean de Meung, had a wide and powerful influence. It was told in many a court and translated into many another tongue, and unquestionably gave an impulse to allegorical composition that was felt throughout Europe. The literature of France at this time abounded too, in chronicles of chivalry and historical memoirs, but it was in no way comparable in point of culture or power of expression with contemporary continental literatures.

In Spain conditions differed in a measure from those in the other countries of Europe. She is unique among modern nations in that her literature can boast of a great national epic, 'The Song of the Cid.' This poem, which dates from the close of the 12th century, has entered into and permeated national thought and popular imagination as no other tale of any other nation of Europe has done, and has accomplished much toward keeping alive a purely national literature. Moreover, the constant warfare with the Moors, which was itself the inspiration of 'The Song of the Cid,' fanned the flame of nationalism, and with a flexible, musican language and simple metrical forms in which to give expression to its national spirit, it is litle wonder that a popular literature sprang into being and flourished. And not only was this literature calculated to stir popular ardor but it had so much of polish and so much of the epic quality as to appeal to the cultured as well.

The poetry of Italy at this time inclined rather to the spirit of the antique than to the spirit of romantic adventure. The intellectual sciences and a scholarly study of the classics were ardently cultivated. The spirit of democracy which prevailed in Florence, the commercial interests which dominated Venice, and kindred influences elsewhere operated to neutralize the influence of chivalry. In Naples some trace of it remained from the time of the Normans, but internal dissensions and frequent dynastic changes kept her from any share in the intellectual development of northern Italy. Dante, Petrarch, and Boccaccio are the three commanding figures of this epoch. The 'Divina Commedia' is the poetic presentation of the scholastic philosophy and theology. The imagination of the master-poet working on the theme of the eternal end as the measure of all things human has given us the tremendous masterwork of epic genius, the richest fruit of mediæval culture. In depth and accuracy of philosophic thought; in power and richness of imagination it has never been surpassed. It is the crown of mediæval poetic achievement. In the field of lyric poetry a corresponding eminence is Petrarch's. His genius achieved a higher degree of artistic perfection than was attained by the lyric poets of any other race of his time, and curiously enough, though he scorned the native idiom in which he wrote so freely, and set his hopes of fame and permanency on his Latin compositions, it is for his Italian poems he is remembered, for his share in the making of a new native literature and the stimulating of the literatures of other races. What Petrarch did for Italian lyric poetry Boccaccio did for prose. He led the way in a new form of prose tale and his influence, too, was not limited to his native city or his native land. It spread to other nations and he became a force in the world's literature.

England, too, was the scene of a great awakening during the 13th century. Before the Norman conquest Anglo-Saxon England had her literature. The mythical record of the deeds of Beowulf, the songs of Cædmon, the writings of Bede and Alfred the Great are the literary monuments of an unlearned age. The Norman conquest brought a new race and new influences. The language was shaping itself and the influence of chivalry which accompanied the Normans wherever they went was asserting itself. The period from the 12th to the 14th century was one of awakening in England as elsewhere in Europe. Geoffrey of Monmouth and Walter Map revived interest in the Arthurian legends (q. v.), Layamon, Orme, and Roger Bacon labored in the fields of chronicle history, scripture, and science. The influence of Dante, Petrarch, and Boccaccio, generating throughout Europe a new sense of literature as an art, was felt in England, and the 14th century saw the real beginning of English literature.

The first commanding figure in our literary history is Chaucer, the earliest of English poets, the «morning-star of song.» Largely influenced by contemporary Italian writers, Petrarch and Boccaccio, his work, in turn, had a powerful influence on his own and succeeding generations. A great teacher and a great reformer he accomplished his end chiefly because his efforts were so free from any profession of didactic purpose. He taught only through images of life. In this he differs widely from Langland, Gower, and others of his contemporaries. The volume of his work was great. It included translations and adaptations from the literature of other lands and original works modeled in some cases, as in that of his best known work, ‹The Canterbury Tales,› on foreign models. He is alternately grave and gay, pathetic and humorous.

The 15th century brought momentous changes throughout Europe. In England civil war and political confusion for a time stifled the voice of song, though there were not wanting some who endeavored, but with little success, to follow in the footsteps of Chaucer. On the Continent, though, other forces were operating for the spread of learning. The fall of Constantinople scattered through Europe many learned Greeks, who introduced the study of Greek. Two years later Gutenberg and Faust perfected their invention and gave to the world the first printed book. The sack of Mayence in 1462 scattered the printers throughout Europe and, taking with them the secrets of the new craft, they set up printing presses in many of the chief cities of Europe. The latter part of the century saw Caxton's press in operation in England. The same century that saw these great innovations saw also the discovery of the New World and the zest for exploration gave an added stimulus to intellectual life.

All these new conditions combined to promote achievement in the world of letters, though it was not until the 16th century that the full fruition came. In Spain Cervantes and later Lope de Vega and Calderon; in Portugal Camoens; in Italy Tasso, and in England Shakespeare and a host of other writers of the Elizabethan period contributed to this rich store of imaginative literature. In Germany poetry, which had degenerated, received a new impulse, its best expression being found in the religious lyrics of Luther, Hans Sachs, and others which the Reformation inspired. In two nations of Europe widely separated and in no way influenced one by the other, dramatic literature sprang at a sudden bound to the highest point of development which it has ever reached. Calderon in Spain and Shakespeare in England represent at the same time the beginning and the highest achievement of modern drama.

Shakespeare is not only the greatest poet that England can boast, but the greatest the world has yet known. He is a universal genius. Like his predecessor Chaucer, he teaches, not consciously, but through images of life. No writer, before or since, has shown such an amazing knowledge of human nature. The human heart was as an open book to him, and every emotion, every impulse of which it was capable was within the reach of his observation. His creatures act and speak and think with a convincing sense of their reality, and the enterprises in which they engage show a grasp on the problems of human destiny that amazes the student. But, despite his greatness, he is tainted with the skepticism of his time, and the greatest of his conceptions fall short of perfection from the hopelessness of solution with which he dismisses his problems. He is essentially a dramatic poet and in the greater light of his dramatic genius the beauties of his sonnets and lesser poems are overshadowed. See ENGLISH LITERATURE.

The age of Elizabeth was the golden age of English letters. The causes already assigned for her wonderful development were augmented by her great struggle with Spain. As Athens rose to the highest point of her intellectual supremacy during and after the struggle with Persia, so did England respond to the incentive afforded by this great conflict. The drama was the chief vehicle of expression but she abounded also in lyric poets. Italian influence had extended even so far and Italian forms and Italian modes enlarged the possibilities of English poetry. France, too, contributed her share of influence on English thought at this period. Rabelais had during the 16th century led in an assault on established religion which had resulted in a wide and general skepticism, and he had found many followers. Notable among them was Montaigne, whose ‹Essays,› translated into English, exercised a marked influence on English literature. See ELIZABETHAN LITERATURE.

With the passing of this group of writers in the next century imaginative literature declined. The drama and poetry steadily decayed during the reigns of the first two Stuarts. Milton, the poet of a later generation, was the last great echo of a glorious period. He took the blank verse which Marlowe had introduced and Shakespeare had perfected in dramatic verse, and applied it in his great epic ‹Paradise Lost.› But in the field of serious thought the literature of Europe was steadily growing. Physical science, which had advanced by great bounds, was finding its expression. Bacon was its great exponent in England during the time of Elizabeth and James and his inquiries were productive of great results. Grotius in Holland exercised a wide and lasting influence through his work on international law. In France, Descartes followed in the footsteps of Montaigne and for a time prevailed but his influence was fleeting. This skeptical tendency which he voiced and other kindred tendencies were met and successfully combated by Saint Francis de Sales; in the field of eloquence, sacred and secular, Bossuet was a dominating force and Fenelon and Huet contributed much to the serious literature of the time. In England, too, religious and political controversy offered continual and fruitful sources of thought. This constant clash of intellect had a beneficial effect on the languages of both nations and in France an indirect result was the establishment of the French Academy. In Italy and Germany the 17th century is marked by the steady decline in literary production.

The period of the Commonwealth in England is remarkable chiefly for polemical literature. The restoration of the Stuarts, however, brought a reaction and a powerful French influence began to dominate English letters.

French tragedy in the hands of Corneille and Racine; French comedy in Molière and French criticism in Boileau were exercising at the time a wide influence and the English court returning from exile in Paris was under its sway. The drama, which had entirely disappeared under the Protectorate, was restored, but in a new form. The glory of the poetic drama of the Elizabethan age had disappeared forever, and the best the new school could offer was the prose comedy of manners modeled on Molière. This new school of drama was distinguished as much by its licentiousness as by its wit, and was a fitting reflection of the times.

Dryden was the most eminent figure in the years following the death of Milton and with him we have the beginning of English criticism. His satires still live as models and though his efforts to rewrite the masterpieces of previous generations were futile he is one of the commanding figures in the history of English poetry. Locke and Hobbes were the leaders in philosophical speculation and Sir Isaac Newton in the field of physical science. The tendency of the age in poetry was toward classical standards, a tendency that became even more marked in the succeeding age of Pope.

The 18th century throughout Europe was one of skepticism. Its temper was cold, dissatisfied, and hypercritical. The utilitarian spirit was abroad and it found adequate literary expression. In England neither prose nor poetry was lofty, but the moral tone was better than that of the age that preceded it. The greatest achievements of the earlier decades were the virile and pungent satires of Swift; the polished essays of Steele and Addison, and the poetry of Pope, didactic or satirical in tone, and severely classical in form. The latter half of the century was completely dominated by Johnson, who by the sheer force of his personality compelled recognition and imparted a healthier tone to the intellectual life of the time. Smollet, Fielding, and Richardson, in the field of fiction, and Hume, Robertson, and Gibbon in the field of history contributed to the voluminous literature of the period. In poetry, as early as the last years of Pope, was heard the first note of the returning song of nature. Dyer and Ramsay gave the first indication of a reaction against the classicism which had oppressed English verse. Thomson and Gray followed, and in the time of Johnson, Goldsmith and still later, Burns, carried the movement to success.

In France the spirit of the 18th century is most fully expressed in Voltaire, and the effect of his work, far from being confined to his native shores, was felt throughout Europe. With apparently deliberate purpose his assaults were directed fiercely and vindictively against the three great bases of society — religion, morality, and civil government. He was followed by the encyclopedists and the work of destruction begun by Voltaire and carried on by them was completed by Rosseau. Voltaire represented the revolt of the intellect, and Rosseau the revolt of the emotions. These were the forerunners of the revolution that convulsed Europe at the close of the 18th century. See France—Literature.

In Germany the 17th century had been comparatively barren of achievement, but the 18th gave the world such writers as Klopstock, Lessing, Wieland, and Herder. Klopstock, equally enthusiastic in his devotion to Christianity and his love for his fatherland, was hailed as the herald of a new school of national literature. Lessing, the dramatist, critic, and philosopher, effected a change in German literature second only to that effected by Luther in theology. Herder, equally versatile, and Wieland, poet and novelist, bring us to the time of Goethe and Schiller, the beginning of the 19th century. This was a time of remarkable intellectual excitement and its product was greater in volume and worth than that of any preceding epoch. Goethe and Schiller represent the highest achievement of German letters. In the 19th century the most notable figures are, in the field of criticism, the brothers Schlegel, Gervinus, and Ulrici; and in poetry Heine and Uhland. Heine, the father of the «young Germany» school of writers and politicians, is the most remarkable poet Germany produced during this period. See Germany—History of Literature.

In England the spirit of revolt against empty forms had taken a firm hold and the result in the world of letters was a complete abandonment of old forms and a return to nature. In 1798 Wordsworth took his stand against all insincerity of diction and, though he and the other Lake Poets were met with ridicule, they persevered and triumphed. Jane Austen, like Wordsworth, in her novels strove to show the charm that underlies common things. From her and Maria Edgeworth, Scott drew his inspiration, and bringing to his task the higher genius of a poet, gave to the world the novels which proved to so many minds a healthy impulse. The influence of Scott extended beyond the confines of England and English-speaking peoples. De Vigny and the whole school of French romantic novelists have felt it, as their work shows. The 19th century was rich in poets, as no other period since the time of Elizabeth has been. Keats and Shelley, though they died young, enriched the literature of all time. Southey, Coleridge, and Campbell, differing widely from each other and from Keats and Shelley, contributed generously to the volume of English poetry. Wordsworth was preeminent in this group and was recognized as the foremost poet of his time. Byron, voicing a bitter and rancorous spirit, nevertheless contributed many noble strains and Moore gave expression to an exuberant fancy in his amorous and patriotic lyrics. Another generation brought Tennyson to succeed to the pre-eminence of Wordsworth, a pre-eminence to which, in the minds of some critics, Browning was entitled. Mrs. Browning, Landor, Patmore are lesser names, and Morris and Swinburne bring us to the present day.

Among prose writers the gentle Lamb, Hazlitt, and Leigh Hunt are read to-day with the same zest as they were in the early days of the century. Landor, Ruskin, Carlyle, Arnold, and Newman are commanding figures in the later years. The great reviews which dominated the literature of criticism at the beginning of the century are associated with the names of Macauley, Jeffreys, and Christopher North. Succeeding Scott, but working each along different lines were Dickens, Thackeray, Eliot, and the versatile Stevenson, poet, essayist, and novelist. To carry the chronicle further is to bring it to the immediate present, where history is in the making and not yet ripe for recording. See English Literature.

There remains one phase of literary development without which this review would be incomplete — that phase which, largely for geographical and political reasons, is known as American literature. In reality it is merely a phase of the larger development of English literature, for it has hardly yet passed beyond the stage where it is a reflection of English thought and a result of English influence. Although a literature, considerable in volume, was produced in the colonial era, there was nothing of moment, save, perhaps, Franklin's 'Poor Richard's Almanac,' and other desultory work. Washington Irving, at the beginning of the 19th century, was the first American man of letters to command more than local approbation. He was followed by Cooper, whose novels, though crude and wanting in distinction in many respects, have this merit, that they were the first in which American subjects supplied the themes. America has produced in Poe one poet of the first rank, and several such as Longfellow, Lanier, Bryant, Lowell, Emerson, and Whittier, who, though of lesser stature, have still compelled admiration. Poe, both as a poet and a prose writer, has been for more than half a century a force not only in his own but in other lands and other tongues. In England he has exerted an influence and much of the French literature of the latter half of the century bears his impress. Hawthorne gave to American letters in his novels and short tales a pure and exquisite style that has never been surpassed. Among philosophers Emerson has been a power, and among historians Prescott, Motley, Parkman, and Bancroft have won admirers by their graces of style. The first half century of the republic produced a wealth of forensic oratory, which has steadily declined in later years, but the output of imaginative literature was meagre. The later years of the 19th century have amply made up in volume for that dearth, but the test of time is necessary before its value can be estimated. See American Literature; American Authors; Anglo-Saxon Language and Literature; Canada, Literary Conditions in; Celtic Language; Drama; English Chronicles; English Literature; Fiction in America; Gaelic Literature; Great Britain—Trend of Thought and Literature; Greek Literature; Italy—Literature; Judaism—Jewish Literature and Jewish Philosophical Writers; Latin-American Literature; Latin Literature; Mexico—Literature; Novel; Persian Literature; Poetry; Provencal Language and Literature; Russian Literature; Sanskrit Literature; Scandinavian Literature; Scotland, Language and Literature of; Spain, Language and Literature of; United States—Intellectual Development; Vedic Literature, etc. See also the paragraphs on literature under the various countries.

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Literature, Canadian, comprises, in its widest acceptation, those phases of French and English literature, which, with indigenous assimilation, have developed during and since the period of Canadian colonization and settlement. In its earliest stages it consists of the recitals of the discoveries and explorations of the early French explorers and Catholic missionaries, and the transported and localized traditions of the first Breton and Norman peasant immigrants, accumulated and crystallized during successive generations, until they reach the present century in a collection of literature of unsurpassed interest. After Canada became a British possession by the Treaty of Paris in 1763, side by side with the continued development of French-Canadian literature, which naturally was confined to the settlers of French origin in the Province of Quebec or Lower Canada, there arose an Anglo-Canadian literature fostered by the early British settlers, who were presently reinforced by the advent of United Empire loyalists that, on the close of the Revolutionary War, left the United States, and settled in the maritime provinces of New Brunswick and Nova Scotia, and in Ontario or Upper Canada. During the first half of the 19th century these growing branches of Canadian literature followed their independent yet parallel courses, until after 1841, with the union of Upper and Lower Canada, and later with the confederation of the provinces, they found a common interest in the patrotic expression in both languages of the newly awakened sentiment of nationality, which has become so important a factor in the political and general life of the Dominion. Canadian literature in all its branches includes not only authors of native origin, but also certain writers of other nationalities, who, having come to settle or reside in the Dominion, and to be imbued by sentiments and interests wholly Canadian, have enriched it with their contributions.

LITERATURE

The earliest writings on Canada, dating as far back as 1599, are those of the explorer Champlain, which after being frequently republished, are now collected in the six volume issue edited by Laverdiere and published at Quebec in 1870. Among other early productions may be cited Lescarbot's ‘Histoire de La Nouvelle France’ (1609), and ‘Les Muses de la Nouvelle France’; La Potherie, ‘Histoire de l'Amerique Septentrionale depuis 1534 jusqu'a 1701’ (4 vols. 1722); Lafitau, ‘Moeurs des Sauvages Ameriquains’ (1724); Charlevoix, ‘Histoire et Description Generale de la Nouvelle France’ (3 vols. 1744); while a mass of interesting material is contained in ‘Les Relations des Jesuites,’ which can be consulted in the definitive edition of 71 volumes, prepared by Thwaites, with an English translation, and published at Cleveland, Ohio (1896–1901).

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In the ‘Chansons Populaires du Canada’ and the ‘Cantiques Populaires due Canada-Francais,’ edited with music, Ernest Gagnon, organist and composer, has preserved the Canadianized songs of early Breton and Norman importation, and the earlier native effusions, while an excellent general view of French-Canadian poetry by the versatile B. Sulte, himself a popular poet, is ‘La Poesie Francaise au Canada’ (1881). Among the better known French-Canadian poets are L. H. Frechette, ‘Les Fleurs Boreales’ and ‘Les Oiseaux de Niege’; O. Cremazie, ‘Le Drapeau de Carillon,’ etc; J. (Mrs.) Dandurand, ‘Les Contes de Noel,’ etc.; J. L. Archambault, ‘Jacques Cartier,’ a historical drama; L. P. Lemay, ‘Essais poetiques,’ etc.; N. Legendre, ‘Echos de Quebec’; L. J. C. Fiset Routhier, ‘Les Echos’; etc.

French-Canadian fiction is comparatively voluminous. Well-known works are P. De Gaspé, ‘Les Anciens Canadiens’ (1863); and J. Marmette, ‘L'Intendant Bigot’ (1872), etc.; H. Beaugrand, ‘Jeanne la Fileuse’; N. Bourassa, ‘Jacques et Marie,’ an ‘Acadian Romance,’ etc.; and others by P. J. O. Chauveau, L. P. Lemay, C. A. N. Gagnon, etc.

Anglo-Canadian literature may be said to commence with Samuel Hearne's ‘A Journey from Prince of Wales's Fort in Hudson's Bay to the Northwest’ (1795), being a recital of an overland trading journey of 1,300 miles to the Great Slave Lake. This was followed by A. Mackenzie, ‘Voyages on the River Saint Lawrence,’ and ‘Through the Continent of North America to the Frozen and Pacific Oceans’ (1801); J. Bouchette, ‘A Description of the Canadas’ (1815–32); W. Smith, ‘History of Canada’ (1815), and J. Howe (a Nova Scotian), ‘Western and Eastern Rambles.’ The first native author to achieve distinction, however, was Judge T. C. Haliburton of Nova Scotia, who, in 1835, with ‘The Clockmaker, or Sayings and Doings of Sam Slick of Slickville,’ originated the dialect humor which is generally looked upon as a United States device. Judge Haliburton was the author also of a ‘History of Nova Scotia,’ while Francis Parkman (1823–93), the American historian whose researches occupied more than 40 years, in his monumental standard works, ‘Pioneers of France in the New World’ (1865), ‘The Jesuits in North America’ (1867), ‘La Salle and the Discovery of the Great West’ (1869), ‘The Old Regime in Canada’ (1874), ‘Count Frontenac and New France under Louis XIV.’ (1877), ‘Montcalm and Wolfe’ (1884), ‘A Half-Century of Conflict’ (1892), was the first to lay the ‘Relations des Jesuites’ under contribution and do for Canada what Prescott did for Mexico. Among a long list of Canadian historians are G. M. Adam, ‘The Canadian Northwest; its History and Troubles’ (1885); J. S. Archibald, ‘The Relations of the Two Races in Lower Canada’; A. Begg, ‘History of the Northwest’ (1894–5); G. Bryce, ‘History of the Canadian People’ (1887), etc.; J. G. Bourinot, ‘Canada under British Rule’ (1900), etc.; R. Christie, ‘History of Lower Canada’ (6 vols. 1849–55); W. Caniff, ‘Canadian Nationality’ (1875), etc.; J. B. Crozier, ‘Civilization and Progress’ (1885); J. C. Dent, ‘The Story of the Upper Canada Rebellion’ (2 vols. 1885–6), etc.; J. Hannay, ‘History of Acadia’ (1879); W. Kingsford, ‘History of Canada’ (10 vols. 1887–97); J. M. McMullen, ‘History of Canada’ (1855); E. Richard, ‘Acadia’ (2 vols. 1895); H. Scadding, ‘Toronto: Past and Present’ (1884); C. G. D. Roberts, ‘History of Canada’ (1897); W. H. Withrow, ‘History of Canada’ (1880); J. C. Hopkins, etc. Chief among modern historians, native or resident, is Professor Goldwin Smith (q.v.), living in Toronto since 1871, whose ‘Canada and the Canadian Question’ (1891), is a minor work in the long list of his valuable publications of world-wide interest.

The list of Anglo-Canadian poetry is a long and worthy one, and among its most notable exponents are Bliss Carman and Sir Gilbert Parker (qq.v.); I. V. Crawford, ‘The Master Builder,’ ‘The Axe of the Pioneer,’ etc.; G. F. Cameron, ‘What Reck We of the Creeds of Men,’ etc.; A. Lampman, ‘Among the Millet,’ etc.; J. W. Bengough, the versatile poet, humorist, and cartoonist, one of the most tender and graceful of Canadian elegiac poets; C. G. D. Roberts, ‘In Divers Tones,’ ‘Songs of the Common Day,’ etc.; William Kirby, ‘The U. E.,’ ‘Canadian Idyls,’ etc.; J. A. Allen; D. Anderson, ‘Lays of Canada’; J. G. Ascher, ‘Voices from the Heath’ (1863); C. L. Betts, ‘Songs from Berenger,’ etc.; J. (Mrs.) Blewett; J. H. Brown; W. W. Campbell, ‘The Mother,’ etc.; J. (Miss) Carnochan, ‘Has Canada a History,’ etc.; M. R. (Miss) Charlton; C. A. (Miss) Frazer; A. R. (Mrs.)

Christie; Annie Rothwell, poet and novelist; G. G. Currie, ‘How I Once Felt: Songs of Love and Travel’; S. A. (Mrs.) Curzon, ‘Laura Secord, the Heroine of 1812,’ a drama; E. H. Dewart, ‘Songs of Life,’ ‘Selections from Canadian Poets’; A. G. Doughty; W. H. Drummond, ‘The Habitant,’ ‘Johnnie Courteau and other poems’; A. W. H. Eaton, ‘Acadian Legends and Lyrics’; C. (Miss) Fairbanks; J. K. Foran, ‘Poems and Canadian Lyrics’; C. S. Goodhue; J. M. Harper; S. F. (Mrs.) Harrison, ‘Pine Rose, and Fleur de Lis’; C. Heavysege, ‘Saul’; S. M. A. (Mrs.) Hensley, ‘A Woman's Love Letters’ (1895); S. Hunter-Duvar; J. Imrie; E. P. (Miss) Johnson; R. K. Kernighan, ‘The Khan's Canticles,’ etc.; W. D. Lighthall, poet and novelist, ‘Songs of the Great Dominion,’ etc.; A. J. Lockhart; C. Mair; G. Martin, ‘Marguerite, or the Isle of Demons’ (1887); S. (Mrs.) Moodie, sister of Agnes Strickland; M. (Miss) Morgan; A. Muir, ‘The Maple Leaf Forever,’ ‘Canada, Land of the Maple Tree,’ ‘Canada Forever,’ etc.; G. Murray, ‘How Canada was Saved,’ etc.; E. MacColl; D. McCaig, ‘Milestone Moods and Memories’; W. McLennan, ‘Songs of Old Canada,’ etc.; T. O'Hagan, poet, critic and essayist, ‘Songs of the Settlement,’ ‘Canadian Essays,’ etc.; T. H. Rand, the Canadian Browning, ‘At Minas Basin and other poems’; J. J. Roche, ‘Songs and Satires’; C. Ryan, ‘Songs of a Wanderer,’ etc.; F. G. Scott; D. C. Scott; A. M. Sinclair; E. H. Stafford; B. Straton; J. S. Thompson, ‘Estabelle and other Verse,’ etc.

Although of native birth and claimed as a Canadian writer, Grant Allen, novelist and naturalist, is typically Anglo-Saxon in the universality of his works, fictional and otherwise. The greatest writer of fiction Canada has produced is Sir Gilbert Parker (q.v.), the literary discoverer of the Northwest, who in ‘Pierre and His People’ (1892), ‘When Valmond came to Pontiac’ (1895), ‘The Seats of the Mighty’ (1896), and ‘The Right of Way’ (1901), has anglicized French-Canadian themes with a vigor and interest of world-wide appeal. Even when he has sought elsewhere for his locale, his characters curiously betray a mixed colonial influence of Canadian origin, as in ‘The Battle of the Strong,’ the scene of which is laid in the Island of Jersey, whence came the ancestors of many early Canadian colonists, represented in the Canadian literary world at this day by, among other descendants, J. E. Le Rossignol, noted for his philosophical and other essays, and W. D. Le Sueur, whose literary and critical essays on Matthew Arnold, Bernardin de St. Pierre, Saint-Beuve, etc., are of a high order. Among other writers of native fiction are G. M. Adam with A. E. (Miss) Wetherald in ‘An Algonquin Maiden’; K. M. (Miss) Barry, numerous novels, including ‘Honor Edgeworth,’ ‘Ottawa's Present Tense,’ ‘The Doctor's Daughter, a Sketch of Canadian Social Life and Character’; R. (Miss) Barry; M. H. (Mrs.) Catherwood; P. Cox, artist and author of ‘The Brownie Books,’ etc.; S. J. (Mrs.) Cotes, ‘A Social Departure’; F. B. Crofton, ‘The Major's Big Talk Stories’; A. Davies, ‘Canadian Short Stories’; L. (Miss) Dougall, ‘Beggars All’; E. L. (Mrs.) Estèy; J. Galt, ‘Laurie Todd, or the Settlers in the Wood’ (1830); J. B. (Mrs.) Hammond; S. F. (Mrs.) Harrison; H. E. (Mrs.) Hayes (Mary Markwell); T. S. Jarvis, ‘Doctor Perdue,’ ‘The Ascent of Life,’ etc.; A. R. (Mrs.) Logan, ‘Children of the Hearth’; B. L. (Miss) Macdonell, ‘Tales of the Soil,’ etc.; J. N. (Miss) McIlwraith (Jean Forsyth); W. McLennan; E. J. (Miss) McManus; G. A. (Mrs.) Newhall; J. M. Oxley; J. Richardson, ‘Wacousta, or the Prophecy’ (1833); J. A. Phillips, ‘Out of the Snow,’ etc.; R. Pocock, ‘Tales of Western Life’; M. A. (Mrs.) and A. T. (Miss) Sadlier; M. M. (Miss) Saunders, ‘Daisy’ (1892), ‘Beautiful Joe’ (1894); E. E. Sheppard; E. W. Thompson; H. B. Willson; E. R. Young; Charles G. D. Roberts, historical novels, and animal stories; Ralph Connor (Rev. Chas. Gordon); Norman Duncan; A. R. Carman; Joanna Wood; Virna Sheard; W. A. Hickman; Alice Jones, etc.

The list of notable Canadian essayists and miscellaneous writers in all branches of theology, philosophy and science is too long to be included here, but of purely literary critics and essayists, besides W. D. Le Sueur already mentioned, may be cited W. J. Alexander, R. G. Haliburton, T. A. Haultain, N. F. Davin, S. E. Dawson, A. M. MacMechan, T. O'Hagan, L. J. A. Papineau, T. Watson, etc., while in the collected and published speeches of Joseph Howe, Sir Wilfrid Laurier, Alexander Mackenzie, Sir John Macdonald, Sir Charles Tupper, etc., Canada has a rich anthology of oratorical literature.

Consult: G. M. Adam, ‘Outline of Canadian Literature’; Bourinot, ‘Canada's Intellectual Strength and Weakness,’ and ‘Intellectual Development of the Canadian People.’

J. MacDonald Oxley, B.A., LL.B.,
Author of ‘The Romance of Commerce,’ etc., Toronto.

Lith'ia, in chemistry, oxide of lithium (q.v.).

Lithia Mica. See Lepidolite.

Lithic Acid. See Uric Acid.

Lith'ium, a name applied to an alkali discovered in the year 1817. Lithia has since been detected in spodumene, lepidolite, triphylite, amblygonite, tourmaline, meteoric stones, mineral waters, coffee, tea, blood, milk, etc. A process for procuring it is the following: One part of petalite or spodumene in fine powder, is mixed intimately with two parts of fluor-spar, and the mixture is heated with three or four times its weight of sulphuric acid, as long as any acid vapors are disengaged. The silica of the mineral is attacked by hydrofluoric acid, and dissipated in the form of fluosilicic acid gas, while the alumina and lithia unite with sulphuric acid. After dissolving these salts in water, the solution is boiled with pure ammonia to precipitate the alumina; is filtered, evaporated to dryness, and then heated to redness to expel the sulphate of ammonium. The residue is pure sulphate of lithium. Its color is white; it is not deliquescent, but absorbs carbonic acid from the air; it is soluble in water; it is acrid and caustic, and acts on colors like the other alkalies; heated with platinum it corrodes it rapidly. It combines with the different acids, and forms crystallizable salts with them. The phosphate and carbonate are sparingly soluble; the chloride is deliquescent and soluble in alcohol, and this solution burns with a red flame. Unlike the other alkalies it cannot be reduced from its carbonate by carbon, but it requires the action of a galvanic battery. The compound employed is the chloride, which, while in a state of fusion, is acted on by the battery. Small globules collect round the negative pole, and these are removed and cooled under petroleum. It is the lightest of metals. It has a bright silver-white metallic lustre, melts at 356° F., and can be welded at ordinary temperatures. It is rather harder than potassium, can be drawn into a wire, but has a low degree of tenacity. Exposed to the air it tarnishes, but it combines with oxygen less rapidly than either sodium or potassium. It decomposes water, and when heated in oxygen, chlorine, and other gases, burns with a brilliant light.

Compounds of lithium are used in pyrotechny on account of the splendid red color they impart to flame. In medicine the carbonate is employed especially as a solvent for uric acid, to prevent the formation of calculi and to remove it from the system in gout. Effervescing lithia water is sometimes used in place of soda or potash water. Citrate of lithia is also employed. It is a white, soluble, crystalline salt, prepared by dissolving the carbonate of lithium in citric acid. Its therapeutic properties are similar to those of the carbonate.

Lithograph'ic Crayon. See LITHOGRAPHY.

Lithographic Stone. See LITHOGRAPHY.

Lithography (Greek, *lithos,* stone and *graphein* (to write), may be divided into two distinct branches — lithography proper, the art of writing, drawing or engraving on stone, and chemical or surface printing from stone or metal, by means of which such writings, drawings or engravings are multiplied, in a manner differing essentially from letter-press or relief printing on the one hand and steel and copper plate or intaglio printing on the other. Lithographic printing is based upon the chemical principle of antagonism of grease and water and upon the porous nature of the printing surface. By virtue of this property, a drawing made upon such surface with unctuous ink or crayon will adhere to it so firmly that its eradication can only be effected chemically by means of strong acids or mechanically by entirely removing the surface with the design. The parts of the surface containing the drawing or design will accept and hold grease or ink, and those parts of the surface free from design will receive and retain water to the evaporating point. Thus if a roller covered with fatty printing ink is passed over the printing surface previously moistened, the ink will attach itself only to the parts constituting the design and will be repelled by the moisture covering the remaining part of the surface, in consequence of which the design only will appear in the impression.

History.— Aloys Senefelder is generally conceded to be the inventor of lithography, although in certain quarters claims have been put forth in favor of Simon Schmidt of Germany. The latter's claims, however, are without much basis. As early as 1788 he printed from stone, but his idea bore no relation to Senefelder's discovery, ten years later, of chemical or surface printing. Schmidt merely substituted stone for metal in relief printing, which bears no resemblance whatever to the process of lithography. Senefelder was born at Prague in 1771 and at an early age removed to Munich, where his father was employed as an actor at the Theatre Royal. The future inventor had a bent for his father's calling, but parental opposition finally induced him to enter the university at Ingolstadt as a law student. His college days were shortened, however, for soon after his entrance, his father died, thus throwing the youth upon his own resources. His attempts at supporting himself met with indifferent success. First as an actor and then as a playwright, he proved a failure, but this very circumstance had much to do with his ultimate discovery of chemical printing. His inability to get his work as a playwright published in the usual way bestirred him to devise some means of doing it himself. Thus he set about to become familiar with the printing art, which culminated in the purchase of a small press. Too poor, however, to pay for the engraving of his compositions, he next turned his attention to etching on copper. His inexperience in forming the reversed characters on the plate led to frequent errors, and not being familiar with the «stopping out» solution used by etchers in rectifying mistakes, he succeeded in devising one of his own. The ingredients he used were those nearest at hand — the wax with which he coated the plates previous to etching, the soap with which he washed the ink from the plates and the lampblack which he used in preparing his ink for printing. Thus accidentally he discovered the composition which forms the basis of all crayons and lithographic drawing inks. The labor attached to grinding and repolishing the copper plates led him to experiment with a fine piece of Kellheim stone, originally purchased to grind his ink with. After treating this in precisely the same way as copper plates, he succeeded in getting some fairly good impressions. Subsequently it occurred to him to reverse the etching process by writing on the stone with the «stopping out» composition and biting down the surface with aqua fortis. This brought out the character in relief, which he inked in and printed in the manner of type. Further experiments led to the discovery that relieving the characters was altogether unnecessary and that the simple process of writing on the stone with his composition of wax, soap and lampblack produced the same results. This was in the year 1798 but it was not until eight years later that the inventor succeeded in establishing himself as a lithographic printer in Munich. This city thus became the centre of the art, and three years thereafter no fewer than seven separate concerns were established, as well as a number of private presses. Senefelder died in 1834, and since then there has been little or no change in the method he laid down, the inventor having exhausted almost its entire possibilities. While to Senefelder is due the lion's share of praise, many others of the early lithographers are entitled to great credit, they having done much to develop and foster the craft. Piloty in 1808 published 432 copies of the old masters, and in 1815 reproductions from the Munich gallery His partner, Lochle, was also conspicuous in the early development of lithography, as well as Count Lasteyrie, who introduced the art in Paris. It fell to Godfrey Engelmann to found the first permanent establishment in Paris. This was in 1816. In 1837 he was granted letters-patent on the invention of chromolithography. The first house in Berlin was established in 1834 by Franz Hanfstängel, and in London in 1822, by Hullmandel, a pupil of Engelmann of Paris. Senefelder himself attempted to establish himself in London, but failed, owing to some difficulty with his partner, André, of Offenbach.

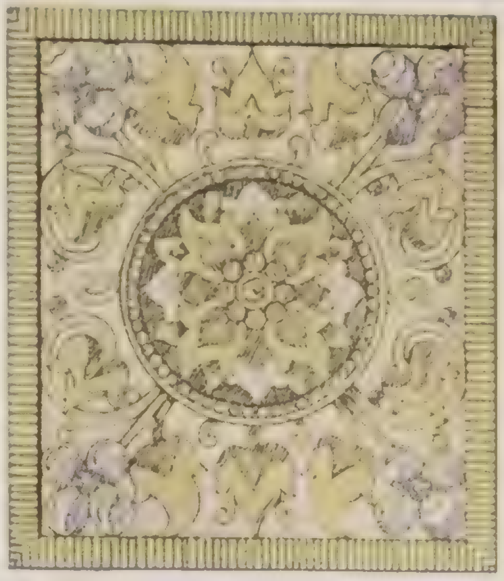
Lithography as an art reached its climax in Paris during the reign of Louis Philippe. Among the masters who distinguished themselves were the satirists Daumier, Grandville, Travies and Gavarni, Deveria, Delacroix, Johannot and Gigoux, the delineators of romantic literature; Charlet and Raffet, who found material in the glorification of Napoleon's career. Other painter-lithographers of the day were Géricault, Richard Park Bonington, James Duffield Harding, Eugene Isabey, Alexandre Calame and Julien, whose 'Etudes en Deux Crayons' made his famous. Since the introduction of the power press and the consequent development of the lithographic industry as a commercial factor, the medium of lithography has found less favor as a mode of artistic expression, but efforts are now being made to create renewed interest in an art so true in its reproduction of the artist's pencil. Commercially it has grown to be one of the most important branches of the printer's craft, as evidenced by the fact that in the United States alone, according to the census of 1900, the capital invested was $22,676,142, and employment was given to almost 14,000 people.

Materials.— The stone used for purposes of lithography is a compact, homogeneous limestone of porous texture, known as «lithographic stone.» It varies in color from a light cream, dull yellow, drab or gray to darker shades of the same colors, the best being found among the light gray varieties. The dark blue-gray or French stone is very fine in texture, but is not favored generally by either the artist or the transferrer, as its color does not contrast sufficiently with that of the design to enable the manipulator to gauge his work as well as on a light gray stone. Lithographic stone is quarried chiefly at Solenhofen, Germany, and while similar stone has been found in England, France and America, none possess the quality of the Solenhofen product. It is sawn at the quarries into slabs of from 3 to 4 inches in thickness, varying in size from 6 x 8 inches to 44 x 64 inches, and is sold by weight. The cost, as compared to its area, increases, not simply arithmetically, in proportion and weight, but in geometrical progression, as in the case of diamonds and other precious stones. Thus a stone measuring 3 x 4 inches, weighing 20 pounds, costs 1½c per pound, and a stone measuring 44 x 64 inches, weighing 1,200 pounds, may cost as much as 40c per pound. The common occurrence of hidden flaws in stones, leading to fracture under pressure when printing therefrom, and the difficulty of securing large stones without blemishes, such as chalk spots or veins, has been a source of constant trouble. For this reason, as well as owing to the expense incurred in handling and storing the cumbersome stone, a substitute embodying the same properties has been the desideratum of lithographers almost since the invention of surface printing. Zinc has been in use for 50 years or more, and while it possesses the necessary qualities to a limited extent, it has never proved useful for any but the most ordinary grades of work. Other metals and materials, as well as artificial stones have been tried, but none were found suitable, until with the introduction of aluminum as a trade article, experiments with that metal were made by John Mullaly, of New York, and later by Otto C. Strecker, of Mainz, Germany, resulting in the almost universal adoption of this metal as a perfect substitute for the lithographic stone. Designs can be removed from either stone or metal plates and their surfaces prepared for the reception of new designs. A stone 4 inches thick or an aluminum plate 29/1000 of an inch thick can thus be used approximately 200 times. Lithographic crayon is composed of beeswax, shellac, tallow, mastic turpentine, soap and lampblack. It is made in several degrees of hardness. For crayon work the surface of the stone is always grained by means of grinding with clean, sharp sand and water between two slabs of stone. Lithographic ink adapted for pen work on stone contains the same ingredients as used for the crayon with a larger quantity of the soap, in order to make it soluble in water. The ink is furnished in sticks and rubbed over a plate or saucer and then gradually dissolved with water or turpentine until it becomes fluid. Gum arabic and acids are important factors in lithography; in fact, Senefelder's original invention would have proved of little practical value had he not also discovered their uses in reinforcing the qualities of the stone. When a drawing is completed on stone, its surface is treated with a solution of gum arabic and nitric acid, effecting a chemical change in its nature where it is not protected by the grease or ink of the drawing. The carbon is freed and a nitrate deposited in the form of a full grained pellicle, the pores of which retain the gummed water, thus creating a surface impermeable to grease. Furthermore, the drawn parts are rendered insoluble in water by decomposing the alkali contained in the soap — one of the component parts of lithographic crayon or ink. The object of this etching is not to elevate the drawing — the relief, if any is obtained, being hardly perceptible, and although it tends to make the impression cleaner and sharper, is not absolutely necessary.

Process.— After the stone is etched, it is washed successively with water and turpentine. When wiped clean, the surface at first glance appears to be perfectly blank, but on closer inspection shows a faint suggestion of the design in white on the face of the stone. After being repeatedly moistened and rolled in with printing ink, the design reappears and accepts the ink. It is then covered with a weak solution of gum arabic and is ready for printing. A drawing on stone is necessarily reversed and it requires considerable experience on the part of the artist to obtain proficiency in thus rendering a reverse facsimile of the original. In the hands of an experienced and capable artist no reproductive art can offer greater possibilities than that of crayon drawing on a grained stone.

LITHOGRAPHY

Plates and Printing required for Design of Six Colors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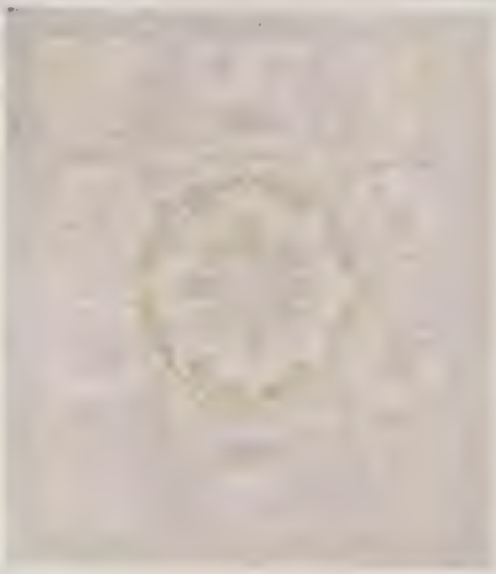
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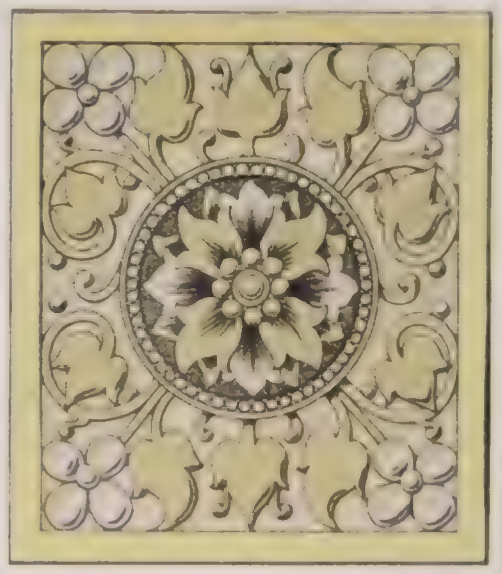
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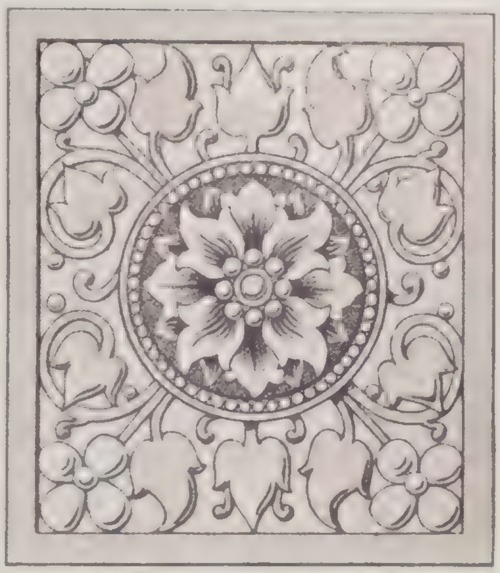
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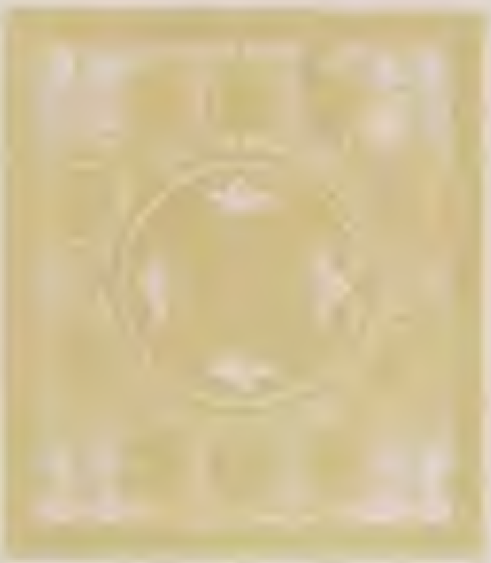
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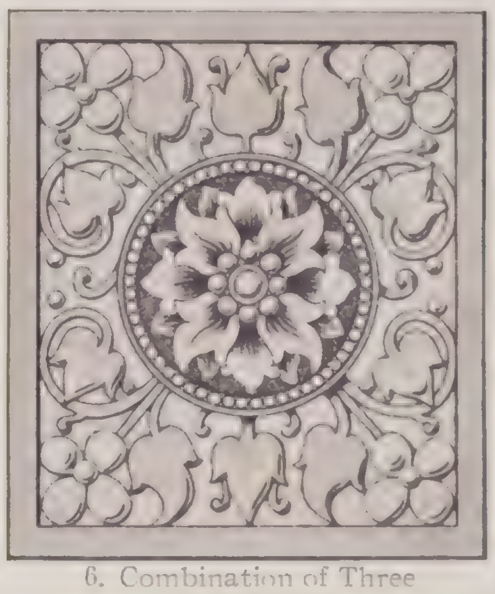
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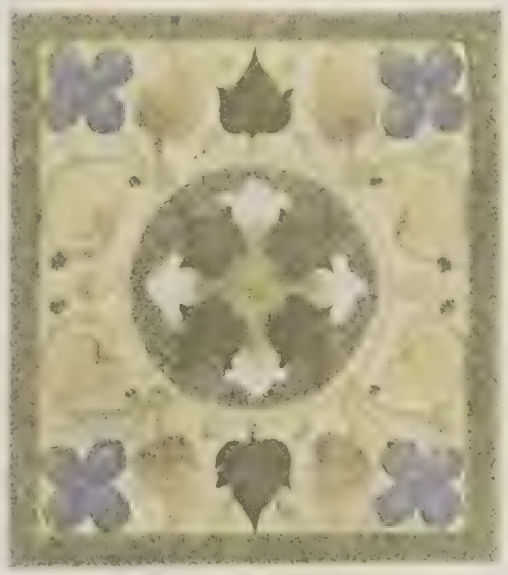
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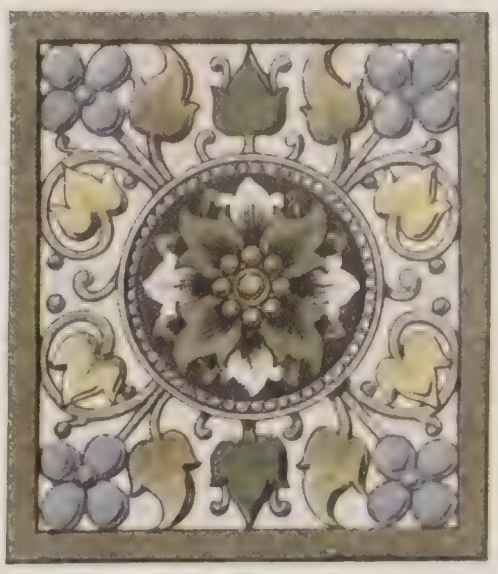
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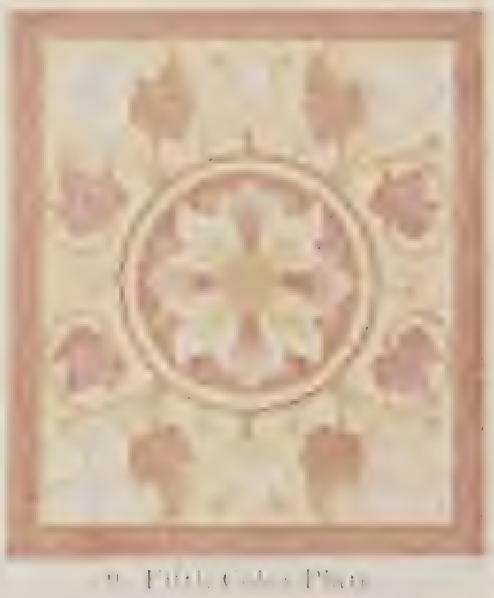
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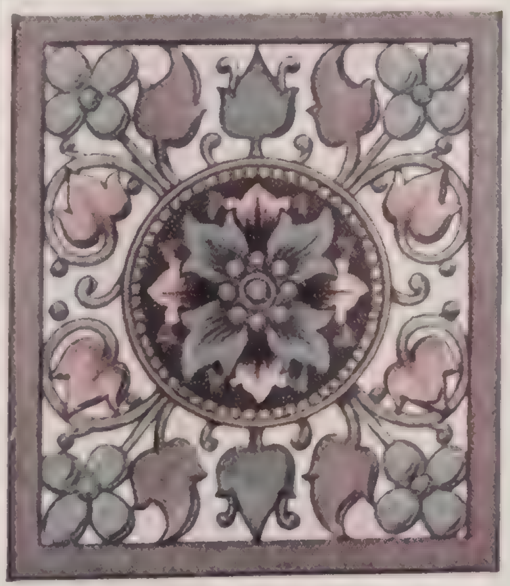
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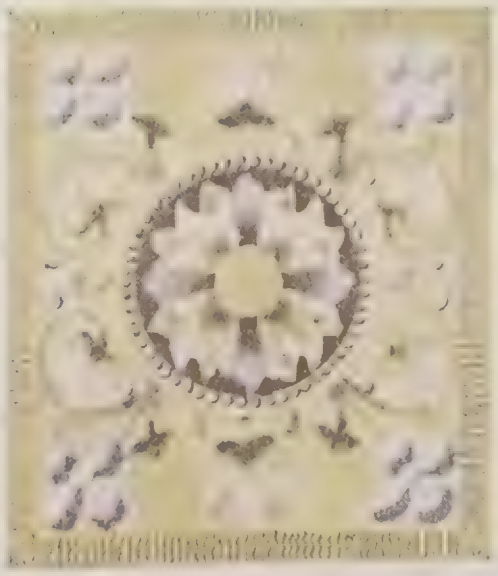
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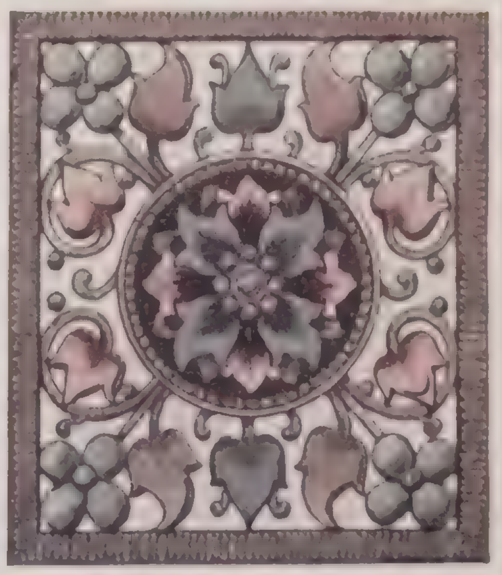
12. Printing Complete in Six Colors

It permits greater freedom as compared with steel, copper plate or wood engraving, inasmuch as technique is less important in lithographic crayon work than true artistic ability, while an infinite variety of tones, from the most delicate shade to rich, deep black, lies within its possibilities. Somewhat more mechanical is the pen stipple manner, which, as its name implies, consists of drawing with small dots, the relative values of shading being determined by the varying density of the dots. This manner is employed mainly in chromo-lithography, its chief recommendation being the clean, sharp, solid nature of the work, and it is therefore particularly adapted to large editions of printing. The greatest achievement of lithography undoubtedly centres in the reproduction of oil paintings and aquarelles, commonly known as chromo-lithography. Either the crayon or pen stipple manner alone or both together, in connection with other manners, such as «rub tints,» «asphalt tints,» etc., are brought into the work. Its most simple form is the tint used for crayon drawings; its highest, the reproduction in colors of an oil or water color painting, requiring a series of drawings on separate stones — one for each of the colors necessary to produce the facsimile. The important feature is to obtain a perfect register of the various printings, as any deviation of the correlation of the colors will tend to produce entirely foreign effects. One of the methods whereby this is accomplished is making a key plate. An accurate detailed tracing is made of the original by means of an engraving-needle, scratching the surface of a sheet of transparent gelatine or celluloid, indicating the boundaries of even the most minute patches of color. The engraved lines are charged with lithographic ink and then transmitted to stone by pressure. After the register marks (usually in the shape of crossed lines) have been put in the margins of the key plate, the stone is etched and rolled up with printing ink, and impressions corresponding to the number of colors or printings to be employed are made therefrom. The impressions are powdered with finely ground dry powder (usually Venetian red), which adheres only to the outline of the design, and then transmitted by pressure to the surface of clean stones. These so-called «offsets» of the key serve as a guide for the artist in making his color plates. In cases where no key of the original is made, offsets from the drawing of the black supplied with the necessary register marks answer the same purpose. The number of colors necessary to produce a given result varies largely, according to the nature of the original to be reproduced, ranging for commercial purposes from three to fifteen, although where especially fine results are desired, 20 or more colors may be required. The stone-engraving manner — used extensively for commercial stationery in imitation of steel engraving — is based on the same principle, although the mode of procedure differs in every respect. For this purpose the stone is polished, its whole surface is first prepared or etched with gum-water acid and covered with a dark ground consisting of lampblack in solution with gum-water or albumen. Into this ground the design is engraved or scratched with an engraving-needle or a diamond. Then linseed oil is poured over the whole, which is absorbed by the stone where the needle has laid it bare. The ground is washed off, the surface moistened and printing ink rubbed in with a tampon or dauber, the ink adhering only to the lines of the design, by reason of the oil which they have absorbed.

Photography.— Since its invention, photography has been more or less allied to the lithographic art. Its most common application is the process called «photo-lithography,» by means of which pen drawings are transferred to lithographic stone at comparatively small expense. The half-tone or Meisenbach process has also been advantageously applied — particularly in chromo-lithography — in furnishing a basis for the several color plates, in place of the key, usually assuring a more faithful reproduction of the original than would be possible otherwise. One of the earliest photolithographic processes in use is that of Lemercier, patented in 1852, which is based on the sensitive property of asphaltum, discovered by Niepce in 1833. A lithographic stone is coated with a solution of asphaltum in oil of lavender and exposed to light under a half-tone negative, the film of which has been turned on the glass to secure the necessary reversed position, effecting a slow change in the asphaltum. The parts thus affected by the light become insoluble in turpentine, leaving the other parts soluble. Thus a (reversed) positive is rendered on stone, which, owing to the unctuous nature of its composition, can be prepared for printing purposes in the usual manner. The method most commonly used is the albumen process, invented by Poitevin in 1855. In this case the stone is coated with albumen in solution with bichromate of potassium, which is much more sensitive to light action than asphaltum. After exposure the stone is immediately covered with printing ink, to prevent further action, and washed with water, which removes the parts that remain soluble, while the ink adheres only to the parts that have become insoluble.

Transferring Process.— Unless limited editions are required, designs that have been drawn or engraved on stone are very rarely printed from directly. By means of the transferring process one design may be reproduced as many times as the relative size of the work and sheet to be printed will allow — ensuring greater economy in printing and greatly reducing the risk of damage to the original drawing stone. Transfer impressions are taken on a paper coated with a sizing of starch and glycerine, with a specially prepared ink. These impressions are laid in their proper position on a sheet of paper of the required size and fastened to it by means of pricking with the dull point of an engraving-needle. The sheet, the transfers adhering, is laid face down on a clean, polished stone or aluminum plate and repeatedly pulled through a hand-press, until the transfers adhere firmly to the stone, the paper being frequently dampened during this process. This done, the sheet is carefully raised from the stone, leaving the thin paper transfers still adhering to its surface. These then in turn are dampened and carefully removed. A weak solution of gum and water is applied and the stone rolled up repeatedly with printing ink.

To make the transfer ready for printing, it is etched in the same manner as an original drawing. In chromo-lithography the first transfer made is always that of the key-plate, supplied with register marks. The impression from this transfer is mounted on a sheet of aluminum or zinc and coated with shellac to ensure against stretching or shrinking. All succeeding transfers are «stuck-up» or fixed on this key-sheet, in order to enable an accurate register of the colors.

Lithographic Printing.— The lithographic hand-press differs essentially from both the type and copper-plate hand-presses, a scraper being used instead of the vertical pressure of the platen. It consists of a frame provided with rollers on which the bed runs to and fro, the scraper or impression-bar and a tympan of leather, fitted to an iron frame hinged to that end of the bed nearest the scraper. The scraper consists of a flat piece of box-wood, beveled on both sides and covered with leather. The manner of printing is as follows: the stone with the design upon it is placed face up upon the movable bed, then moistened with a sponge, rolled up with ink and the sheet which is to take the impression, laid thereon. Several sheets of paper are placed over it to secure the necessary backing, the tympan lowered upon it to cover the entire bed and stone, and the carriage brought forward under the scraper. Pressure is applied by means of a hand-lever at the side of the press, and the entire length of the bed passed under the impression bar. The pressure is then released, the bed brought back to its original position, the tympan raised and the printed sheet taken off. Until the introduction of the lithographic power-press in 1867, this method of printing was exclusively used for lithographic printing. At the present time its only utility is for the purpose of making artist-proofs and transfers for printing on power-presses. The lithographic power-press differs but slightly from that of the typographic power-press. The principle of operation remains the same, taking in place of the letter-press form a lithographic stone in its bed and being supplied with a contrivance for distributing the moisture with which the stone must be covered before the ink is applied. The use of rotary printing-presses, with an increased speed of 50 per cent over the flat-bed presses, has been made possible by the substitution of the flexible aluminum plate for lithographic stone, and has opened the field of multi-color printing by the lithographic process, whereby two or more colors are printed in rapid succession before the sheet is delivered. The rotary press consists principally of two cylinders — one to hold the plate and the other to furnish the pressure — and is supplied with a mechanism similar to that of the flat-bed press for distribution of moisture and ink. Rotary presses having two and three plate cylinders and printing respectively two and three colors each time a sheet is fed are already largely in use, and four-color presses are now being built on the same general principle.

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Otto W. Wilhelms,
Of Sackett & Wilhelms Lithographing and Printing Company, New York.

Lithot'omy, in surgery, the operation of cutting for the stone. (See Calculus.) As usually performed it consists in cutting by the side of the anus in the perinæum, so as to reach and divide the urethra and neck of the bladder, where it is surrounded by the prostate gland. A grooved and curved staff is introduced into the bladder first, and then the incision is made in the perinæum to reach the bladder, the groove in the staff serving as a guide to the knife. When the calculus or stone is felt with the finger the staff is withdrawn and the stone extracted by means of forceps, proper treatment to ward off inflammation and other accidents being then adopted. When thus performed, unless there be unusual difficulties, the length of time required to extract the stone is seldom more than three minutes, often one or one and a half. At first the urine escapes through the wound, but in favorable cases it issues by the natural passage within a week, and the wound heals in the course of a month.

Lith'otrity, in surgery, the operation of crushing a stone in the bladder into fragments of such a size that they may be expelled by the urethra. The instrument, called a lithotrite, by which the stone is broken up, is introduced in the same manner as a catheter or sound into the bladder, and after catching the stone crushes it to pieces. The instrument has two movable blades at the extremity introduced into the bladder, and these are brought together to crush the stone by means of a powerful screw. This operation is only applicable where the bladder is not irritable, where the canal of the urethra is of good size, and the stone small. It is inapplicable to children, but this is the less to be regretted, because there is perhaps no surgical operation more generally successful than that of lithotomy in children. In lithotrity care must be taken that no portions of the stone are left in the bladder, as such fragments are almost certain to form the nuclei of fresh concretions.

Lithuania, lĭth-ŭ'ā-nĭ-ạ, Russia, a historic grand-duchy of 60,000 square miles, united in 1569 to Poland, and since the dismemberment of that kingdom in 1773, 1793, and 1795, forming the Russian governments of Mohilev, Vitepsk, Minsk, Vilna, and Grodno, and portions of the Prussian province of Gumbinnen and East Prussia. The Lithuanians, who are of Lettish origin (see Livonia), were in the 11th century tributary to Russia, but they made themselves independent when Russia was divided by the troubles under the successors of Vladimir. Ringold, in 1235, bore the title of grand-duke, and under his successors the whole of Russian Lithuania became independent. Vladislaus Jagello, by his marriage with the Polish queen Hedwig, united Lithuania and the conquered Russian provinces with Poland.

Lititz, lĭt'ĭts, Pa., borough, in Lancaster County; on the Reading & Columbia railroad;

about 28 miles southeast of Harrisburg, and 8 miles north of Lancaster. The first permanent settlement was made in 1757 by Moravians. Some of the United Brethren had formerly lived in Bohemia and they named the place after their old home. They showed their loyalty to their new country by providing shelter, food, and care for wounded soldiers of the Revolutionary War. The graves of some of the early patriots are still pointed out. Lititz is situated in a region where there are many good farms, but its chief industries are in manufacturing. The principal manufactures are cornstarch, knit-goods, cocoa, chocolate, cigars, and some dairy products. The mineral springs are noted and much frequented. The borough is the seat of Linden Hall Seminary, established in 1794. Pop. (1900) 1,637. Consult: Mombert, ‘History of Lancaster County, Pa.’; Moravian Historical Society Records.

Lit'mus, or **Lacmus,** is a blue pigment obtained from any lichen which yields archil. (See LICHEN, *Fungi.*) The plant, bruised between stones, is exposed to the air for several weeks, and moistened with some liquid containing ammonia, lime and potashes being also added. Fermentation sets in, the lichen becomes red and finally blue, and when it has acquired the proper tint, chalk or sulphate of lime is added, and the soft paste is made into square cakes by pressure in molds, and the cakes are then dried. Litmus is complex in nature; it contains several coloring matters of definite composition, which can be separated by the use of glacial acetic acid and absolute alcohol.

Lit'olff, Henry Charles, European composer and pianist: b. London 6 Feb. 1818; d. Paris 6 Aug. 1891. He studied pianoforte playing under Moscheles, and made his first public appearance as a pianist at the Covent Garden Theatre, London, in 1832. At 17 he went to France and for some time lived a wandering life traveling in France, Holland and Germany, giving concerts. In 1851 he settled in Brunswick, married the widow of the music-publisher Meyer, and took control of the business; later he transferred the management of affairs to his adopted son, who began the publishing of cheap editions of classical music. In 1860 he moved to Paris, and married the daughter of the Count de la Rochefoucauld. His compositions include piano pieces (including the ‘Spinnlied’); symphony concertos; and the operas ‘Héloise et Abelard’; ‘Die Braut von Kynast’; ‘Les Templiers,’ and ‘King Lear.’ As a pianist he showed feeling and brilliancy of execution, but was uneven, and sometimes inaccurate.

Litop'terna, a South American perissodactyl of the Tertiary Period, related to the ancestors of the horse. See HORSE, FOSSIL

Litori'na. See PERIWINKLE.

Litre, lē'tėr, or **Liter,** the French standard measure of capacity in the decimal system. It is a cube, each side of which measures 3.937 inches, and it contains 61.028 cubic inches, or 2.113 pints. See also METRIC SYSTEM.

Littell, lĭ-tĕl', **Eliakim,** American publisher: b. Burlington, N. J., 2 Jan. 1797; d. Brookline, Mass., 17 May 1870. He learned the printer's trade, and in 1819 established at Philadelphia a literary periodical, the ‘National Recorder,’ the name of which was changed in 1821 to the ‘Saturday Magazine.’ In 1822 he began to publish a monthly, the ‘Museum of Foreign Literature and Science,’ giving selections from the best periodical literature of Europe. In 1844 he started in Boston ‘Littell's Living Age,’ a weekly literary eclectic periodical which is still continued.

Little, James Stanley, English writer on literature and art: b. Herne Hill, Surrey. He has lectured in England, on South Africa and imperial federation, edited ‘African Review’ 1895–7, and 1901–2, and has published ‘A World Empire’ (1879); ‘South Africa’ (1884); ‘What is Art?’ (1884); ‘The United States of Britain’ (1887); ‘A Vision of Empire’ (1889); ‘The Progress of the British Empire in the Century’ (19th Century Series) (1901); etc.

Little Blue Creek, a small stream in Jackson County in the western part of Missouri. A contest occurred, in 1864, on the banks of this stream, between Federal troops under General Curtis and Confederate troops under General Sterling Price. The contest lasted several hours, when the Confederates fell back on Big Blue Creek, in the same county, and made a strong resistance. The Union cavalry, under General Pleasanton, finally routed the Confederates, who retreated into Arkansas.

Little Colorado, a river which has its rise in the western part of New Mexico, and flows southwest into Arizona, where the course changes northwest to its junction with the Colorado River. The amount of water is sometimes large, but again the river resembles a chain of small lakes or ponds, with dry or nearly dry river beds in many places. The river is about 230 miles long. It flows a little south of the southern boundary of the Navajo Indian Reservation, around the region where many “Cliff Dwellers” once lived in Arizona, and on through arid wastes and among low mountains to near the Colorado, where it enters a deep cañon, through which its waters flow into the Colorado just at Marble Cañon.

Little Corporal, The, a name bestowed upon Napoleon by his admiring soldiery after the battle of Lodi, in affectionate allusion to his small stature.

Little Dorrit, a novel by Charles Dickens (q.v.) published in 1856. There is but a slight plot to the story, which contains more than 50 characters.

Little E'gret, any of several small, white herons. See EGRET; HERON.

Little Falls, Minn., city and county-seat of Morrison County; on the Mississippi River, and on the Northern Pacific railroad; about 100 miles northwest of St. Paul. The place was settled in 1856, and in 1889 was incorporated. A dam across the river aids in furnishing extensive water-power. It is situated in an agricultural and lumbering region. Its chief manufactures are flour, lumber, machine-shop products, paper, bricks, beer, and dairy products. It is the commercial centre for a large part of Morrison and adjoining counties. It has a fine court-house, Saint Gabriel's Hospital, Saint Otto's Orphan Asylum, a city library, and several good school buildings. Pop. (1890) 2,354; (1900) 5,774.

Little Falls, N. Y., city, in Herkimer County; on the Mohawk River and the Erie

Canal, and on the West Shore and the New York Central & H. R. R.R.'s; just midway between Albany and Syracuse. Where the city is now was once the site of an Indian village, and was visited in the 17th century by missionaries. A white settlement was made here about 1770 or a few years later. In 1782 this settlement was destroyed by Indians and Tories, and no successful efforts were made to rebuild until 1790, when a colony of Germans took possession. The place was incorporated as a village in 1811; the incorporation was changed in 1827. It became a city in 1895. The city gets its name from the falls, or series of cascades in the river, which descends 45 feet in less than a mile. General Herkimer, a Revolutionary officer, is buried in a cemetery near the city.

Little Falls is situated in a grazing region noted for its dairy products; but the city is noted for its manufactories. The country around is rolling and is diversified by many low hills; but along the Mohawk, where Little Falls stands and in the vicinity, there are peculiar rock formations. The chief manufactures are knit-goods, paper, carriages, bicycles, leather, knitting machinery, foundry and creamery products, and book-cases. There are about 2,500 employees in the manufacturing establishments. The two banks have a combined capital of $350,000; the annual amount of business is about $2,750,000. The city has a number of fine church buildings, a city hospital, a public school library, an excellent high school, public and parish schools, and a number of fine public and private buildings. Pop. (1890) 8,783; (1900) 10,381.

Little Giant, The, a familiar name applied to Stephen A. Douglas (q.v.) by his political admirers in allusion to his small stature and great intellectual capacity.

Little John, one of the outlaw comrades of Robin Hood. He was famed for his strength and was the only one of the company who could approach Robin Hood in skilful handling of the bow. By some authorities his name is supposed to have been John Nailor.

Little Kanawha, kă-nâ'wạ, a river which has its rise in the central part of West Virginia, flows west and northwest, and enters the Ohio River at Parkersburg. It is about 100 miles long, has considerable rapidity in the mountain section, and is of benefit as a route for the transportation of the oil and lumber of that portion of the States through which the river flows. It has been made navigable as far as Burning Springs, about 40 miles from Parkersburg.

Little Lord Faunt'leroy, a popular story for children by Mrs. Frances Hodgson Burnett, originally published in 1885 as a serial in the magazine ‘Saint Nicholas.’

Little Mac, a nickname applied by the soldiers of the Union army during the Civil War to General George B. McClellan (q.v.).

Little Nell, a child character in the novel ‘Old Curiosity Shop,’ by Charles Dickens. She was reared amid vice and crime, yet preserved a beautiful purity of character.

Little Phil, a nickname given by his soldiers to General Philip H. Sheridan (q.v.) during the Civil War.

Little Red Riding Hood, a well-known fairy tale which first appeared in Paris in 1697, in a collection of tales by Charles Perrault.

Little Rock, Ark., capital of the State, the seat of Pulaski County, and the largest city in the State; on the St. Louis, I. M. & S., the Rock Island, and the St. Louis S. railway systems; 133 miles east of Memphis, 346 miles southwest of St. Louis, 165 miles east of Fort Smith, and 145 miles northwest of Texarkana. Little Rock is situated on both banks of the Arkansas River, and takes its name from the rocky promontory which rises on the south bank some 50 feet above the river, now used as one of the abutments of one of the four bridges which span the river. This rock is the first seen in ascending the river, and was called the Little Rock, in contradistinction to the bold precipice, about ten times higher, which rises some three miles above upon the opposite bank, and called the Big Rock. This commanding eminence is now the site of an army post. While the eastern border of the city touches rich alluvial cotton lands, without rocks and subject to a high state of cultivation, its western border reaches to the foothills of the Ozark Mountains. It is situated near lat. 35° and lon. 92°, almost at the centre of the State. The Arkansas River is navigable up to this point during the major portion of the year for large steamboats, while smaller vessels ply as far up as Fort Smith.

Trade and Commerce.—The growth of the commerce of Little Rock has been gradual but steady. The total business for 1902 is estimated at $50,000,000, a large portion of which consisted of cotton and its by-products. During the season of 1901–2 Little Rock shipped 246,675 bales of cotton. The total freight traffic for 1902 employed 83,405 cars. The real estate transactions during the same year aggregated $2,495,882. The postal receipts for the fiscal year ending 30 June 1903, totaled $116,036. The Board of Trade, the Retail Grocers' Association, and the Merchants' Freight Bureau are organs for concert of action among business men.

Manufactures.—The largest single industry is the manufacture of cottonseed-oil. There are four mills, which shipped during the season of 1901–2, 727 cars of oil, 1858 cars of meal, and 473 cars of hulls. Of other industries, besides domestic and jobbing shops such as clothing, food, plumbing, etc., the principal are foundries, railway shops, a cotton mill, ice and printing plants, 4 compress companies, beer and bottling works, and wagon shops. The census report shows that in 1900 the city contained 171 manufacturing establishments with $3,434,393 capital, employing 2,751 persons, paying $1,384,722 in wages, and $1,990,081 for materials, and having a total output of $4,723,118.

Banks.—On 1 Nov. 1903, there were three national banks and 12 State and savings banks, with a capital stock of $1,875,000 and surplus of $563,410, and deposits amounting to $6,211,117. The local bank clearings for the year 1902 aggregated $48,521,981.99. Besides these, there are 13 building and loan associations, all local, with aggregate stock amounting to $8,335,010, and loans in force aggegating $2,605,316.

Government and Finances.—All municipal corporations in Arkansas are governed by general laws, and not by special charter. The mayor, treasurer, police judge, city clerk, and city attorney, as well as the aldermen, are elected biennially. The city council is composed of the mayor and 16 aldermen, two of whom are elected from each of the eight wards by the voters of the entire city, and are required to reside in their several wards. The administrative officers are partly appointed by the mayor and partly elected by the council. The ordinary expenses of the city for the year 1902, not including the schools, aggregated about $180,000, of which $37,225 were expended for the police department, and $36,504 for the fire department. The net bonded indebtedness is $78,000. There is a floating indebtedness of $11,000, a judgment debt of $21,000, and a disputed claim of some $60,000. The assessed valuation of real and personal property in 1902, on a basis of about 40 per cent of the full value, was $15,971,236. The rate of taxation was as follows: State 5¾ mills; county, 9¼ mills; city 6 mills; school district, 5 mills, making a total of 26 mills. Counties and cities and towns are prohibited from levying taxes in excess of five mills on the dollar, except that they may levy a tax not exceeding five mills on the dollar to pay indebtedness existing at the time of the ratification of the State constitution (1874), and that counties may levy a road mill tax not exceeding three mills. Besides the revenue derived from the tax on real and personal property, the city received in 1902 from police court fines the sum of $43,734.05; from general licenses, $39,654.40; from the vehicle license, $11,238.00; from miscellaneous sources $8,691.79.

Churches and Charitable Institutions.—Little Rock is a city of numerous churches. There were in 1902, 73 churches and chapels (of which 37 were colored) with a total membership of 13,600; the two strongest denominations being the Methodist and the Baptist. It is the seat of Roman Catholic and Protestant Episcopal cathedrals, Saint Andrew's and Trinity. The former, at the corner of Seventh and Louisiana streets, is a noble edifice built of native granite, the most striking piece of architecture in the city. Other notable buildings are Christ Church (P. E.), the Eighth Street Methodist the German Evangelical Lutheran, the First Presbyterian Churches and the Jewish Temple. Of the charitable institutions the more notable are the county and city hospitals, Saint Vincent's Infirmary, conducted by the Sisters of Mercy, the Children's Home, the Methodist Orphanage, the Jane Kellogg Home for Aged Women, and the Home for Aged Colored Women.

Buildings, Parks and Suburbs.—Little Rock is noted for the beauty of its homes. The profusion of its flowers have won for the city the name of "the City of Roses." All of the State's public institutions except the University of Arkansas at Fayetteville and the Branch Normal Institute for colored youth at Pine Bluff are located here. These include the State House, the School for the Blind, the Deaf-Mute Institute, the Lunatic Asylum, and the State Penitentiary. The State is erecting a new Capitol, to be built of Arkansas marble. Other public buildings of note are the Pulaski County Court house, constructed of granite quarried in the vicinity, the Custom House and Post Office, and the Board of Trade building. Of club houses are the Country Club, the Athletic Association, the Quapaw Club and the Elks' Lodge, social organizations, Concordia Association, a Jewish club, the Masonic Temple, and the Albert Pike Consistory. The City Park, consisting of 35 acres of ground, is situated in the heart of the residence portion of the city, and is tastefully laid out in walks and drives, and well kept up. The Arkansas River is crossed by three railroad bridges and a free bridge erected by Pulaski County at an expense of nearly $400,000, uniting the northern and southern portions of the city. There are two incorporated suburbs of the city, namely, Baring Cross, a thriving town of 800 inhabitants lying north of the Arkansas River and west of the city limits, and North Little Rock, a small town lying north of the river and of the city. A new suburb on Pulaski Heights, a picturesque hill overlooking the city, has recently been brought into prominence by the extension of the street car system, and promises to become fashionable for residences. Mount Holly, the oldest cemetery in the city, is beautifully adorned with shrubs and flowers, and has many fine monuments. Other cemeteries are Oakland, the Jewish, the Catholic, the National, the Confederate, and the Colored. The city is abundantly supplied with pure water obtained from the Arkansas River. There are two reservoirs with a storage capacity of 11,000,000 gallons, with an average daily consumption of 3,250,000 gallons. There are 65 miles of water mains in the city.

The streets are laid out with regularity. The principal retail thoroughfares are Main and Markham, the former running north and south and at right angles to the latter. There are within the city 239.61 miles of opened streets, of which 3½ are paved with brick, granite and asphalt, and 8 miles with Telford and macadam pavement; 47.6 are graveled, and 105 are graded. The city has entered upon a new era as to the improvement of its streets. In addition to a tax of 3 mills collected exclusively for the improvement of highways, the city collects for the same purpose a vehicle tax. The recent discovery of asphalt beds in Arkansas is expected to lead to great improvement in road making in the city. Perhaps no other city of the same size will enjoy better street railway facilities than Little Rock when the projected improvements are added. The street railway company is now operating 25 miles of line within the city limits. The extensions to Pulaski Heights and on the north side of the river, when completed, will add 6.5 miles.

Education.—The single school district of Little Rock is a corporation distinct from the city, its territory including only that portion of the city which is south of the river. In 1902 it had ten schools, with 14 buildings, of which four schools with five buildings were for the colored children, 93 teachers, and an enrollment of 5,140, of whom 1,670 were colored. The school census for the same year showed a total of 11,535 who were entitled to attend the schools, of which number 4,407 were colored. This school district is perhaps unique in possessing a commodious and well furnished school board building, with rooms for meetings of the board of directors, for the superintendent and secretary, and for the teachers' meetings. The North Little Rock school district, including so much of the city as lies north of the river, had in 1902 five school buildings, two of which were for colored children, 15 teachers, and an attendance of 885. The school census showed that

2,600 were entitled to attend the public schools in that district. Besides the public schools, there are private and parochial schools. For higher education, the University of Arkansas, the main departments and buildings of which are located at Fayetteville, has branch schools of law and medicine located here. Besides these are the Arkansas Military Academy, a military training school for boys, Maddox Seminary for young ladies, and the Philander Smith College for colored youth.

History.—When the territory now known as Arkansas passed to the United States in 1803, the site of the future capital was an unbroken wilderness. By the act of Congress of 2 March 1819, the seat of government of the newly created territory was fixed at the Post of Arkansas on the Arkansas River some 30 miles above its confluence with the Mississippi. On 24 Oct. 1820, an act was passed removing the capital to Little Rock. It has been aptly said that so manifest was the destiny of the future city that it was made the seat of government before it had become a town. A post-office was established on 10 April 1820. It was incorporated as a town 27 Oct. 1825. It is said that the inhabitants numbered only 450 in 1830. On 2 Nov. 1835, it was, by special act, incorporated as a city. When the momentous question of secession arose in 1861, a convention was called by the legislature to meet at Little Rock to discuss the subject. It met on 4 March, and, after considering the matter, adjourned without definite action on 21 March, subject to recall. On 6 May 1861, when war was already flagrant, the convention, being recalled, with only one dissenting vote, adopted an ordinance dissolving the union existing between the State of Arkansas and those united with her under the compact entitled, «The Constitution of the United States of America.» On 10 Sept. 1863, Little Rock was captured by the Northern army under Gen. Steele, and remained in possession of the Federal forces during the remainder of the war. The unexpected increase in the population between the years 1860 and 1870, covering the period of the Civil War, may perhaps be attributed to the fact that during that period of disintegration society was forming new associations. The growth of the city since 1880 has been constant and rapid.

Newspapers.—The city has three daily and several weekly newspapers. The Arkansas *Gazette* was originally founded by Wm. E. Woodruff, Sr., at the Post of Arkansas in 1819, and has been continuously published ever since under the same name, except when it was suspended for a short time during the war. When the seat of government was removed to Little Rock in 1820, it followed in the wake of the government, and issued its first number at the new capital on 29 Dec. 1821. Its subsequent growth has been closely linked with that of the city.

Population.—The population of Little Rock in 1850 was 2,167; (1860) 3,727; (1870) 12,380; (1880) 13,138; (1890) 25,874; (1900) 38,307, of whom 23,590 were white, and 14,717 were colored. Of these 38,307 inhabitants, 2,099 were foreign born, while 36,307 were native. In 1904, population was 55,000. T. D. Crawford,

Supreme Court Reporter, Little Rock, Ark.

Little Rock, Capture of. The State authorities of Arkansas seized the United States arsenal at Little Rock 8 Feb. 1861, and until 10 Sept. 1863 the city remained in Confederate occupation. After the fall of Vicksburg and Port Hudson, 4 and 8 July 1863, Gen. F. Steele was ordered from Vicksburg to Helena and directed to form a junction with Gen. Davidson, who was moving south from Pilot Knob, Mo., break up Sterling Price's army, and occupy Little Rock. Steele arrived at Helena 31 July and organized his expedition, finding at that place two divisions of infantry, a brigade of cavalry, and 39 guns; in all, about 7,000 men. On 5 August he marched for Devall's Bluff on White River, reached it without incident, and there was joined by Davidson with 6,000 cavalry and three batteries, making his force about 13,000 men and 57 guns. A few days later he was joined by a brigade which raised his aggregate to over 14,000, of whom 10,500 were effective, many being sick. August 24 Davidson's cavalry advance skirmished with Marmaduke's cavalry up to and through Brownsville and up to his intrenchments at Bayou Meto. Davidson fell back to Brownsville, where, 2 September, Steele joined him, and concentrated all his available force. The position on the Bayou Meto, 12 miles from Little Rock, was flanked, and on the 7th Steele reached the Arkansas River near Ashley's Mills, where Davidson's cavalry had a sharp skirmish and drove the Confederates across the river. Steele repaired the main road back to Bayou Meto, and on the 10th Davidson crossed to the south side of the river by a pontoon bridge and marched on Little Rock, but ten miles distant, Steele marching along the north bank. The city was defended by Sterling Price with about 7,700 men, of whom 6,500 were intrenched on the north side of the Arkansas, and about 1,200 on the south side, on the line of the Bayou Fourche, about five miles from the city. Davidson moved directly on the city, without much opposition until he reached Bayou Fourche, where he found Marmaduke's cavalry, dismounted, a brigade of infantry, and two batteries, all drawn up to oppose him. Davidson attacked on two roads, driving the Confederates back; Steele, who had marched abreast of him on the opposite side of the river, opened an enfilading artillery fire; and Marmaduke fell back through the city, closely followed by Davidson's cavalry. Price had withdrawn from the north bank of the river when he learned that Davidson had turned the position, and evacuated the city at 5 P.M., retreating to Arkadelphia. Steele's cavalry followed Marmaduke's cavalry for a day, and returned to Little Rock on the 12th. At 7 P.M. the city was formally surrendered to Davidson by the civil authorities. Price burned eight steamers, one of them a powerful gunboat, but the arsenal was saved. Steele reported a loss of 137 killed, wounded, and missing; Price reported a total loss of 64. Consult: 'Official Records,' Vol. XXII.; Lossing, 'History of the Civil War,' Vol. II.; The Century Company's 'Battles and Leaders of the Civil War,' Vol. III.

E. A. Carman.

Little Turtle, an Indian chief of the Miami Nation, one of those who signed the Treaty of Greenville in 1795. He visited President Washington in Philadelphia in 1797. He was celebrated for his courage, ability and shrewdness. With his native forces he defeated General Harmer on the Miami River in 1790, and General St. Clair in 1791.

Little Women, a popular story for children by Louisa M. Alcott (q.v.), published in 1868.

Lit'tlefield, Walter, American journalist: b. Boston 17 March 1867. He was educated at Harvard and has been since 1897 on the editorial staff of the New York *Times.* He is the American correspondent of *Le Siècle,* Paris, and the author of ‘The Truth about Dreyfus.’ He has edited ‘The Letters of an Innocent Man (Dreyfus)’ (1898), and other works.

Lit'tlehales, George Washington, American hydrographic engineer: b. Schuylkill County, Pa., 14 Oct. 1860. He was graduated from the United States Naval Academy in 1883. He is an associate editor of the ‘International Journal of Terrestrial Magnetism,’ and has published, ‘The Development of Great Circle Sailing’; ‘The Methods and Results of the Survey of Lower California’; ‘The Magnetic Dip or Inclination’; ‘The Azimuths of Celestial Bodies’; and other works, all published by the United States Navy Department.

Lit'tlejohn, Abram Newkirk, American Protestant Episcopal bishop: b. Florida, Montgomery County, N. Y., 13 Dec. 1824; d. Williamstown, Mass., 3 Aug. 1901. He was graduated at Union College in 1845 and took orders in the Episcopal Church in 1850. He was rector of St. Paul's, New Haven, Conn., 1851–60, and of Holy Trinity Church, Brooklyn, N. Y., 1860–9. He was made bishop of Long Island in 1869, and from 1874 was in charge of American Episcopal churches on the continent of Europe. He wrote ‘Philosophy of Religion’; ‘The Christian Ministry’; etc.

Littlejohn, John Martin, American physiologist and osteopathist: b. Glasgow, Scotland, 1867. He was graduated from the University of Glasgow, afterward studied theology and was ordained in 1886. He was a tutor in Glasgow University, principal of Rosemont College 1890, of Amity College, Iowa, 1894–7, and has been president of the board of trustees of the American School of Osteopathy, Kirksville, Mo., from 1900, and professor there from 1897. He has published ‘The Political Theory of the Schoolmen and Grotius’ (1894); ‘Text-Book on Physiology’ (1898); ‘Lectures on Psycho-Pathology’ (1900).

Lit'tleton, or **Lyttleton,** Sir **Thomas,** English jurist: b. Frankley, Worcestershire, 1402; d. there 23 Aug. 1481. He was a student at the Inner Temple, sheriff in 1447, recorder of Coventry in 1450, and in 1453 was made sergeant-at-law. After holding several legal appointments he became justice of the common pleas in 1466. His treatise on ‘Tenures,’ with the well-known commentary by Sir Edward Coke, was long the standard authority on the English law of real property. It was written in legal French, and first published at London about 1480. There are many subsequent editions.

Littleton, N. H., town, in Grafton County, on the Ammonoosuc River, and on the Boston & Maine railroad. When it was first settled in 1770, it was called Apthrop. When it was incorporated, in 1784, the name was changed to Littleton. It is in a section of the State noted for its beautiful scenery and cool summer climate. The river furnishes considerable water-power; and the town has several manufactories. Its chief manufactures are shoes, gloves, wagons and carriages, whetstones, bobbins, stereoscopic views, wooden ware, and furniture. It has a good public library; the building is a gift from Andrew Carnegie. The government of the town is administered by means of the annual town meeting. Pop. (1900) 4,066.

Littoral Deposits. See SANDSTONE.

Littré, Maximilien Paul Emile, mäk-sĭ-mĭl-ĭ-ŏṅ pōl ā-mēl lē-trā, French philosopher: b. Paris 1 Feb. 1801; d. there 2 June 1881. After completing his course at school his study of medicine was interrupted by the death of his father. He then engaged in teaching for a livelihood, took an active part in the revolution of 1830, and soon after was invited by Armand Carrel, editor of the ‘National,’ to write for that paper. In 1839 he published the first volume of an edition of Hippocrates in the original, with a French translation and copious notes. This work, in 10 volumes, secured his admission to the Académie des Inscriptions et Belles-Lettres. He translated Strauss's ‘Leben Jesu,’ and having adopted Comtist principles, wrote an able and lucid synopsis of them in his ‘De la Philosophie Positive’ (1845). In 1854 he was appointed editor of the ‘Journal des Savants’ and in 1863 commenced the publication of his great work, the ‘Dictionnaire de la Langue française,’ which has been called the best dictionary of any living language yet published. This was finished in 1873, two years previous to which Littré had been admitted into the Académie Française. Another important work of his was an edition of Pliny's ‘Natural History’ with a translation and notes. During the siege of Paris he retired with his family to Bordeaux, and was appointed professor of history and geography in the polytechnic school there. He was afterward summoned to Versailles to take his seat in the senate, having been chosen by the department of the Seine. He became a life senator in 1874. Among Littré's other works are ‘Application de la Philosophie Positive au Gouvernement des Sociétés’ (1849); ‘Conservation, Révolution et Positivisme’ (1852); ‘Paroles de Philosophie Positive’ (1859); ‘Histoire de la Langue française’ (1862); ‘Auguste Comte et la Philosophie Positive’ (1863); ‘Etudes sur les Barbares et le Moyen Age’ (1867); ‘Médecine et Médecins’ (1871); and ‘Littérature et Histoire’ (1875).

Lit'trow, Joseph Johann von, Austrian astronomer: b. Bischof-Teinitz, Bohemia, 13 March 1781; d. Vienna 30 Nov. 1840. In 1807 he obtained the chair of astronomy in the University of Cracow, and in 1810 accepted a similar chair in Kasan, where he founded the observatory. He became in 1816 joint director of the observatory of Buda, and from this he removed in 1819 to become director of the observatory of Vienna. He completely reorganized this establishment, and in his lectures yearly attracted a numerous audience, not only of ordinary students, but of unprofessional persons, many of them strangers from abroad. His writings, chiefly on mathematical and astronomical subjects, are numerous, and have generally had a very extensive circulation. By far the most popular of all is his 'Die Wunder des Himmels,' of which the 8th edition was published (1895–7). It ranks as one of the best works of astronomy for the use of general readers.

Littrow, Karl von, Austrian astronomer: b. Kasan, Russia, 18 July 1811; d. Venice 16 Nov 1877. He was a son of Johann Littrow (q.v.), whom he assisted in the Vienna Observatory from 1831, and succeeding him as director in 1842. He edited the works of his father, adding considerably to 'Die Wunder des Himmels,' and was the author of 'Populäre Geometrie' (1839); 'Verzeichnis der geographischen Ortsbestimmungen' (1844–6).

Liturgy (Greek λειτουργία means a public service; used at Athens to mean a public service which the richer citizens discharged at their own expense). The Septuagint translators used the Greek word *leitourgos* for that service of God in the Sanctuary. In the Hebrew it had various kindred meanings; in the Old Testament it usually denotes the service of a Jewish priest, but in the New Testament it is used of any service rendered to God. In the 4th century, the word as applied to priestly ministrations was generally recognized; and while it continued in use as meaning any solemn service, it was applied especially to the Eucharistic service. It is in this sense that the word is used by the Greek Church when they say «Divine liturgy.»

The records extant which show the exact liturgy of the Christian Church in the 1st century are more the allusions found in documents of the 2d century. From the year 150 there are numerous proofs to show the existence of a fixed order and fixed words for the service of the mass or for the Eucharistic service. This service or liturgy was not made just when mentioned by Cyprian, and in 138 by Justin, and many others who committed to writing the order of the services or the liturgy. But there is not sufficient proof to warrant the assertion that there was any entire written liturgy before the 4th century. As the liturgies exist to-day they may be divided into five groups or families of liturgies, distinguished from each other chiefly, though not entirely, by the different arrangement of their parts. Three of the groups are Oriental and two are Western. They are: (1) The West Syrian Group, which includes the Liturgies of Saint James, Saint Basil, Saint Chrysostom, and that of Armenia. In this group the intercession for the living and the dead is placed after the invocation of the Holy Spirit, which in Oriental liturgies follows the consecration.

(2) The Alexandrian Group, which includes three Greek liturgies; Saint Mark, Saint Basil, and Saint Gregory, also the Coptic liturgies. This group is characterized by the «Great Intercession» for the living and the dead being placed in the midst of the Preface.

(3) The East Syrian Group includes the liturgies in the Syriac language as used by those who belong to the Roman Catholic Church. In this group the «general intercession» is placed between the words of institution and the invocation of the Holy Spirit.

(4) The Liturgies of Gaul and Spain. In this group the «Great Intercession» comes just after the offertory, though the Mozarabic liturgy has a memento of the living before the Pater Noster.

(5) Gallican Liturgy. In this the intercession is divided, that of the living is before consecration, and that of the dead after consecration.

That part of the «Liturgy of the Mass» called the «Canon» is very ancient, and existed about as at present since the time of the Apostles (see MASS; MISSAL). The liturgy of the Church of England is derived from the Ephesine original through the ancient Gallican liturgy which was brought to France by Greek missionaries, who were accustomed to use the form known as the liturgy of Saint John. There is no invocation of the Holy Spirit in the present English form, although the Protestant Episcopal Church has restored the invocation, like the Scottish Episcopal Church. There is, however, no ritual element wanting in these two English forms whether they be compared with the Greek or Latin liturgies. The liturgy in use in the Protestant Episcopal Church more nearly resembles the Gallican liturgy than any other group, but in some respects there is a difference in arrangement, and also in meaning. There is no intercession for the dead, and the intercession for the living comes before the Communion.

Bibliography.—Tertullian, 'De Corona'; Cyprian, 'Epistle'; Report of Council in Trullo; Probst, 'Liturgie der drei ersten Jahrhunderte,' who claims that there was a written liturgy before 150; Hammond, 'Ancient Liturgies'; Smith and Cheetum, 'Liturgies'; Rock, 'The Church of Our Fathers, as Seen in Saint Osmond's Rite for the Cathedral of Salisbury' (1904); De Herdt, 'Sacra Liturgia' (3 vols.).

Lit'uus, (1) a crooked staff, represented in works of art as borne by the ancient Roman augurs in their divinations. It was like a crozier in shape. (2) A trumpet, having a mouth which curved upward, and which was used by the Roman priests and cavalry. (3) In geometry, a spiral, of which the characteristic property is that the square of any two radii vectores are reciprocally proportional to the angles which they respectively make with a certain line given in position, and which is an asymptote to the spiral.

Liudger, lĭ-ood'ger, **Saint,** the first bishop of Münster, Germany: b. Friesland about 744; d. Billerbeck 26 March 809. He studied in England under Alcuin, and returned to preach Christianity to his countrymen. When Wittekind was sent to Friesland in 784, Liudger abandoned his mission and went to Rome. Subsequently he returned to become the first bishop of Münster. The various *Vitæ S. Liudigeri* are collected in the 'Geschichtsquellen des Bistums Münster' (Diekamp 1881). Consult also the Lives by Hüsing (1878); Pingsmann (1879); and Krimphove (1886).

Liudprand, lĭ-ood'prănd, **Liutprand,** or **Liuzo,** Italian historian: b. about 922; d. 972. He was of a noble Lombard lineage. His father, who was King Hugo's ambassador to Constantinople, dying when the son was not more than five years old, young Liudprand was educated as a page in King Hugo's court in Pavia, and later entered the Church. Hugo's successor, Berengarius, made him chancellor, and in 949 sent him on an important diplomatic mission to Constantinople. Soon afterward he joined himself to the Emperor Otho I., who, in 962, made him bishop of Cremona, and in 968 sent him on an important but unsuccessful mission to the court of the Eastern Church, which called forth his bitter ‹De Legatione Constantinopolitana.› His ‹Antapodosis› covering the period from 886–950. and ‹De Rebus Gestis Ottonis Magni imperatoris,› from 960 to 964, are important sources of 10th century history. They are all found in the ‹Monumenta Germaniæ Historica.›

Liu-kiu, lē-oo'kē-oo', or **Loo-choo Islands,** Japan, a chain of 37 islands, mostly small, forming an integral part of the empire, and extending irregularly in a southwestern direction between Kiu-shiu and Formosa. The islands were conquered by the Prince of Satsuma in 1609. They constitute the Japanese prefecture of Okinawa, with an area of 1,863 square miles; pop. 160,000. Oshima and Okinawa are the only islands of considerable size. Capital, Shiuri in Okinawa. See JAPAN.

Liu-Kun-Yi, Chinese statesman: b. Hunan about 1820; d. Nanking 6 Oct. 1902. He received a military education, and though not a scholar held high official positions. In 1861 he commanded one of the armies raised to oppose the Taiping rebels, and defeated them by a series of successful maneuvers. At the time of the Boxer outbreak he was viceroy of Nanking, the so-called «southern capital» of China, and in spite of the vigorous anti-foreign agitation in his own province and the hostile attitude of the Imperial Government at Peking, he refused to join the anti-foreign movement, and used his foreign-drilled troops to suppress all Boxer demonstrations. In this he was supported by the viceroy of Wuchang, and these two viceroys prevented the spread of the Boxer movement to the valley of the Yang-tse-Kiang, and were consequently influential in protecting Chinese interests in the subsequent peace negotiations.

Liutprand, Italian historian. See LIUDPRAND.

Liutprant, lĭ-oot'prănt, or **Liutprand,** king of the Lombards (q.v.) from 712 to 744, the period of their greatest power: b. about 688. He was an active and popular prince. He captured Ravenna in 728, defeated the dukes of Spoleto and Beneventum in 741, joined with Charles Martel against the Arabs, and extended the Lombard sway over practically the whole of Italy. His death marked the beginning of the downfall of the kingdom. His laws are codified in the ‹Edicta Liutprandi.›

Livadia, lĭv-ä-dē'ä, or **Lebadea,** Greece, a town on the Hercyna, 52 miles northwest of Athens. It is defended by a castle; and has manufactures of cotton goods, and a trade in small articles of raw produce. Pop. 6,500. Higher up the river, in a narrow gorge, is the site of the ancient Hieron, or cave of Trophonius, and the fountains of Lethe and Mnemosyne.

Livadia, a Russian imperial residence near Yalta, on the southern coast of the Crimea, Russia. It is an extensive and beautiful estate, with two fine palaces and many less important villas and lodges. It was the favorite residence of Alexander III., who died there 1 Nov. 1894.

Live-for-ever, or **Garden Orpine,** a small cultivated stonecrop, *Sedum telephium.* See STONECROP.

Liveing, George Downing, English chemist and surgeon: b. Nayland, Suffolk, 21 Dec. 1827. He was graduated at St. John's College, Cambridge, in 1850, and in 1853 he became a fellow and lecturer in natural science in that college. He was appointed professor of chemistry at the Royal Military College, Sandhurst, in 1860; and in 1861 professor of chemistry in the University of Cambridge. In 1852 he established at his own expense the first chemical laboratory for undergraduates in Cambridge, and may be said to be the founder of the system of experimental teaching that is now such a prominent feature of that university. He was instrumental in securing the examination and inspection by the university of secondary schools, and the admission of girls' schools to the examinations. He also took an active part in the establishment in 1873 of the Oxford and Cambridge Schools Examination Board, and in 1875 of the medical examinations for the Diploma of Public Health. He promoted the establishment of the School of Agricultural Science at Cambridge. He has published: ‹On the Transmutation of Matter› (Cambridge Essays, 1st series, 1855); ‹Ultra-Violet Spectra of the Elements› (with Prof. Dewar, ‹Transactions› of the Royal Society, 1883); ‹Chemical Equilibrium the Result of the Dissipation of Energy› (1885); ‹Report on the University Colleges› (with Mr. Warren, 1897); and many papers on spectroscopy, crystallization, etc., in the ‹Proceedings› of the Royal Society, the ‹Proceedings› of the Cambridge Philosophical Society, and the ‹Philosophical Magazine.›

Live Oak, a species of evergreen oak found growing in various parts of the United States, Central America, and Cuba. See OAK.

Live Stock, American. The animals which emigrants brought from Europe and the British Isles gave America a mixed aggregation of traits and types, from which came our native cattle, our wild horses, and the common hog and sheep. From these the pioneers bred; their descendants, in turn, improving these breeds by importation and selection, aided by a temperate climate, fertile soil, rich herbage and grasses and grains such as no other country had ever furnished for the foundation and development of domestic animals. The result has been to give to the United States in one century the highest type and greatest number of high-grade and pure-bred animals of any nation on the earth.

From 4,336,719 in 1850 the number of horses in the Union had increased to 21,203,901 in 1900, a ratio of more than one horse to every family. The imports of horses into the United States, from 45,610, valued at $3,726,534 in 1884, had decreased to 3,785, valued at $985,738 in 1901, while the export of horses in 1884, 2,721, valued at $424,317, had increased in 1901 to 99,809, valued at $10,037,204. The majority of the imported horses are for breeding purposes. During the last quarter of the 19th century the rapid increase of the lower grade of horses from the ranches of the West and Southwest had lowered the price of farm and common draft or street horses, and the market was further depreciated by the rapid displacement of horses in street car service by the various electric street railroad systems. New avenues for disposal of the surplus had to be opened, and as even the price of cured horse meat for shipment to Belgium and Germany fell as low as six cents per pound, many thousands of inferior animals, unemployed and disabled horses, found their way to fertilizer factories. These factories buy castoff horses as low as $2 per head; the hide is worth, on an average, $3.25, the bones $1.25, the fat and tankage about as much more; and with the resultant fertilizer yields handsome profits. The result of the wholesale destruction and diminution of these inferior animals has been a rapid improvement, still progressing, in the quality of the American horse. See various articles under title HORSE for information regarding that animal.

In the west and south the mule, as a draft and farm animal, has long been of great service. Gen. Washington was America's first successful breeder of mules. The king of Spain presented Washington with a jack from his royal stud in 1787. Gen. Lafayette also presented him with one, which sired Washington's favorite jack, Compound. To him he bred his best coach mares, and produced such valuable animals that the southern planters began to use their thoroughbred mares for raising mules. The mule being more steady at a draft, less liable to injury or disease, less subject to lameness, and being able to endue heat and hardship better than the horse, his price for heavy work has kept as high as that of draft horses. The number of mules in the United States increased from 559,331 in 1850 to 3,438,523 in 1900. There is no import trade in mules, the trade being wholly domestic and export. From 1,965, valued at $238,591 exported in 1891, the number in 1900 had increased to 50,179 valued at $4,757,892.

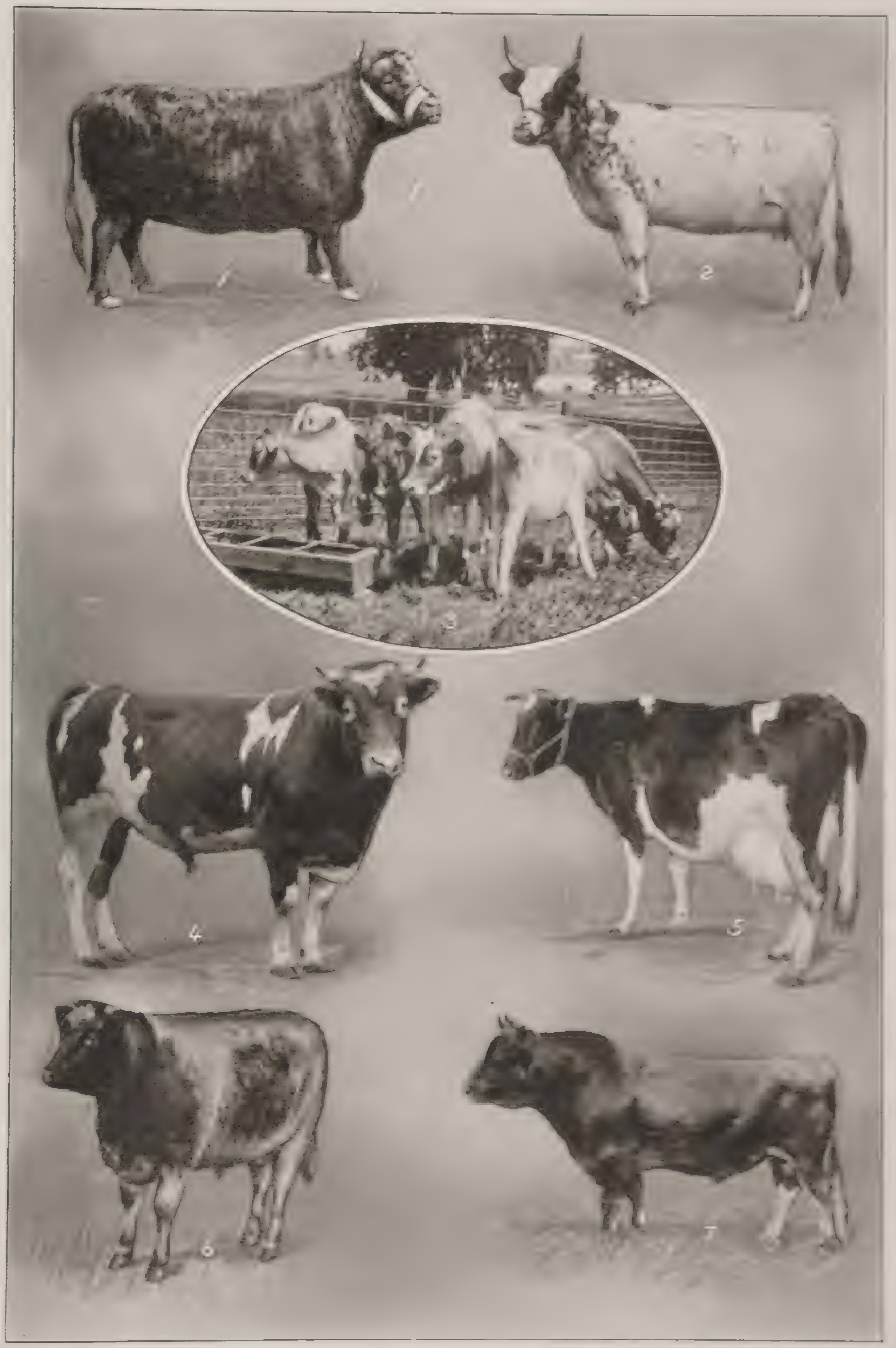
The large exports of horses and mules in 1900–1901 was in great part due to the demand for war purposes in South Africa. In 1902 the export of horses was 60,694, value $6,086,012; of mules, 16,306, value $1,744,192.

In American cattle, not only good health but good blood is remarkable; the immense herds have been singularly free from the diseases which from time to time have swept off the cattle of middle and southern Europe. Pleuropneumonia and anthrax entered our shores with imported cattle from lands where such diseases have a hold, but these plagues spread over no great extent of country. Under the efficient organization of the U. S. Bureau of Animal Industry, outbreaks of any contagion speedily disappeared; and every cargo of cattle leaving our ports carries with it a clean bill of health. Fresh importations are continually being made, and in our herds is the blood of the choicest of the Devon, the shorthorn, the longhorn, the Hereford, the Sussex, and the Norfolk of England; the Ayrshires, Angus, and Galloway of Scotland; the Kerrys of Ireland; the Alderney, Guernsey, and Jersey of the Channel Islands, and the Holstein from Holland.

The first English colonial settlement on the James River, brought cattle from England as early as 1607. Succeeding colonies brought cattle from the countries whence they emigrated. In 1625 the settlers of New York made an importation from Holland, which was followed by further importations, each leaving its impress on the cattle of that region. The English colonies in Massachusetts and New Hampshire, the Dutch in New Jersey, the Swedes in Delaware, and the Danes on the Piscataqua River, all brought cattle from the countries nearest the ports from which they sailed. The cattle of Normandy came in with the French around Quebec, and the Spanish cattle from South America and Mexico made their impress on the Southwest, as seen in what are now called Texas cattle. The shorthorns have been more used, perhaps, than any other beef breed for improvement of stock; and the early settlers were more interested in developing cattle that could concentrate the wealth of grass and corn of the fertile valleys into beef than into butter and cheese.

Soon after the Revolutionary War a few shorthorn cattle had been imported into Virginia. They were well fleshed, and the cows gave as much as 32 quarts of milk a day. In 1783, Matthew Patton, Sr., of the South Fork of the Potomac, imported a longhorn bull. In 1785 three of Patton's sons moved to Kentucky, taking with them some of the half-bred heifers. In 1795 they sent back to Virginia and Maryland for cattle known as «milk cattle.» In 1803 the Pattons brought out the «milk bull» Pluto 825, a noted breeder. Descendants of this bull and another named Mars, and a cow, Venus, found their way into the Virginia Reservation of Ohio, and laid the foundation for future improvement of cattle in the West. In 1817, Lewis Sanders, of Lexington, Ky., imported three bulls and three heifers from England, which were of so good a quality that they laid the foundation of many excellent herds. In 1818, Cornelius Coolidge, of Boston, Mass., imported a heifer and a bull. About 1820 several public-spirited men in the neighborhood of Boston brought out at different times a number of valuable animals, whose descendants are still numerous in New England. In 1823, General Stephen Van Rensselaer, of Albany, N. Y., imported the bull Washington and two heifers. In 1824, Colonel John Hare Powell, of Philadelphia, began to import shorthorns, and bred largely at his estate near the city, selling them to go into Ohio and Kentucky. The first drove of fat cattle from the fertile Scioto country and the Virginia Reservation crossed the Alleghanies in the spring of 1805. Of the 68 head, 22 were disposed of at Morefield, Va. The remainder were driven on to Baltimore where they were sold at a net profit of $31.77 per head. The problem of getting cattle from the grazing lands of the West to the Eastern markets was solved, and its effects were as great as those of the successful shipment later of the first cargo of fat cattle to England, or the first efforts of Swift & Company, in sending dressed beef from Chicago to New England. The Virginians of Ohio and Kentucky co-operated in the exchange and improvement of their best cattle. Not content with the slow improvement of cattle, various Ohio breeders under the lead of ex-Governor Duncan McArthur, Felix Renick, George Renick, William Renick, and S. S. Denney, resolved «to try the experiment of direct importation from Great Britain,» and formed a company 2 November 1833, with ample capital and unlimited public spirit, as no subscriber expected any profit on the money invested. Mr. Felix Renick, E. J. Harness, and Josiah Renick were sent to England to buy the best cattle they could find, regardless of price. Their first importation consisted of seven bulls and twelve cows and heifers. Further importations followed. In 1835 and 1836 Felix Renick had

CATTLE.



1. Dexter Heifer.
2. Ayrshire.
3. Group of Guernsey Calves.
4. Guernsey.
5. Holstein.
6. Shorthorn.
7. Jersey Bull.

charge of the company's business and the breeding of the cattle, continuing up to the closing sale in 1837, when those remaining were sold at prices ranging from $425 to $2,500. Other companies were afterward formed in Kentucky and Ohio. The success of this pioneer company led also to heavier importations by the Eastern men; and Mr. Whitaker, an English breeder, sent 100 head to Philadelphia, which were sold on the farm of Mr. Powell, an extensive breeder and importer. During the 30's and later the Devons and Herefords had stanch admirers. Henry Clay had gone to England and imported Devons, Herefords, and shorthorns, and in a letter to Governor Trimble he advised the Ohio company to bring out Devons and Herefords, as they were «better for the yoke.» The Devons were at that time the favorites in New England. The Herefords have been vastly improved in the prairie States, and have been used in great numbers on the plains, to the vast improvement of the range cattle of the West. As beef-cattle they have carried off a full share of prizes with the shorthorns at the Chicago fat-stock shows. As the farms of the country became improved, and cattle no longer wintered in the forests or open fields, farmers found horns to be an expensive and unnecessary appendage, and a constant menace to the quiet and peace of the herd enclosed in yards and sheds. The shipper, too, finds the horns a source of loss in the pens and the cars of the railroads. Buyers of feeding cattle prefer those without horns, since they can accommodate a greater number with peace and quiet at the feeding racks and troughs. These causes have led to the practice of dehorning cattle intended for the dairy and feed lots. The polled breeds of Scotland and England have been imported extensively within the last decade; and the polled Durham, a new breed of cattle originated in the Miami Valley is so far established that already the number of breeders and their favorites are numerous, and the type so well fixed that the first volume of the 'American Polled Durham Herd-Book' has been issued. At present there are successful herds of polled Durhams in Ohio, Indiana, Illinois, and Iowa. The long-horned Texas cattle are one remove above the buffalo. They doubtless are of Spanish origin, introduced into Mexico, of which Texas was then a part, about the year 1500. They overran the plains of the Southwest, and were for years killed for their hides and tallow. Before the advent of railroads into the Southwest, Texas was supposed to have one seventh as many cattle as all the other States and Territories. Until Kansas became settled, they were driven by trails into the Northwest, and made the base for founding the numerous and extensive cattle ranches which utilized the wild grasses of government lands. The settlers pushed west to take up lands along the watercourses of the mountain ranges until the boom in the cattle business burst, leaving wrecked fortunes and a clearer field for the legitimate production and improvement of cattle on the farms.

The necessity of greater attention to live stock and of plowing less and grazing more, is beginning to be recognized by the more intelligent, and, during the last quarter of the 19th century especial attention was paid to the improvement of dairy cattle. The importation of Channel Islands cattle and Holstein-Friesian was large, and even the dairy qualities of shorthorns attracted attention. The World's Fair dairy test of shorthorns, Jersey, Guernsey, and Ayrshire cattle continuing through several months, gave a new impulse to the breeding of Channel Islands cattle and dairy shorthorns. The Jersey, Holstein, and Ayrshire can be found in every community, and our milk records and dairy tests show that our improved cattle and our methods of breeding and feeding enable us to excel records made in the countries where dairy breeds originated. Our experiment stations and agricultural colleges are investing in dairy plants and employing every means known to science for the fostering and development of the dairy interests of the people.

Our foreign trade in dairy products is older than the government. During part of the first half of the 19th century our shipments of butter exceeded those of cheese. This continued until about 1842, when the introduction of cheese factories led to increased exports of that product. Instead of our American cheese growing in favor abroad, it deservedly lost standing, because of the process of «filling cheese» with lard, unmerchantable butter, etc. The history of the dairy business in America is one of vast fluctuations. The legitimate manufacturer has had to cope with the most ingenious substitutes. The fats of swine and cattle have come into competition with butter fat, by the introduction of oleomargarine, lard, neutral, and filled cheese. The business has been demoralized, and the reputation of American butter and cheese impaired. There is no longer any mystery about the character of oleo and filled cheese. Some States have regulated their sale by law, compelling them to be sold on their merits. The change in the values of butter and cheese for the last 40 years has been steadily downward.

As our dairy exports have declined with the quality of goods offered, our exports of beef-cattle have increased, the quality of stock being improved in the same ratio. One of the first attempts to export cattle from the Southwest was made by a company of ranchmen of Texas. It was before the days of refrigerator-cars and cold storage in vessels. Only 15 per cent of a large cargo of the Texas longhorns reached Liverpool. The first cattle exported for beef went to Glasgow about 1868. Only two consignments a week were first sent out. The number increased to 50 a week, but as the cost of export was $48.66 per head, shipments were discontinued in 1874. Freights declining to $10 or less per steer, the business was resumed, and has gradually increased as the prejudice against American beef gave way to enthusiasm in its favor. Since the first trials the business of exporting beeves, either alive or dressed, has grown to mammoth proportions. The effect of the transfer of the choicest beeves to a foreign market has been to stimulate the price of prime cattle. Illinois, Kentucky, and Ohio for years furnished the bulk of export cattle, but now Iowa and Missouri also send many. There was but a small surplus of cattle in this country prior to 1850. About that time grass-fed beeves began to find market in Cuba. The real commencement of our export business was in 1877, when the improvement started in Ohio and Kentucky, and worked westward, where cows and grass were abundant and cheap. In 1877

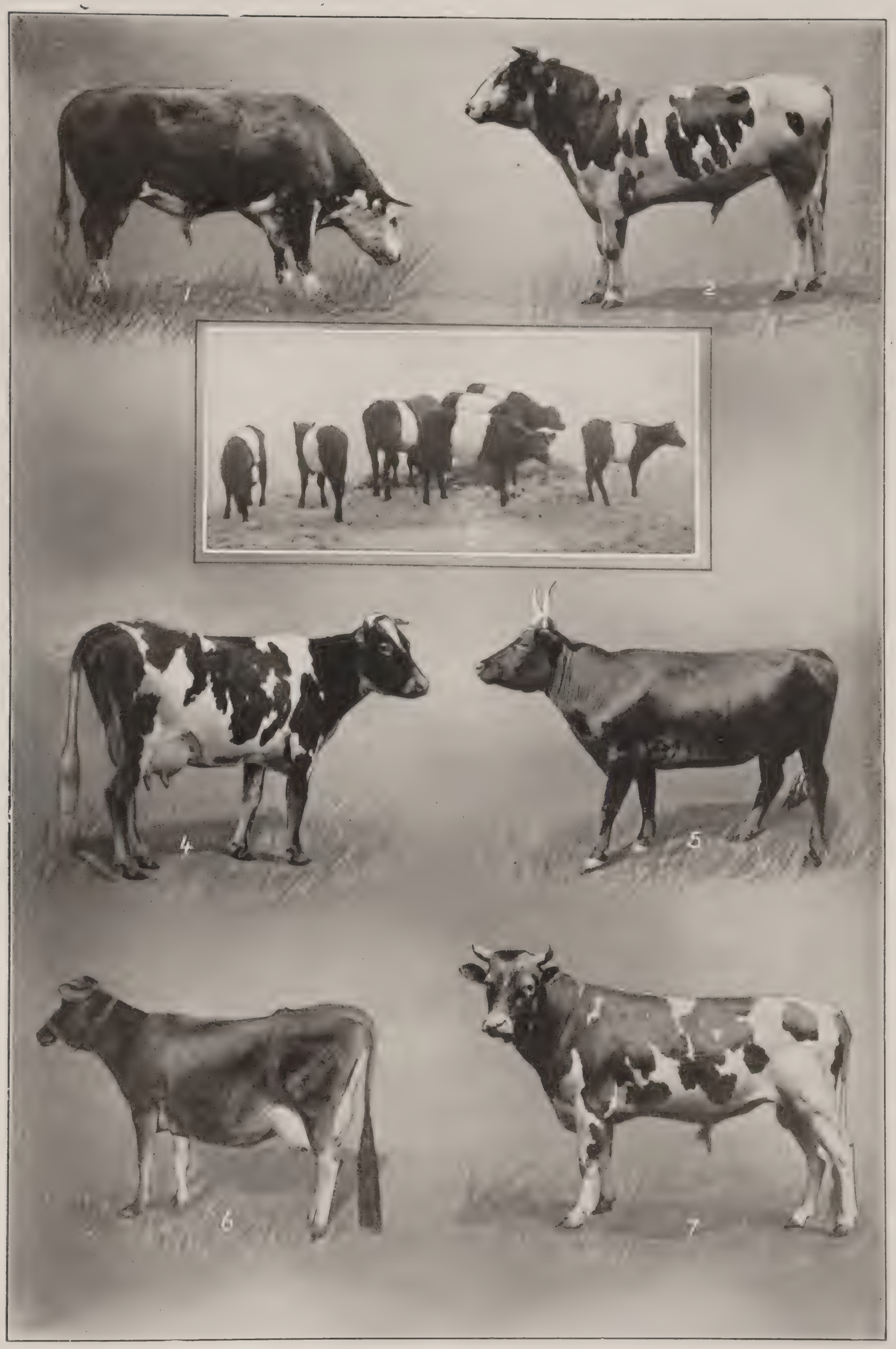
50,000 head were exported to Great Britain, Cuba, the British West Indies, Canada, and Mexico. More than half of this number went to Cuba, and only 5,091 to Great Britain. The quality of cattle having improved, the export trade to Great Britain in 18 years increased to 355,852, worth nearly $32,500,000. France, Germany, Belgium, and the Netherlands, took less than $2,000,000. From 394,772 heads of cattle valued at $36,576,412 exported in 1896, the number increased in 1901 to 454,590 heads, valued at $36,606,204. In 1902, 327,118 heads of cattle, valued at $24,301,969, were exported. 93,481 cattle were imported, 2,119 being high class stock for breeding purposes, and the remainder 91,362 «feeders,» a cheap grade of animal, brought in from Mexico and Canada to be fattened for market. In 1877 the first shipments of fresh beef in refrigerator-ships were made. In 1870 the value of all shipments of beeves and beef products was $6,194,626. In 1902 the total value was $62,420,732, taking more than 1,000,000 of the choicest cattle from the central corn-growing States. In 1870 an export beef was worth $15.98; in 1891 the average price was $81.26 each, showing that as quality improves price advances, although in 1901 it had fallen to an average price of $74.30. There is no longer any demand for good cattle among country butchers, and the farmer who formerly could fatten one to six prime bullocks has now no market.

The hog crop of America is most closely related to the corn crop. The States in the corn belt west of the Ohio River furnish the surplus pork for export and for home consumption in States where corn is not largely grown. Hogs were brought by the Virginia and Massachusetts settlers, and in the common hog of the country was early found a mixture of types and races from every country where pork was produced. This mongrel was the base, easily impressed by the blood of the China, Neapolitan, Berkshire, Tamworth, and other breeds, known as early as the second quarter of the century. After the settlement of Ohio and Kentucky improvement was marked. The corn in the valleys and the mast in the timber furnished food in such abundance that the energies of the early settlers were bent upon producing pork and cattle to utilize the superabundance. The West Indies furnished a market for all surplus pork of the Eastern States, and under the stimulus of this trade fat hogs were produced along the Delaware, before the development of the interest in the country around Cincinnati. The production of hogs in Ohio, Kentucky, and eastern Indiana increased so rapidly that Cincinnati early became the packing centre of the West. As the Wabash, the Illinois, and the Missouri valleys and the prairies became vast corn-fields, and the railroad pushed westward, the centre of pork production also moved west. Ohio is no longer the leading corn and hog State, being now the seventh; and Cincinnati is excelled as a packing city by Chicago, Kansas City, Omaha, St. Louis, and Indianapolis. The China and Berkshire, along with the Russian and Irish grazer, were earliest used to cross upon the common hog. In New Jersey the red hog formed the foundation for the large hogs to furnish the heavy meat for the West Indies and the Carolinas. In Chester County, Pennsylvania, the white hog was the favorite, and the type called Chester white was established. In the Miami Valley the China, Berkshire, Woburn, Russian, and Irish grazer blood mingled with that of the common hog, and the Poland China breed was evolved and improved to meet the wants of the packer and feeder. In northern Ohio, in the dairy districts, where the conditions of feed, soil, and handling were very different, the white hog of Pennsylvania has been improved, and we find a breed known as Todd's improved Chester whites. The red hog of New Jersey has come west, filled out, and is taking on the plumpness and refinement of bone, ear, and head peculiar to the breeds in a corn-growing country. In northern Indiana we find a breed of white hogs called Victorias, finer in type than the Chester whites, and of more growth than the small English breeds. The above-named American breeds have become so well fixed and established that each has its record. The improvement of the swine of America has been greater than that of its horses, cattle, or sheep, and with a far smaller outlay for imported animals for breeding purposes. The cotton States consume more pork than they produce, and the States producing the surplus are Iowa, Illinois, Ohio, Missouri, Indiana, Kansas, Nebraska, Wisconsin, Tennessee, Kentucky, Minnesota, and Michigan, ranking about in the order named. It has been estimated that 95 per cent of the exports of pork, 86 per cent of the exports of lard, and 93 per cent of the total exports of hog products from the United States come from the surplus of these States.

While the sheep industry is of variable importance, there are according to recent returns about 40,000,000 sheep in the United States, exclusive of lambs under one year of age. The chief sheep raising States are Montana, New Mexico, Wyoming, Ohio and Utah. The imports of sheep in 1902 were 304,755, valued at $1,049,231; the exports 235,497, valued at $1,492,484.

Our unequaled system of transportation is one of the prominent factors which helped the remarkable development of the pork business. Pork products are carried from Chicago or St. Louis to New York for only about one third of a cent per pound. The ocean charge from New York to Bremen is about the same. Direct consignments from St. Louis or Chicago to Bremen have been shipped for a little more than half a cent per pound. Lard production has suffered somewhat since the discovery of the process of utilizing a waste product of cotton. Cotton-seed oil has now come into such extensive use as a substitute for lard and lard-oil, for culinary and manufacturing purposes, that its present annual sale is estimated to exceed the equivalent of 70,000,000 pounds of lard. The production of oleo from beef suet has also furnished the by-product of stearine, which enters largely into the manufacture of lard substitutes, to give body and consistency to imitation lard. This adulteration of lard has brought American lard into disrepute in foreign markets, and reduced the demand. The surplus of pure lard continues great, and its extent fixes the price. The healthfulness of American pork, like that of our beef, has been a distinguishing

CATTLE.



1. Hereford.
2. Holstein.
3. Group of Dutch-belted Calves.
4. Guernsey.
5. Devon.
6. Jersey.
7. Guernsey.

feature of our meat products. Our herds have been singularly free from disease; and the superior quality of our pork products, and their low cost compared with that of European products, gave us an immense and growing trade abroad, furnishing a wholesome and cheap meat supply to the densely populated districts of Germany and France. But this trade was almost wiped out by adverse legislation on the part of the French and German governments; in 1902 only 4,582 hogs were sent abroad as compared with 15,909 in 1901; 33,915 in 1900, and 52,230, the highest number reached, in 1899.

Great wealth has grown up with American herds, and vital interests surround them. In many parts of the country dairying and animal production have driven out the growth of wheat and oats or other cereal crops, and although the population is not as dense in those regions as elsewhere, the inhabitants seem more prosperous, their houses and outbuildings are larger, and the annual profits are as great.

LAZARUS N. BONHAM,
Ex-Secretary State Board of Agriculture.

Live Stock, Derivation of. The domestic animals of the world have all been derived from wild stock, from which they differ in a greater or less degree, according as the need and variety of their services have called for changes in the course of their development from original types. In some cases the original stock has been completely lost, so that it can only be inferred or remembered by tradition. In others it is perfectly well known from what natural species the domestic races in question have descended, and this animal may still be found in a wild state.

The cattle of the world are the product mainly of three lines of descent. First, that which gave rise to the ordinary breeds known in Europe, America, and all those parts of the world that have been colonized by Europeans; second, the Indian humped cattle; and third, the varieties of the Asiatic buffalo. The last named are merely domesticated races of the existing wild buffalo of southern Asia, which are adapted to swampy lands and have been spread throughout that part of the world inhabited by Malays, and also carried to Egypt, the Senegal region and some other territories.

The common cattle of the United States have come down to us apparently along two lines of descent, which are continually mingled, especially in the interior parts of the country. The cattle of New England and the eastern half of the country generally, were brought primarily, and have since been supplemented by occasional importations, from Great Britain and the Netherlands. This stock owes its origin to the domestication following the Roman conquest of western Europe, of two species of wild oxen which roamed the forests of the continent of Europe, and were found numerously there by Cæsar and his army. One of these was a long-horned kind which seems also to have been indigenous to the British Isles. The other was apparently more southerly and easterly in its distribution.

Our horses are the highly varied product of the domestication of a species of horse which became entirely extinct anterior to any records. Its home, no doubt, was in the highlands of central Asia, and it was probably a small, shaggy, big-headed, dun-colored animal, more nearly resembling the Asiatic wild ass or kiang than anything else now known to us. It is possible that a separate pony was native to the forests of Europe, and that its blood may have been joined with that of the Asiatic horse in the formation of our present race, but of this we cannot be sure.

Sheep also are of unknown origin. It is probable, however, that they represent a combination of several species natives of the mountains of central Asia, some or all of which may be living but unrecognizable. The ordinary goat we know to be descended from the wild goat of western Asia, with possible admixture in the case of the Angora goats of the markhor or some other Himalayan species.

Swine are the domesticated races in Europe of the wild boar, which is still extant; and in the Orient of one or more local species of wild swine that still exist there in their native state.

Poultry are more easily traced than most of the larger domesticated animals. All of our barn-yard hens and chickens, curiously diversified as they have become, are the descendants of the jungle-cock of India, still to be shot among the foot-hills of the Himalayas. Similarly the ancestry of the peafowl, guineafowl and turkeys, is found in species of birds which we still know in a wild condition. Ducks and geese are of more diverse origin, but may be traced in most cases to the wild ducks and geese still prevalent in many parts of Europe and America, or else to certain well-known species of the Orient.

Liver. The liver is the largest glandular organ of the body. In man it is situated on the right side of the abdominal cavity immediately beneath the diaphragm. Its weight in the adult is approximately from 3 to 4 pounds, and its size is roughly indicated by the following measurements: greatest diameter about 12 inches, anteroposterior diameter about 7 inches, thickness at different parts from 1 to 3 inches. The organ is divided into five lobes, of which the right and left are the principal ones; the former comprising the greatest part of the bulk of the entire organ. On the under surface may be seen a square lobe lying anteriorly between the right and left lobes, and known as the quadrate lobe. In a similar position between the right and left lobes at the posterior part of the organ is the Spigelian lobe, while a bridge-like lobe extending from the latter to the right lobe is known as the caudate lobe. The upper surface of the right and left lobes is convex and fits into the arch of the diaphragm. The lower surface of the organ is more or less concave, and is divided by five fissures. Of these a longitudinal furrow extends from the anterior to the posterior border of the organ separating the right from the left lobe; a transverse fissure extends at right angles from this at a point somewhat nearer the posterior than the anterior surface; it divides the longitudinal fissure into an umbilical fissure in front (so called on account of its lodging the umbilical vein in the fœtus) and the fissure of the ductus venosus behind (on account of its lodging the ductus venosus in the fœtus). Between the lobus Spigelii and the right lobe of the liver is the fissure of the inferior vena cava, lodging that vein, while at the anterior edge of the organ at the side of the quadrate lobe is a fissure which accommodates the gall-bladder. The transverse fissure is the most important, as it serves for the entrance into and emergence from the organ of the blood-vessels, nerves, and hepatic ducts.

The liver is held in place by five ligaments, four of which are simple folds of peritoneum, while the fifth, or ligamentum teres, is a round cord formed by the obliteration of the umbilical vein and extending from the anterior edge of the liver at the notch between the left and right lobes to the umbilicus and along the under surface of the liver to its posterior border. The peritoneal folds which serve the purpose of ligaments are a longitudinal one extending on the upper surface of the organ from the notch in front to the posterior border, a coronary ligament which is found along the posterior border, and a right and a left lateral ligament. These peritoneal reflexions serve to hold the organ in place, keeping it more or less firmly in apposition with the diaphragm.

The blood-vessels entering the liver are the hepatic artery and the portal vein; the former being a branch of the cœliac axis, the latter being the large venous trunk which is formed by the union of the superior mesenteric and splenic veins. Both the hepatic artery and portal vein divide in the transverse fissure into two parts, a right and a left, which enter the substance of the right and left lobes respectively.

The hepatic veins are the efferent veins of the liver conveying the blood from this organ into the inferior vena cava. In addition to these vessels, the liver, like other organs, is supplied with large and numerous lymphatics. The nervous supply of the organ is derived from the left pneumogastric, the hepatic plexus of the sympathetics, and from the right phrenic nerve. The bile ducts and hepatic ducts will be described below.

The gall-bladder is a small pear-shaped sac lying on the under surface of the liver. At its narrow end it opens into a small duct (cystic duct) which passes back and down to join the hepatic duct forming the common bile duct, which terminates in the duodenum. The gall-bladder is the reserve sac in which bile is stored and by the contracting of which a uniform flow of this liquid is maintained.

Structure of the Hepatic Substance.— The substance of the liver is made up of lobules of more or less equal size, separated by areolar connective tissue, which is a continuation of the fibrous covering of the organ or *capsule of Glisson.* In these fibrous septa between the lobules are found the larger blood-vessels, biliary ducts, lymphatics, and nerves. The lobule under a low power of the microscope is seen to be composed of radiating columns of liver cells converging to a central point in which is situated a large vein (intra-lobular vein) belonging to the system of the inferior vena cava. The columns of liver cells branch and anastomose with each other, and between them are spaces occupied by blood capillaries and the primary biliary passages. The liver cells themselves are polyhedral in shape, and are so arranged that a capillary space, known as the biliary capillary, is left between them. The capillary blood-vessels are similarly formed by the peculiar juxtaposition of the liver cells, leaving spaces in which the capillary blood-vessels extend from the terminal branches of the portal vein in the septa at the periphery of the lobules to the central vein already mentioned. The latter, collecting the blood from the capillary system, transports it to larger vessels known as sublobular veins, which finally unite and form the hepatic veins and discharge the blood into the inferior vena cava. The hepatic arteries and their terminal branches occupy the septa and supply blood to the connective tissue constituting the septa, and to the walls of the portal veins and biliary ducts. The venous blood of this distribution is discharged into the terminals of the portal vein within the septa.

At the periphery of the hepatic lobules, the epithelial cells of the hepatic columns continue directly into the smaller bile ducts which are situated in the interlobular septa. These primary bile ducts unite to form larger ducts and finally a right and left hepatic duct emerging from the transverse fissure unite to form a common bile duct. This is further joined by the *cystic duct* or duct of the gall-bladder, and it terminates in the duodenum in a common orifice with the pancreatic duct.

The structure of the liver is such that the blood entering through the portal circulation comes in contact with the liver cells on one side while the capillary biliary passages are on the other side of the hepatic cell.

The lymphatic vessels accompany the portal vein and hepatic artery, and another system accompanies the branches of the hepatic vein. The capillaries penetrate into the lobules, passing between the hepatic cells.

Functions of the Liver.—The physiological functions of the liver are probably very numerous and are but imperfectly understood. The position of the organ indicates that one of its important functions is the elaboration of materials presented by the blood coming from the gastro-intestinal tract, and probably also the purification of this blood. As far as they are known, the functions of the organ may be divided into the *metabolic* and *biliary.*

Metabolic Functions.— It is known that the liver acts upon sugars and other carbohydrate materials to convert them into glycogen which is stored up by the hepatic cells. This accumulates during digestion and is utilized in the intervals, so that the percentage of sugar in the blood is kept at an approximately uniform standard. It is known that in certain diseases (for example, diabetes), this function is greatly disturbed with resulting consequences that affect the general health. The liver shares with the muscles of the body this glycogenic function.

Another important metabolic function is that of forming urea, the final stage in the metabolism of albuminous food. Uric acid also is to some extent formed in the liver but is more particularly the product of the lymphatic organs and tissues.

Biliary Function.— The formation of bile is one of the important attributes of the liver, though possibly this function is less predominating than has hitherto been believed. The bile is an albuminous liquid containing bile pigments (bilirubin, biliverdin), bile salts (glycocholate and taurocholate of soda), nucleo-albumin, cholesterin, fat, and other less important substances including various salts. The bile is secreted more or less intermittently, the amount being greatest about the middle part of the day and increasing after meals. The daily output is from one to two pints. Its functions are numerous. Among other properties it aids in the absorption of fatty foods, stimulates intestinal peristalsis, and prevents intestinal fermentation.

and is the vehicle of excretion from the body of certain waste products, notably hemoglobin. It is known that bacteria and other minute foreign bodies are discharged from the system through this medium.

Diseases of the Liver.—The diseases of the liver may be classified under the following heads: Derangements of the Circulation; Nutritional and Inflammatory Disease of the Substance of the Liver; Tumors; Parasitic Diseases; Functional Disturbance.

Circulatory Disturbances.—Congestion of the Liver is an increase in the volume of blood in the organ. This may be transient or more or less permanent.

(*a*) Transient congestion follows the ingestion of food and drink, especially when these are of stimulating quality. It is also occasioned by circulatory activity, such as accompanies fevers and other conditions of systemic excitement. In these cases the increase of blood in the liver is the result of an excessive supply of blood to the organ.

(*b*) Passive congestion is the form in which the outflow of blood from the liver is interfered with. This form is likely to be more or less durable or permanent. Among the causes, the most important are diseases of the heart and the lungs, or any other cause of obstruction to the circulation in the thorax.

Pathological Anatomy.—In active or acute congestion no marked alteration is observed on examination of the organ. In passive congestion the liver becomes enlarged, and the central veins within the lobules are seen to be increased in size, while the peripheral parts of the lobule often become light-colored from degeneration of the liver cells. This gives the surface of section of the organ a peculiar appearance that has been well designated «nutmeg liver.» When passive congestion is long continued, the hepatic cells, compressed by the dilated blood-vessels and otherwise disturbed in their nutrition, undergo atrophy, while at the same time some fibrous tissue growth replaces the degenerated hepatic cells, and the whole organ becomes darker in color from deposit of pigment from the stagnated blood. The result is that the organ decreases in size, becomes harder, and of a darker color than normal. The term *cyanotic or red atrophy* is given to this condition.

The symptoms of congestion of the liver vary with the kind, the degree, and stage of the disease. In acute congestion, such as follows overindulgence in stimulating food and drink, a sense of heaviness in the region of the liver, and perhaps slight disturbances of digestion with general malaise constitute the symptomatology. In chronic or passive congestion, such as accompanies heart disease, the symptoms are quite distinctive. The organ increases in size so much that it is easily felt in the upper part of the abdominal cavity and it becomes tender or even acutely painful. Digestive disturbances are very common, partly as the result of the condition of the liver itself and partly as the result of the underlying condition which occasioned the congestion of the liver. Among these digestive symptoms, loss of appetite, difficult and painful digestion, nausea and vomiting are the most conspicuous. When the congestion of the liver is pronounced, more or less jaundice occurs. This results from the thickening of the walls of the biliary ducts and the compression of the finer biliary channels by the swollen state of the organ. In marked cases, the jaundice may be intense; usually it is slight.

In the last stages of congestion of the liver when the organ has undergone cyanotic induration, the symptoms may be similar to those of cirrhosis (q.v.).

Treatment.—The treatment of congestion of the liver is directed primarily toward the relief of the condition which causes the congestion. In heart diseases, cardiac tonics are important. Sometimes a prompt relief is obtained by venesection. Depletion from the portal circulation by brisk purgation may also be efficacious, and regulation of diet is important as the congested organ is less able to withstand injurious effects of stimulating foods or drink than the healthy liver.

Diseases of the Substance of the Liver.—Among these may be considered: (1) Simple atrophy; (2) acute yellow atrophy; (3) fatty liver; (4) cirrhosis, and (5) abscess.

Simple Atrophy of the Liver occurs in cases of starvation or inanition from long continued disease. A frequent form is that called *pressure atrophy* which is found in cases of deformities of the chest, in which the ribs are pressed inward against the liver, and as a result of tight lacing. The substance of the organ does not change very greatly in atrophy, though the individual liver cells are smaller than normal and usually somewhat pigmented, giving the structure a darker color. The shape of the liver is often peculiar. In the case of deformities of the chest, the pressure exerted by the ribs may cause deep grooves in the surface of the liver, or there may be a single transverse furrow at the lower margin of the ribs where this is pressed against the organ. In the case of deformity from lacing, part of the right lobe is frequently elongated and extends directly downward from the body of the organ as a more or less attenuated process.

The function of the liver is probably not seriously impaired in any of these cases, though some disturbance undoubtedly occurs.

Acute Yellow Atrophy is a disease in which a marked fatty degeneration of the cells of the liver is the important change. It is a rather rare condition, occurring in youth and early adult life; and has frequently been found in persons of dissipated habits. Parturition is one of the determining causes, and probably in many cases the disease is due to the action of microorganisms, or to some form of poisoning. Phosphorous poisoning may cause changes in the liver and general symptoms sometimes quite indistinguishable from those seen in acute yellow atrophy unassociated with such poisoning.

The liver is decreased in size, often to a remarkable degree. It is soft and on transverse section the substance is of a light yellow color with mottled areas of reddish or purplish hue, the latter being portions in which the substance is congested or in which hemorrhages have taken place.

Changes are found also in various other tissues of the body, showing that acute yellow atrophy is not wholly a disease of the liver but a general infection or intoxication, having its most marked manifestations in the liver.

Symptoms.—After a period of indefinite digestive disturbances, acute jaundice, and marked nervous symptoms set in. The patient becomes deeply jaundiced, delirious, and sometimes comatose. In the course of ten days or two weeks the disease terminates fatally in a large percentage of cases. A small proportion of the cases recover. The treatment consists in stimulation or other measures called for by the general condition.

Fatty Liver.—There are two varieties of fatty disease of the liver, that known as *infiltration* and that termed *fatty degeneration.* In the former there is a deposition of fat in the liver cells, similar to that which is found in the subcutaneous tissues in ordinary obesity. In the latter the liver cells undergo destruction with formation of fat. Fatty infiltration may be the result of excessive supply of nutriment as in ordinary obesity, and is also found in certain states of general weakness and wasting, particularly in association with diseases of the lungs. In the latter cases, the cause is to be found in the deficient consumption of fat, owing to diminished oxygenation. Fatty degeneration may be caused by various infectious diseases, but is more particularly the result of poisoning with phosphorus, arsenic, mercury, and other poisons.

In fatty infiltration, the liver is enlarged, lighter than the normal organ in specific gravity and in color, and on section with a knife the increased fat is indicated by an oily character of the cut surface. In fatty degeneration the liver is usually diminished in size and the substance is of a friable softened character.

There are no characteristic symptoms of fatty infiltration, but the increased size of the organ may cause a local feeling of fulness and pressure, and vague disturbances of the general health may also be attributable to the condition. In fatty degeneration, the symptoms are equally obscure. That due to phosphorous poisoning may present itself with the symptoms of acute yellow atrophy (*vide supra*).

Cirrhosis of the Liver is the most frequent and important of the diseases of this organ. It is essentially a replacement of normal liver tissue by connective tissue, causing more or less hardening.

The causes of cirrhosis of the liver are numerous, though one in particular occupies a very prominent position on account of its frequency. The cause referred to is over-indulgence in alcohol, especially raw spirits, whence the terms alcoholic liver, gin drinker's liver, etc. It must not be supposed, however, that alcohol is the invariable cause. Over-eating, gouty conditions, syphilis, and various other infectious diseases may be followed by cirrhosis entirely like that caused by alcohol. It has been noted in the description of congestion of the liver that a form of cirrhosis (cyanotic induration) results from long standing congestion. Sometimes cirrhosis of a peculiar type is caused by obstruction of the biliary ducts. This produces a stagnation of the bile and an irritation of the substance of the liver that terminates in the formation of connective tissue.

Pathological Anatomy.—Two forms of cirrhosis of the liver are recognized. One, known as the *atrophic,* in which the liver is decreased in size; the other, *hypertrophic,* in which the organ is increased in size. In atrophic cirrhosis (hobnail liver, granular liver), the organ has an irregular nodulated or granulated surface, the irregularities being caused by the contractions of the connective tissue which forms the basis of this pathological state of the organ. The liver is decreased in size, though not always very notably. It is very firm, and on section the increased connective tissue can be recognized in the form of more or less distinct septa interlacing the lobules or groups of lobules of the liver substance. The lobules and groups of lobules are compressed by the contracting connective tissue, and as a result undergo atrophy and degenerative change. The connective tissue formation which is characteristic of this form of cirrhosis is found in the interlobular tissues surrounding the terminal branches of the portal vein. Consequently the portal circulation is obstructed, and congestion of the various abdominal organs whose blood is discharged through this circulation results. When cirrhosis has proceeded for some time, new channels of circulation may be established, by which the congestion of the abdominal organs is relieved. There results from this visible enlargement of the veins of the abdominal walls and increased size of the veins in the lower end of the œsophagus and in the rectum.

Hypertrophic cirrhosis of the liver is a form in which the liver is increased in size. The surface is usually smooth and the substance of a uniform character. This is due to the fact that the new connective tissue is uniformly distributed within as well as between the liver lobules. This form of disease may be the result of the same causes as the atrophic variety, but is more commonly due to obstructions of the flow of bile. Very commonly interference with the discharge of bile is found in this form, as interference with the circulation of blood is characteristic of the other variety.

Symptoms.— The symptoms of cirrhosis of the liver in earlier stages are very obscure and uncertain. Later interference with the portal circulation causes congestion of the mucous membrane of the stomach and intestines, with resulting disturbances of digestion, such as dyspepsia, vomiting, constipation, and even hemorrhages from the stomach or bowel. The spleen is enlarged from congestion of its substance and the last phase of the disease is marked by dropsical effusion in the abdominal cavity (ascites). Cirrhosis of the liver is a chronic disorder which may extend over a period of many years and which may be arrested even after it has reached an advanced stage. Among the symptoms of hypertrophic cirrhosis are tenderness and increase in the size of the liver, the development of jaundice, and sometimes the occurrence of fever. The disease is more rapid in its course than the atrophic variety.

Treatment.—The treatment of this condition is preventative rather than curative. When due to alcohol it may be arrested if not too well advanced, by a control of the habit of drinking; and a restitution of normal conditions may be favored by careful diet, including mainly the avoidance of stimulating or irritating food, and of general excesses of diet. The use of saline waters may be beneficial. When advanced to the stage of dropsy of the abdominal cavity, depletive measures, such as are used for the relief of dropsies in general, may be useful; or it may be necessary to remove the liquid by tapping.

Abscess of the Liver may result from dysentery and other ulcerative conditions of the intestines, in which cases the abscess is likely to be solitary; or it may accompany a septicæmia originating in the abdominal cavity from some local disease like appendicitis or puerperal infection, in which case multiple small abscesses are found throughout the substance of the liver. Another variety of multiple abscess is that in which obstructions of the biliary ducts by gallstones occasions retentions of bile and the formation of local foci of suppuration.

Abscess is more common in tropical countries, probably on account of the greater frequency of dysentery in such localities. The direct cause of this form of abscess is probably the Amœba coli which bears a causative relation to certain forms of tropical dysentery.

Pathological Anatomy and Symptoms.—The liver is enlarged, and sometimes a projecting mass can be seen in the upper right portion of the abdomen. The abscess may be of small size, but frequently reaches very considerable proportions, containing perhaps a pint or more of thick pus. It may discharge externally through the skin, into the abdominal cavity or some of the abdominal organs, and even through the diaphragm, into the lung and bronchi. Occasionally a spontaneous cure results in this way. More commonly the patient perishes before the abscess ruptures, from general infection or from prostration. The disease is frequently attended with great pain, with jaundice and with irregular fever.

Treatment.—The only effective treatment of abscess is surgical operation.

Tumors.—Among the tumors of the liver, the most important is cancer. This is usually secondary to cancer of the stomach or intestines. It may, however, be primary in the liver. The liver is found enlarged and its surface irregularly studded with nodules varying in size from that of a pea to that of an apple, or even larger masses. The cancerous nodules are of white or pinkish color and the liver substance between them is usually more or less compressed and pigmented.

Symptoms.—The important symptoms are profound disturbance of general health with emaciation, such as characterize cancer in any part of the body; pain in the region of the liver, and increase in the size of the organ; jaundice of intense and lasting character; and occasionally dropsy of the abdominal cavity.

Parasitic Diseases.—The most important of these is the *hydatid cyst,* which results from the lodgment of the embryo of the Tenia echinococcus, a tapeworm occurring in the adult state in the intestines of dogs and some other animals. In man the larval condition alone is met with. The embryo in the liver becomes surrounded by a capsule in which a light liquid collects and thus a *cyst* is formed. Secondary cysts (daughter-cysts) may develop within the original one and thus a large cavity filled with smaller spherical cysts may result. The liver increases in size and the cyst may be visible, or it may be felt through the abdominal walls as a resilient projecting mass. The hydatid cyst may subsequently contract by absorption of its liquid contents or it may rupture in the same manner as an abscess. The symptoms of this disease are frequently obscure, but jaundice (from pressure on the bile ducts), dropsy of the abdominal cavity from pressure on the portal vein, and other «mechanical» symptoms may occur.

Jaundice.—The important functional disturbance of the liver is jaundice. This condition is one in which the biliary coloring matter is absorbed by the blood and deposited in the tissues of the body. The causes of jaundice are very numerous. The condition may result from any cause of obstruction of the outflow of the bile through the biliary ducts or from any serious disease of the liver substance, such as abscess, cancer, acute yellow atrophy, etc. Various poisons and infectious diseases cause jaundice by their destructive action on the liver.

The most frequent form of jaundice is that known as *simple catarrhal jaundice,* which results from digestive disturbances, especially such as follow great excess in eating or drinking and exposure to cold. In this variety, the outflow of the bile is impeded by swelling of the mucous membrane of the duodenum where the common bile duct discharges, and also by swelling of the lining membrane of the larger bile ducts themselves. When the bile formed within the liver cannot find normal discharge, it is absorbed into the blood, and finding its way to various parts of the body, discolors these, causing the yellow appearance of the skin and mucous membranes which characterizes the disease. The bile may be in part discharged from the body through the urine, and even in the sweat, tears, and other liquid discharges.

Symptoms.—The symptoms of catarrhal jaundice are, in the first place, those of intense disturbances of digestion, such as great pain in the region of the stomach, nausea, and vomiting; later, the appearance of a yellowish discoloration of the skin and mucous membranes. The fæces become light-colored from the absence of biliary coloring matter, and in advanced cases they are actually a light clay color or even white. The urine becomes dark brown or greenish in color. The patient is depressed, often even melancholy. The pulse is slow; the temperature as a rule is depressed, though there may be a moderate degree of fever.

Treatment.—Careful dieting is an essential in the treatment. The patient must abstain from food entirely at first, and later take the less irritating of foods, such as milk, broths, and the like. Remedies, like bismuth, pepsin, small doses of calomel, and salines are administered to improve the state of digestion and lessen the congested condition of the stomach and duodenum. Drastic purgatives are harmful. Warm applications over the region of the liver are efficacious. The disease usually subsides in a few days or in a week or two.

Gall-stones.— Gall-stones are usually formed within the gall-bladder. Very rarely they may originate in the biliary ducts within the liver. They result from inspissation of the bile and inflammatory conditions in which exfoliated epithelial cells or mucus in the gall-bladder or biliary ducts accumulate and form a basis for concretion of thickened bile. The gall-stone consists of biliary pigment matters, but in some cases almost wholly of one of the constituents of bile, cholesterin. On section through a gall-stone, a central nucleus may be seen which is composed of epithelial detritus and inspissated mucus, together with bacteria in many cases.

Around this is deposited cholesterin or biliary pigment. The gall-bladder may contain a single stone or, more commonly, a number, and sometimes even hundreds are found.

Gall-stones are more common in women past middle life than in younger persons or in the male sex.

Symptoms may be wanting until a stone enters the cystic duct and becomes lodged in the latter, or passing through this, becomes obstructed in the common bile duct. The symptoms of such a passage of gall-stone are known as biliary colic. The patient is seized with intense pain, radiating to the right and to the back, sometimes as high as the right shoulder. Vomiting and other reflex disturbances and even collapse may occur. When the stone lodges, jaundice is the most pronounced symptom. Frequently the gall-stone passes with some effort and the paroxysm is relieved. Sometimes this relief is brought about by a recession of the stone into the gall-bladder.

Treatment.—The treatment of gall-stone consists of careful diet and the use of saline waters to improve the digestive conditions and render the bile as liquid as possible. Gall-stones may thus be diminished in size and enabled to pass through the ducts. During the paroxysm of biliary colic, remedies to relieve pain are imperatively necessary. Hypodermic injections of morphine and even narcosis with ether or chloroform may be required. Surgical operation for removal of the stone is often desirable.

ALFRED STENGEL, M.D.

Liver-leaf, or **Noble Liverwort.** See HEPATICA.

Liv'ermore, Mary Ashton Rice, American reformer and lecturer: b. Boston, Mass., 19 Dec. 1821; d. Melrose, Mass., 23 May 1905. She was married in 1845 to Rev. D. P. Livermore, a Universalist minister (d. 1899), and was early in life active in the anti-slavery and temperance movements. In 1862 she was appointed agent of the Northwestern branch of the United States Sanitary Commission at Chicago and after the Civil War period was conspicuous in her efforts to promote the woman suffrage and temperance movements. She was president of the Massachusetts Woman's Suffrage Association and for 10 years president of the Massachusetts Woman's Christian Temperance Union. Among her popular lectures are: 'What Shall We Do with Our Daughters?'; 'Women of the War'; 'The Moral Heroism of the Temperance Reform.' She is the author of 'Pen Pictures' (1865); 'Thirty Years Too Late' (1878); 'My Story of the War' (1888); 'The Story of My Life' (1897); etc.

Liverpool, England, a city, municipal, county, and parliamentary borough, and seasey, three miles from the sea, and extending about eight and a half miles along the east side of the river. The port of Liverpool extends from Hoylake, at the mouth of the river Dee along the Cheshire coast of the river Mersey to Ince Ferry, and from Dungeon Point on the Lancashire coast of the river to Formby Point at its mouth. Liverpool is (by rail) 201 miles N.W. of London, 251 miles from Harwich (N.W.), 92 miles from Birmingham (N.W.), 34 miles from Manchester (W.), 96¼ miles from York (S.W.), 124 miles from Hull (S.W.), and 227 miles south of Edinburgh.

Area.—The area of the city is 14,909 acres (23 square miles); the ratable value £4,470,837. The population in 1905 (officially estimated) was 730,143. The following statistics of population will show the comparatively rapid growth of the city: 11,833 (1720); 35,600 (1770); 77,708 (1801); 376,065 (1851); 517,980 (1891); 684,958 (1901); 730,143 (1905). The great advance in the population in later years indicated by these figures is partly explained by the extension of the city boundaries so as to take in several adjoining townships.

Divisions.—The city is divided into nine parliamentary divisions returning nine members to Parliament; and into 35 wards, returning 137 members to the city council.

Public Buildings.—Down to the middle of the 19th century Liverpool contained very few public buildings, the streets were narrow and architecturally unattractive. During the last 60 years a complete change has taken place, and within a radius of half a mile from the Town Hall the city has been rebuilt; new streets have been made, and old ones widened. The following are amongst the most important of the public buildings:

St. George's Hall, opened 1854, cost £328,500; Town Hall, 1795, cost £170,490; Municipal Offices, 1867, cost £141,170; Post Office, 1899, cost £400,000 (including site); Picton Reading Room, 1878, cost £20,000; Central Technical Schools, 1901, cost £110,000; University Buildings, cost £220,000 (including sites). The William Brown Library and Museum (1860) and the Walker Art Gallery (1877) were the gifts of the generous citizens whose names they bear. The Royal Infirmary, The Blue Coat Hospital, and the Seamen's Orphanage are handsome buildings devoted to the cause of charity.

Many of the buildings associated with commerce have been designed by some of the foremost architects of the day and must be ranked amongst the finest in the city.

With the completion of the three great buildings now in progress, viz.: the Cathedral, the Dock Offices, and the Cotton Exchange, Liverpool, from an architectural point of view, will be unsurpassed by any provincial city or town in the United Kingdom.

Libraries.—The Free Public Libraries of the city consist of one large Central reference library (already referred to) and nine lending libraries and reading rooms. The central reference library contains upwards of 130,000 volumes, and the branch libraries 106,000 volumes. The total number of volumes issued in 1904, exclusive of magazines and reviews, was 2,052,896. An extension of the reference library is being made at a cost of £10,000 to receive the Hornby collection of art books, prints and autographs. Other important libraries in the city are the Athenæum (founded 1798), The Liverpool Library (founded 1758), and The University (founded 1881). There are also special theological, legal and medical libraries.

Art Gallery and Museums.—The famous collection of pictures in the Walker Art Gallery is extremely valuable, and contains works by

Burne-Jones, Herkomer, Holman Hunt, Leighton, Millais, Albert Moore, Poynter, Briton Riviere, D. G. Rossetti, and others. Modern sculpture is also well represented. An autumn exhibition is held annually when the most important pictures of the year are placed on view. The Public Museums containing archæological, ceramic, and natural history collections (the latter including an Aquarium) are amongst the most popular institutions in the city.

Places of Worship.—The Bishopric of Liverpool was founded in 1880, when an endowment of £100,000 was raised by public subscription. There are over 100 churches in the city (which does not comprise the whole of the diocese). The various nonconformist denominations have amongst them about 190 places of worship.

Education.—The city possesses an efficient system of education. The elementary, secondary and technical schools are under the control of the City Council. There are a considerable number of scholarships to enable students to pass from the elementary to the secondary schools and on to both the Liverpool University, and the Universities of Oxford and Cambridge.

The Liverpool University was first established as a college in 1881, and obtained its charter as a University with power to confer degrees in 1903. The teaching staff numbers 150. The University is endowed both for teaching and research. In addition to the sum mentioned above as expended on the purchase of sites and erection of buildings, £460,000 have been spent in the endowment of chairs, lectureships, scholarships, and prizes. There is also an annual grant of £10,000 from the City Council.

Orphanages.—The city has several institutions devoted to the maintenance and education of fatherless children and orphans, while the «Cottage homes» wherein are trained pauper children have commanded the highest approbation.

Water, Electricity and Tramways.—The city and district are supplied with fresh water from Rivington in Lancashire, and Lake Vyrnwy, Montgomeryshire (Wales). The engineering difficulties connected with the supply of water from such distances have been very great and the cost proportionately heavy. The capital expenditure on the Liverpool Water Works has been about £5,250,000. The average rate of daily consumption of fresh water in the city is about 27,000,000 gallons. In 1896 the Corporation purchased the works and rights of the Liverpool Electric Supply Company at a cost of £400,000. Since that date the demand for electricity for light and power has rapidly developed and the undertaking has proved financially successful. The total capital expenditure was, on 31 Dec. 1904, £1,719,000. For many years a portion of the profits has been contributed to the rates of the city. In 1904 the amount so contributed, after paying all working expenses, charges for interest and sinking fund, was nearly £17,000.

In 1897 the Corporation decided to purchase the tramways, which down to that date had belonged to a Limited Company. The amount paid was £567,375. The overhead trolley system of electric traction was quickly substituted for the horse system hitherto in use. New routes were opened up, streets widened, the length of track nearly doubled, and fares reduced. The length of track is now over 100 miles and the average length of the penny stage 2 1-3 miles. The total capital expenditure to 31 Dec. 1904 amounted to £1,916,000. The amount contributed to the rates of the city in 1904 was over £27,000. So far the tramways have only been used for passenger traffic.

Insanitary Houses.—During the past 40 years the Corporation has spent large sums of money in the demolition of insanitary cottage property, and in the reconstruction of artisans' dwellings. The city is also well provided with public baths, including open air baths (free), and in the poor quarters of the town there are Corporation buildings efficiently equipped for public laundry work.

Parks, Etc.—The city possesses a number of fine parks, gardens, and recreation grounds. The total number of acres thus allotted to public use is about 1,100—including Sefton Park with 269 acres, the cost of which, including the laying out, was £410,269. About 100 acres of the above represent churchyards, and plots of land varying in size from ¼ of an acre to 3 acres, which have been turned into gardens and recreation grounds, thus greatly improving the appearance of many localities and adding to the pleasure of the inhabitants.

All the land here referred to has not been purchased by the Corporation. The Wavertree Play Ground, 108 acres, said to be the largest playground in the world, was the gift of a generous citizen, and cost about £100,000; while the Roby Estate (100 acres), situated on the eastern boundary of the city, has recently been purchased by Alderman Bowring and is to be dedicated to the use of the citizens. The total amount spent by the civic authorities in the purchase and laying out of land for parks, etc., is about £560,000, while the sum of £25,000 is annually spent in maintenance.

Hospitals.—The medical charities are on a very extensive scale. Some of the charities are old, but all are now housed in modern buildings possessing all the latest scientific requirements. Most of the charities are maintained by endowments and public subscriptions (the amount raised by subscription in 1905 was £15,469), but seven of the largest hospitals in the city have been built and are maintained by the Corporation, and in 1904 the sum of £46,000 was expended in their administration. In addition to the hospitals in the city there are sanatoria for consumptive patients at Delamere Forest and Heswall Hills. The Royal Southern Hospital has special arrangements for patients suffering from tropical diseases. The Queen Victoria District Nursing Association employs skilled nurses to attend the sick poor in their homes.

Railways.—Nearly all the British Railway Companies are connected with Liverpool. The London and North Western, the Lancashire and Yorkshire, and the Midland Railway Companies have large and commodious passenger stations. In 1895 a new riverside railway station was opened for the convenience of ocean travellers. The city is also connected by canals with the manufacturing towns of Lancashire, Yorkshire and the Midlands. Within recent years the Mersey Railway, which connects Liverpool with Birkenhead by a tunnel under the river, and the Lancashire and Yorkshire line to Southport were electrified, and the latter was connected at Seaforth with the Overhead Electric Railway which runs along the line of docks from The Dingle.

Trade and Shipping.—Liverpool has a few manufactures, but it is essentially a port. So far as the export trade is concerned statistics prove that it is the leading port in the United Kingdom, while for imports it is second only to London. Not the least important part of the shipping industry is the ocean passenger traffic. Connected with the port of Liverpool are fleets of the largest ships afloat, and the daily sailings and arrivals of these steamers to and from all the great ports in the world draw to the city large numbers of emigrants and other passengers.

Docks.—The great trade of the port has developed the magnificent dock system of which

veloped the magnificent dock system of which

about 7¼ miles the river is fronted by a system of docks and basins of every imaginable type and variety. There are 63 wet docks, with a water area of 558 acres and a lineal quayage of over 35 miles. Additional land has recently been purchased with the intention of extending the docks at the north end. The warehouses of the port, particularly those devoted to the storage of grain and tobacco, are of gigantic dimensions, and fitted with every modern appliance. The great passenger steamers nearly all embark and discharge their passengers at the landing stage, which is one of the attractions of the city.

Landing Stage.—It is a floating structure 2,478 feet in length with a general width of about 80 feet. The northern portion of this stage is allotted to the use of the ocean going, and coasting steamers, while the southern portion is reserved for the busy ferry traffic across the river to the Cheshire coast.

River Dredging.—One of the most important duties of the Mersey Dock Board is the dredging of the river and increasing the depth of water at the bar. For this work the Board have two large hopper dredges, each of which cost £60,000. One of these vessels has dredged 39,000 tons of sand in 24 hours. By the end of the year 1902 nearly 29,000,000 tons of sand had been removed from the bar, at a total expenditure, exclusive of capital and interest, of £288,000. Before dredging was commenced the depth of water at low water of spring tides was 11 feet, whilst now under the same conditions there is a depth of 26 feet.

Such are the efforts necessary to maintain the city in that position so eloquently described by James R. Lowell in the words which appropriately close this notice: «Liverpool is one end of the three thousand mile loom on which the shuttles which are binding us all in visible ties more and more together are continually shooting to and fro.»

History.—The history of Liverpool practically dates from the issue of the letter patent, or charter, by King John in 1207, and the erection of a castle. This latter structure has long since disappeared, part of its site being now occupied by a statue of Queen Victoria. In 1709 a wet dock was constructed, the first in the kingdom. From this event dated the rapid extension of its commerce and population. In 1880 Liverpool was made the see of a bishop, and in that year a charter was granted constituting it a city. The town developed very slowly until after the Civil Wars, in which it played a prominent part, being besieged three times. The facts stated in this article will prove that Liverpool is in every sense of the word a modern city, its development during the 19th century being almost unparalleled.

Liverpool is justly proud of the distinguished men and women who have been either born within its boundaries or associated with it. There are statues of William Roscoe, William Ewart Gladstone, William Rathbone, and others, while the birthplaces of Mrs. Hemans, Arthur Hugh Clough and W. E. Gladstone have had memorial tablets placed on them. The house at Rock Ferry, wherein Nathaniel Hawthorne resided, is well known, but a tablet has not yet been placed upon it.

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George T. Shaw,

Master and Librarian, The Athenæum, Liverpool.

Liverpool, Nova Scotia, Canada, the capital of Queen's County, a town and port of entry on the south bank of the Mersey estuary at its entrance into Liverpool Harbor, 108 miles southwest of Halifax. It has large fisheries, and some manufactures of lumber, machinery, and shoes. Pop. (1901) 1,937.

Liverpool, Charles Jenkinson, first Earl of, English statesman: b. Winchester in Oxfordshire, 26 April 1727; d. London, 17 Dec. 1808. He was educated at the Charterhouse School, London, and later entered University College, Oxford, whence he was graduated in 1752 with the degree of M.A. In 1761 he was elected to Parliament and during the same year was appointed to the post of Under Secretary of State; in 1763 became joint Secretary of the Treasury; was made Lord of the Admiralty by the Grafton Administration in 1766; became one of the vice-treasurers of Ireland in 1772; Master of the Mint 1776, and Secretary of War under Lord North 1778-82. He was appointed by Pitt in 1783 a member of the Board of Trade and continued to serve in that body till 1801, from 1786 serving as its president, but he did not enter public life from the time of his retirement from the Board till his death. In 1786 he became Chancellor of the Duchy of Lancaster; was created Baron Hawkesbury in that year and Earl of Liverpool, 1 June 1796. He published, among other works: ‘Discourse on the Conduct of Government Respecting Neutral Nations’; ‘Collection of All the Treaties of Peace between Great Britain and Other Powers from 1648 to 1783’ (3 vols. 1785); ‘A Treatise on the Coins of the Realm’ (1805); etc.

Liverpool, Robert Banks Jenkinson, second Earl of, English statesman: b. London 7 June 1770; d. there 4 Dec. 1828. He was the eldest son of Charles Jenkinson, first Earl of Liverpool. He was educated at the Charterhouse School and Christ Church College, Oxford, 1786-89; in the latter year travelled in Europe, reaching Paris during the French Revolution and witnessing the fall of the Bastile. He was elected to Parliament in 1790; in 1796 became Lord Hawkesbury by courtesy; in 1803 was created Baron Hawkesbury; and in 1808 upon the death of his father succeeded to the title of Earl of Liverpool. In Parliament he was prominently identified with the Tories; for seven years was a member of the India Board; in 1799 became Master of the Mint; and in 1801 became Minister of State for Foreign Affairs in the Addington cabinet, and while in that office negotiated the treaty of Amiens with Napoleon. On 12 May 1804, when Pitt was returned to power, he accepted the office of Home Secretary and became leader of the House of Lords and held that post until Pitt's death. During the Whig ministry of 1806-7 he led the opposition, but on 25 March 1807 was again appointed Home Secretary in the Portland administration. He held various portfolios during Percival's administration and when the latter was assassinated in 1812 became Premier and continued to direct English affairs until April 1827, when a stroke of paralysis forced him to resign office. He opposed the Roman Catholic emancipation movement and the reform of Parliament and his term of office was marked by a retrograde policy on the part of the ministry and widespread discontent among the people. Public finances were criticised as being poorly administered; the duty on imported grain was increased; and the policy of forcible repression was followed by him till 1826, but from that time he sought to modify and reform the burdensome Corn Laws. He was instrumental in sending Napoleon to Saint Helena and in readjusting French Affairs in 1815 and 1818.

Liversidge, Archibald, Australian chemist and mineralogist: b. Turnham Green, England, 17 Nov. 1847. He was educated at the Royal School of Mines and the Royal College of chemistry, and at Christ's College, Cambridge. In 1867 he was appointed acting instructor of chemistry in the Royal School of Naval Architecture; in 1870 became university demonstrator in chemistry at Cambridge; and since 1874 has been professor of chemistry, from 1883-1904 dean of the faculty of science, and from 1879-1904 fellow of the senate in the University of Sydney, New South Wales, Australia. He also founded the Australasian Association for the Advancement of Science. He has written 'The Minerals of New South Wales'; 'Reports upon Technical Education and Museums'; etc. For many years he edited the 'Journal' of the Royal Society of New South Wales.

Liv′erworts, or **Hepaticæ,** a group of cryptogamous plants, forming one of the two divisions of the class *Bryophyta* or *Muscineae* (moss-worts), and closely related to the true mosses (*Musci*), with which some of the species are apt to be confounded. They are either spread out in the form of a simple lobed thallus, showing differentiation into a dorsal (upper) and a ventral (lower) surface, or they are composed of a small ramified stem bearing sessile leaves in two or three ranks. Root-like bodies (rhizoids) attach the plant to its substratum. Many liverworts reproduce themselves by means of brood-cells (thallidia or gemmæ), formed asexually in cups on the surface, in leaf-margins, etc. They are also reproduced sexually by means of club-shaped antheridia, containing the male elements (antherozoids), and flask-shaped archegonia, containing each an egg-cell or oösphere. These sexual organs occur in groups either in small depressions or special outgrowths of the thallus, or as so-called flowers at the tips of the leafy shoots, or in the axils of their leaves. The spore-capsule is formed after fertilization within the archegonium, and the spores are often provided with hygroscopic elaters which assist in their dispersal. On germination a spore produces, not the common liverwort plant, but a very small filamentous protonema. There are four families of liverworts, namely, *Ricciaceae*, *Marchantiaceae*, *Anthocerotaceae*, and *Jungermanniaceae*. The first includes the duck-weed-like crystalwort (*Riccia natans*); the second the exceedingly common *Marchantia polymorphia*, formerly used as a basis for medicine for ailments of the liver (whence the name "liverwort"); and the last, which is much the largest family, comprises all the leafy, as well as some thalloid forms. The Hepaticæ are generally distributed over the world, and prefer situations similar to those occupied by the mosses. There are about 4,000 species, of which about 3,500 belong to the *Jungermanniaceae*. See authorities on cryptogamic botany, especially Cooke's 'British Hepaticæ' (1893); and Strasburger, 'Text-book of Botany' (1903).

Liv′ingston, Edward, American statesman: b. Clermont, N. Y., 26 May 1764; d. Rhinebeck, N. Y., 23 May 1836. He was graduated from the College of New Jersey in 1781, was admitted to the bar in 1785, was a New York representative in the 4th, 5th, and 6th Congresses (1795-1801), and was a leader of the opposition. In 1801 he was appointed by President Jefferson United States attorney for the New York district, and in that year became also mayor of New York. During the yellow fever epidemic in 1803 he was stricken with the disease, and during his illness $43,666.21, for which he was responsible to the United States government, were misappropriated by his fiscal agent. He confessed judgment in favor of the United States for $100,000, and resigned both his offices. In 1804 he began the practice of law and land speculation at New Orleans. At the time of the preparation for the battle of New Orleans, he was president of the committee of public defense, and Jackson's chief assistant. During the battle he served on Jackson's staff. In 1820 he was elected a representative to the State legislature of Louisiana, in 1823-9 represented the New Orleans district in Congress, and from 7 Dec. 1829 to 3 March 1831 was United States senator from Louisiana. In 1831 he became secretary of state in Jackson's cabinet. This post he resigned to become minister to France in 1833; and in 1835 he returned to the United States. He was a distinguished lawyer; and as secretary of state exercised strong influence on the administration of Jackson, whose state papers, including the Nullification proclamation of 10 Dec. 1832, are generally believed to have been written by him. Among his writings are: 'System of Penal Law for the State of Louisiana' (1826); 'System of Penal Law for the United States' (1828). His 'Complete Works on Criminal Jurisprudence' appeared in 1873. Consult the biography by Hunt (1864).

Livingston, Henry Brockholst, American jurist: b. New York 26 Nov. 1757; d. Washington, D. C., 19 March 1823. He was a son of William Livingston (q.v.), and graduated from the College of New Jersey in 1774, was commissioned a captain in the Continental army, and later became aide to Gen. Philip Schuyler in the northern department with rank of major. He was also aide to Gen. Arthur St. Clair, took part in the siege of Ticonderoga, and was present at Saratoga. Subsequently he was again with Schuyler and was promoted lieutenant-colonel. In 1779 he went to Spain as private secretary to John Jay, in 1782 on the return voyaage was captured by the British, and was for a time imprisoned at New York. In 1783 he was admitted to the bar and entered practice in New York. He was judge of the New York supreme court in 1802–7, and in 1807 became associate justice of the United States Supreme Court. On the organization of the New York Historical Society in 1805 he became its 2d vice-president.

Livingston, Peter van Brugh, American merchant: b. Albany, N. Y., October 1710; d. Elizabethtown, N. J., 28 Dec. 1792. He was graduated from Yale in 1731, at New York was active in the shipping business with William Alexander, Lord Stirling, and in 1755 provided the supplies for Governor Shirley's expedition to Acadia. He was long a member of the provincial council, and in 1775–6 was a delegate to the 1st and 2d provincial congresses of New York, of the former of which he was president. In 1776–8 he was treasurer of the congress. He was prominent in most of the measures that led up to the Revolutionary War, and was referred to by John Adams as «stanch in the cause.»

Livingston, Philip, American patriot: b. Albany, N. Y., 15 Jan. 1716; d. York, Pa., 12 June 1778. He was graduated from Yale in 1737, became a prosperous merchant in New York, in 1758–69 was a member of the Colonial assembly, of which he was speaker in 1768, but was unseated by the Tory majority because of his strong Whig views. In 1774–8 he represented New York in the Continental Congress, and in 1776 signed the Declaration of Independence. Subsequently he sat in the New York provincial congress, in the State assembly, and in the senate. His legislative services were many.

Livingston, Robert, English proprietor in America: b. Ancrum, Scotland, 13 Dec. 1654; d. Albany, N. Y., 20 April 1725. He emigrated to America in 1673, spent a part of a year at Charlestown, Massachusetts Bay, removed to Albany, N. Y., and was there in 1675–86 secretary of the commissaries who directed the affairs of Albany, Schenectady, and the region adjacent. In 1686–1721 he held the corresponding office of town-clerk. In 1686 he received from Gov. Thomas Dongan the grant of a large tract, which comprised extensive portions of the present counties of Dutchess and Columbia, and which was confirmed by royal charter of George I. in 1715. This tract was erected into the lordship and manor of Livingston, and as Livingston Manor has since been known. Livingston was the first to obtain the means for the equipment of the expedition of Capt. William Kidd (q.v.) against the pirates. He was elected member of the assembly for Albany in 1711, and sat for his manor in 1716–25. From 1718 he was speaker.

Livingston, Robert R. (the initial R. having been assumed for purposes of distinction), American statesman, commonly known as «Chancellor Livingston»: b. New York 27 Nov. 1746; d. Clermont, N. Y., 26 Feb. 1813. He was graduated from Columbia (then King's College) in 1765, was admitted to the bar in 1773, was for a brief period partner in legal practice with John Jay, in 1773–5 was recorder of New York city, lost this post through his revolutionary spirit, and in April 1775 was elected from Dutchess County to the New York State assembly. In 1776 he was sent by the assembly to the Continental Congress, where he was one of the committee of five appointed to draft the Declaration of Independence, which, however, he did not sign owing to his return to enter the provincial convention. He took his seat on 8 July 1776, and was of the committee to draw up a State constitution. Under this instrument he became the first chancellor of New York (1777–1801). He resigned from the Continental Congress in 1777, but was again one of its members in 1779–81. He was secretary for foreign affairs of the United States Confederation in 1781–3, in which post he conducted with much success the business previously entrusted to the committee of secret correspondence. As chancellor he administered the oath of office to George Washington on the latter's inauguration as first president of the United States (30 April 1789). In 1801–5 he was minister to France, in which capacity he, with James Monroe as additional plenipotentiary, concluded the treaty by which Louisiana was ceded to the United States for the sum of $15,000,000. He became the partner of Robert Fulton (q.v.) in experiments toward the employment of steam-power in navigation; launched a boat on the Seine, but was not fully successful; and later continued the work with Fulton in the United States, where in September 1807 the Clermont made the trial trip from New York to Albany in 22 hours, the average rate of speed thus being 5 miles per hour. Livingston also introduced merino sheep into New York, made general the use of gypsum for fertilizing purposes, was the principal founder (1801) of the New York Academy of Fine Arts and its first president, and was also for a time president of the New York Society for the Promotion of Useful Arts. He was styled by Franklin the «Cicero of America.» By act of Congress his statue was placed in the Capitol at Washington, as one of the two representative citizens of New York State, George Clinton being the other. He published 'Essays on Agriculture,' an 'Essay on Sheep' (1809), and some addresses. Consult the biographical sketch by De Peyster (1876).

Livingston, William, American statesman: b. Albany, N. Y., 30 Nov. 1723; d. Elizabethtown, N. J., 25 July 1790. He was graduated from Yale in 1741, was admitted to the bar in 1748, attained distinction in practice, was elected to the provincial legislature from Livingston manor, and in 1760 established himself at the well known country-seat of «Liberty Hall» at Elizabethtown, N. J. In 1774 he became a delegate for New Jersey province to the 1st Continental Congress, and later served in the 2d and 3d Congresses. He was a member of the committee of the 1st Congress that prepared the address to the people of Great Britain. In June 1776 he took command of the militia of New Jersey, with rank of brigadier-general, and was thereby prevented from signing the Declaration of Independence. On 28 Aug. 1776 he was elected first governor of New Jersey, and this post, having resigned his military command, he held until his death. During the first two years of his administration the State of New Jersey was perhaps more than any other exposed to the operations of the British forces, and this was the cause of many difficulties and dangers. The legislature was compelled to meet at various different places, and Tory hostility was strong against the governor, whose capture was several times attempted. In his message of 1777 to the assembly, Livingston recommended the abolition of slavery, and in 1786 caused the passage of an act forbidding the importation of slaves into New Jersey and himself liberated his two slaves. In 1787 he was appointed a delegate to the convention that framed the Constitution of the United States. He was at one time president of the «Moot,» the well known lawyers' club founded at New York in 1770. He published in 1752 52 numbers of ‹The Independent Reflector,› a weekly periodical, in which he opposed the Episcopal Church. His writings include: ‹Philosophic Solitude› (1747); ‹A Funeral Eulogium on the Rev. Aaron Burr› (1757); and ‹A Digest of the Laws of New York, 1691–1762› (with W. Smith, Jr., 1752–62). Consult Sedgwick, ‹Life and Letters of William Livingston› (1833).

Livingston, Mont., city, county-seat of Park County; on the Yellowstone River, and on the Northern Pacific railroad; about 45 miles north of the Yellowstone National Park, and 100 miles southeast of Butte. It is situated in a mining and lumbering section of the State. A branch of the Northern Pacific railroad extends from Livingston to the Yellowstone Park. It is the division headquarters for the Northern Pacific. The railroad depot cost $75,000. Its chief manufacturing establishments are machine-shops, lime-works, railroad shops, and lumber-mills. Its trade is mainly in mining tools, wool, coke, coal, and gold, and it is a distributing centre for groceries, dry goods, and clothing for an extensive region. Livingston is a favorite resort for sportsmen, as game and fish abound. Pop. (1900) 2,778.

Livingston College, a coeducational institution founded in 1882, in Salisbury, N. C., under the auspices of the African Methodist Church. In 1903 there were connected with the school 24 instructors and 360 students. The library contains about 5,000 volumes; the buildings and grounds are valued at $130,000; and the productive funds $110,000. The college course leads to the A.B. degree.

Livingston Manor, at one time a large tract of land in New York State, on the east side of the Hudson River, and the northern part of what is now Dutchess County. This land was obtained by Robert Livingston, in 1674, and comprised about 160,240 acres. The title was confirmed in 1715, and the patent obtained gave the land to the heirs forever. In 1752–4 Gov. Clinton of New York had to settle a dispute as to the eastern boundary; Massachusetts and the Livingstons both claiming the same land. The manor was divided and subdivided into holdings which are let to tenants. In 1795 the tenants made an effort to have the title pronounced invalid, but it was decreed that the land was Livingston property. In 1844 the tenants again sought to get possession, and they petitioned the Legislature to set aside the grant; but the petition was not granted. Since that time the owners have sold to individuals the larger part of the old Livingston Manor.

Livingstone, lĭv′ing-stŏn, **David,** Scottish missionary and African traveler: b. Blantyre, Lanarkshire, 19 March 1813; d. near Lake Bangweolo, Africa, 1 May 1873. His parents had settled in the neighborhood of the cotton mills near Blantyre, where David became a «piecer» at the age of 10. While at work in the mill he learned Latin and read extensively, and having attended the medical and Greek classes at Glasgow University during the winter months, finally became a licentiate of the Faculty of Physicians and Surgeons of Glasgow. Under the direction of the London Missionary Society he proceeded in 1840 to South Africa, where he joined Robert Moffat in the missionary field. His first station was in the Bechuana territory, and here his labors for nine years were associated with Mr. Moffat, whose daughter he married. Hearing from the natives that there was a large lake north of the Kalahari desert, he proceeded to explore that region, and discovered the valley of the Zouga and Lake Ngami. Subsequently he penetrated farther northwest until he reached Linyanti, the capital of the Makololo territory, situated on the Chobe, a tributary of the Zambesi, which river he also visited. In 1853–6 he made a great exploratory journey, or series of journeys. Starting from Linyanti he ascended the Leeambye (Upper Zambesi), journeyed overland to Lake Dilolo, and thence to St. Paul de Loanda on the west coast. Returning to Linyanti, he went eastward from there in 1855, tracing the Zambesi to the Indian Ocean, and reaching Quilimane on the east coast in 1856, having thus crossed the entire continent. The record of this journey is found in his ‹Missionary Travels and Researches in South Africa› (1857). After making various journeys and exploring the Lake Nyassa and Zambesi region, Livingstone set forth in 1865 to set at rest the question of the sources of the Nile. From this time till his death he was engaged in laborious explorations in the lake region of South Africa, especially to the westward of Nyassa and Tanganyika, where he discovered Lakes Bangweolo and Moero, the Upper Kongo, etc. For about three years no communication had come from him, and the doubts regarding the traveler's safety were only set at rest when it was known that H. M. Stanley, the special correspondent of the New York *Herald,* had seen and assisted Livingstone at Ujiji, on Lake Tanganyika. They parted in March 1872, Livingstone going to explore the southern end of Tanganyika, and Stanley proceeding to Zanzibar. After another year's wanderings he was attacked with dysentery near Lake Bangweolo, and there he died. His body was buried in Westminster Abbey, having been conveyed to the coast, rudely preserved in salt, by his faithful followers. Consult: 'Livingstone's Last Journals' (1874); Stanley, 'How I Found Livingstone' (1873); Blaikie, 'Livingstone's Personal Life' (1880); Hughes, 'David Livingstone' (1891); Johnston, 'Livingstone and the Exploration of Central Africa' (1897); Machlachlan, 'David Livingstone,' in 'Famous Scots' Series (1900).

Livingsto'nia Mission, southern Africa, established in 1875 by the Free Church of Scotland, consists of two settlements with local branches. The first settlement was made at Cape Maclear at the southern end of Lake Nyassa, but the chief settlement is at Bandawè, on the west shore of the lake. The establishment of the mission was the result of a suggestion made by Livingstone (q.v.) that the shore of this lake was a good position for a mission that might counteract the slave trade which was carried on by the Arabs and Portuguese. The Church of Scotland established a mission at Blantyre, in the Shiré Highlands, near the lake. At Blantyre some manufacturing establishments have been established, a foundry, basket factory, cloth-mill (the cloth is made from the bark of trees), and a cotton factory. The Portuguese, in 1889, tried to get possession but since 1890 the British have had control.

Liv'ius, Andron'icus, Roman poet, by birth a Greek of Tarentum. He first went to Rome at the commencement of the 3d century B.C. as instructor to the children of Livius Salinator. He introduced upon the Roman stage dramas after the Grecian model, and wrote a translation of the 'Odyssey' in the old Saturnine verse. His fame, however, rests chiefly upon his hymn written in celebration of the battle of the Metaurus River.

Livo'nia, Livland, or **Riga,** Russia, a Baltic province, bounded north by Esthonia, west by the Baltic Sea, south by Courland, and east by Vitepsk and the Lake of Peipus; length, 178 miles; breadth, 111 miles; area, about 18,158 square miles. The surface is for the most part flat, sandy, and swampy; the only hilly ground is in the districts of Venden and Dorpat. The government is well watered by the Dwina or Duna, and Embach; its principal lakes are the Vertserf and Luban. The climate is subject to extremes of heat and cold. Notwithstanding extensive tracts of sand, the greater part of the government is under cultivation, and yields good crops of oats, barley, wheat, potatoes, flax, and hops. The forests are extensive, and furnish good timber. Horses, cattle, and sheep are generally of small inferior breeds. Distilling, sugar refining, and the manufacture of tobacco, woolens, cotton, and linen, are the chief industries. The inhabitants consist of Livonians, of Russian, Swedish and German origin, who form the landed proprietors and governing class, and are divided into the nobility and bourgeoisie; and Esthonians and Letts, who form the peasantry, and though no longer serfs (having obtained their freedom in 1824), are bound to perform certain oppressive duties for the lords of the soil. The Esthonians occupy the north and east portion of Livonia; the Letts the south and west. The Esthonians are of the Finnish stock (see FINNS); the Letts, like the Lithuanians, belong to the Slavonic stock, and speak a language of their own (Lettish). Of the original inhabitants of the country, the Lives or Livonians proper, who are also of Finnish race, only a thousand or two are all that are left. The inhabitants are almost all Protestants of the Augsburg Confession. The capital is Riga. Pop. (1897) 1,300,640.

Livre, lē'vėr, an ancient French coin, now superseded by the franc, to which it was about equal in value.

Livy (TITUS LIVIUS), Roman historian: b. Patavium (Padua) 59 B.C.; d. there 17 B.C. He spent most of his time at Rome, but kept aloof from active political life, although among his friends were numbered the most eminent men of his day. In spite of his republican leanings, he was befriended by Augustus, who counted him with Virgil and Horace, as one of the literary ornaments of his court. His principal work is the 'History of Rome' in 142 books (*Titi Livii ab Urbe Condita Libri*), which comprehends a period extending from the building of the city to the year 9 B.C. Only 35 of these books are extant, namely the first 10, which cover the period ending 293 B.C., and the 25 from the 21st to the 45th books, which comprehend the years between 218 and 167 B.C., as well as a number of fragments, and short abstracts, or tables of contents of all the books excepting the 136th and the 137th. Livy undertook this work, as he states in his preface, partly that he might plunge his mind into things of the past, and so forget the grievances of the present, and partly that he might spread out before his contemporaries a picture of the nation's ancestral glories. He has indeed produced a work which is truly national, which has always received the admiration and esteem of antiquity, and is in modern times regarded as one of the most precious relics of Latin literature. Since his time it has been the source of all knowledge of the period it deals with. He began its composition between the years 27 B.C. and 25 B.C., and published it from time to time in a series of detached parts; the present division into decades is of later origin. It appears that he was engaged upon his history up to the time of his death, but failed to carry it on to the end he had meditated, which would have included the death of Augustus. He had a practical object in view in the accomplishment of his task, but this was less to achieve a critical and scientific exploration of the past, than to produce a moving, lifelike, and readable representation of the time and country in which he lived. With this end in view he has chosen a style of his own; not the transparent splendor of Cicero, nor the condensed and epigrammatic pungency of Tacitus, nor the dilettante, though sometimes effective, archaism of Sallust. His narrative moves along with stately dignity; it teems with anecdote, and glows with patriotic emotion. He employs a phraseology remarkable for copiousness, for picturesqueness, for vivid description and occasionally for an eloquence that is burnished into poetic lustre. His materials must mainly have been derived from preceding annalists, but he weaves into his work the local traditions of a mythic age, and rivals Virgil in his love for the fables of Tuscany and Latium. His account of the Punic wars he draws from Polybius. We must not, however, expect to find in his writings a clear account of the origin and development of the Roman constitution. He seems to have cared little for the study of constitutional law, and even less for that of military art. Yet his political views were very decided, and in his account of the civil war, which resulted in the downfall of the Republic, he shows himself a strong partisan of the aristocratic party, so that Augustus did not hesitate to style him a Pompeian. The historic basis for the Roman history of Livy cannot be fully understood without reading the works of Niebuhr. Livy's complete works have been published by Gronov (1679); Drakenborch (1828); Zingerle (1883); and a translation of them appears in the Bohn Library. Fügner's 'Lexicon Livianum' (1889) is important in Livian literature. Consult: Niemann, 'Etudes sur la Langue et Littérature de Live' (1884); Taine, 'Essai sur Tite Live' (1888); Madvig, 'Emendationes Livianæ' (1877).

Liz'ard Point, or **The Lizard,** England, a headland in Cornwall, forming the southernmost point of Great Britain, 24 miles southeast of Land's End, and having two lighthouses with fixed lights 224 feet above sea-level.

Lizards, animal reptiles of the order *Lacertilia* which, together with the *Ophidia* (serpents), form the higher group *Sauria*. The one important character distinguishing lizards from snakes is the fact that the mandibles of the lower jaw are solidly united in the former and not in the latter. The lizards have generally two pairs of limbs, but one or both pairs may be absent (as in the amphisbæna), and the toes may vary in number from two to five. Though the front limbs may be wanting, the pectoral arch or bones of the shoulder-girdle are still represented; but when the hinder limbs are wanting, the pelvic arch also disappears. The spine is generally elongated, and a tail of considerable length is generally present. In most *Lacertilia,* the vertebræ are either hollow in front and convex behind (procœlous), or hollow at both ends (amphicœlous), the former condition being much more common than the latter. The cervical or neck-vertebræ may be furnished with ribs, and those of the back or dorsal region generally become united to the sternum or breast-bone. In the flying-lizard or dragon some of the hinder ribs become elongated and extended to form a support for the wing-membrane, by which this lizard is enabled to sustain itself in the air. The teeth are simple in structure, are not lodged in distinct sockets, and they generally become united to the jaw-bones with age. They vary much in form, from a toad-like plumpness to the slender shape of a snake. The food of lizards is generally insects, worms, and various small animals, but some live on vegetable substances. The eyes are provided with movable eyelids, while the ear is usually to be perceived externally. The skin is generally covered with scales or horny plates, although the integument — as in the chameleons, etc.— may be soft; and the epidermis is shed in patches annually. In their reproduction lizards never undergo any metamorphosis, and are generally oviparous, but in some the eggs are retained until they hatch within the abdomen of the mother. Salivary glands are found which in *Heloderma* act as poison glands. The lungs are thin-walled sacs, from which terminal pouches may arise. The movement of the ribs assists in respiration. The lizards are most abundant in tropical regions, but are absent only from the cooler temperate and the frigid regions of the globe.

The *Lacertilia* are divided into three sub-orders, of which the following is an outline:

Sub-order 1. *Geckones.— Lacertilia* with four legs, amphicœlous vertebræ and clavicles dilated ventrally. The chorda persists and grows throughout life, in the centre of and between the vertebræ; the ribs are bifurcated, and dentition is pleurodont. Some species have mechanically adhesive disks. This is a very old group, modern species existing in tropical and southern European countries. See Gecko.

Sub-order 2. *Lacertæ.— Lacertilia* with procœlous vertebræ and the ventral part of clavicles not dilated. Eighteen families, as follows:

1. *Agamidæ.—* A family of exclusively Old World lizards, containing some 200 species, among which the Malayan dragon (q.v.), and the frill-lizard (q.v.) are remarkable species. Many have a very chameleon-like appearance and are known in India and Ceylon as blood-suckers (genus *Calotes*). The desert lizards of North Africa and southwestern Asia are mostly of this family. See Agama.

2. *Iguanidæ.—* A large and chiefly American family with pleurodont dentition, and a short, thick, non-protractile tongue. The genus *Anolis* contains the common "chameleon" of the southeastern United States. (See Anolis; Chameleon.) *Basiliscus,* of Central America has a great, erectile vestigial crest on the back and tail. (See Basilisk.) *Iguana* (q.v.) includes large edible lizards of Central and South America. *Phrynosoma* is the genus of the "horned toad" (q.v.), common in the arid region of the Great Plains and west to California. One of the most northerly species is the large, black, fat-bodied, bud-eating lizard of the sandy plains of southern California, known locally as Alderman lizard, or by the Indian name Chuckwalla; and scientifically named *Sauromalus ater.*

3. *Xenosauridæ.*—A Mexican family intermediate between the *Iguanidæ* and the *Anguidæ;* represented in Africa by (4) the *Zonuridæ.*

5. *Anguidæ.—* Terrestrial pleurodont lizards, with bony plates in the skin and the tail long and brittle, dwelling in Central America, Europe and India. *Ophisaurus,* the genus of the glass snakes (q.v.) of the Central States, has the limbs reduced to mere spikes. *Anguis,* the "slow-worm" (q.v.), has no limbs at all, and the eyes well developed.

6. *Helodermatidæ.—* Pleurodont, poisonous lizards of New Mexico and Arizona. See Gila Monster. The (7) *Lanthanotidæ* are Asiatic representatives of the foregoing.

8. *Varanidæ.—* Pleurodont aquatic lizards of the Old World, with bifid, protractile tongue. See Monitor Lizards.

9. *Xantusiidæ.—* Three Central American genera.

10. *Teiidæ.—* A large tropical-American fam-

ily of large forest dwelling, carnivorous lizards of great strength and swiftness. See Teju.

11. *Lacertidæ.*— Typical small lizards of the Old World, with pleurodont dentition, and bony dermal plates over the temporals. About 100 species. All live on animal food, chiefly insects, worms and snails. The sand-lizard (*Lacerta agilis*) occurs in the Palæarctic region; the green lizard (*L. viridis*) inhabits central and southern Europe; and the wall-lizard (*L. muralis*) runs over the walls in Mediterranean cities.

12. *Gerrhosauridæ.*— African lizards intermediate between *Lacertidæ* and *Scincidæ.*

13. *Scincidæ.*— Pleurodont, viviparous lizards, with feebly nicked, scaly tongue. They live in sandy ground, where they make burrows in which they retreat. The limbs are in some groups reduced. The family contains about 400 species distributed all over the world. See Skink.

The following five families have become degraded on account of their burrowing instincts: (14) *Anelytropidæ,* worm-like, legless lizards of the tropics; (15) *Dibamidæ,* of Malay Archipelago; (16) *Anjellidæ,* worm-like lizards of California, limbs entirely absent; (17) *Amphisbænidæ,* worm-like blind, burrowing lizards which burrow like earthworms, especially in ants' nests and manure heaps. *Chirotes* of Mexico and California has the fore-limbs remaining; *Amphisbæna,* in tropical America, lives in ants' nests. See Amphisbæna.

(18) *Pygopodidæ.*— Snake-like lizards; fore-legs absent; hind-legs a pair of scaly flaps; Australasia.

Sub-order 3. *Chamæleontes.*—Old-World saurians, with compressed body and prehensile tail; tongue club-shaped and capable of being protruded to a distance equal to the length of the body; two digits of the feet are permanently opposed to three; head crested; eye-balls very large and movable on the two sides independently of each other; capacity for changing color conspicuous. See Chameleon.

For information on this group consult: Gadow, ‹Amphibia and Reptiles› (1902); the ‹Royal› and ‹Standard› Natural Histories; and Boulenger's ‹Catalogue of Lizards in the British Museum› (1885-7).

Lla'ma, one domesticated form (often specifically distinguished as *Lama glama* of the huanaco (q.v.), the other being the wool-bearing Alpaca (q.v.). It is larger than the wild huanaco (about 3 feet at the shoulder), and may be white, brown, black, or variegated with patches of all three colors. This animal was domesticated long before the era of the Incas. When the Spaniards conquered Peru they found hundreds of thousands in use as riding animals and beasts of burden in the southern part of the country; and as they were the only domestic ungulate of the kind in South America their importance was very great. The Spanish conquerors adopted llamas as burden-beasts, and soon long strings, in charge of a few native drivers, were passing back and forth between the mountain mines and the coast, laden with ore or bullion or with supplies, a proper burden not exceeding 120 pounds, which may be carried about 12 miles a day. Until toward the middle of the 19th century this remained almost the only means of carriage in the Cordilleras, where the endurance of cold, ability to live on the mountain herbage, and sure-footedness peculiarly fitted them for this service. Only the mature males were used as burden-beasts, the smaller females being reserved for their milk and flesh, which resembles mutton, and is extensively eaten. Llamas produce only one offspring annually, so that care is needed to sustain the herds which are still numerous and valuable. Various breeds are known, but the differences are not very great. The wool is used among the native Indians for the manufacture of textile fabrics. The skin is made into leather. The dried dung is used for fuel, and the milk is also employed as an article of native diet. When irritated these animals have the habit of kicking at their adversaries, and they also eject the food when undergoing re-mastication in the mouth, along with quantities of saliva.

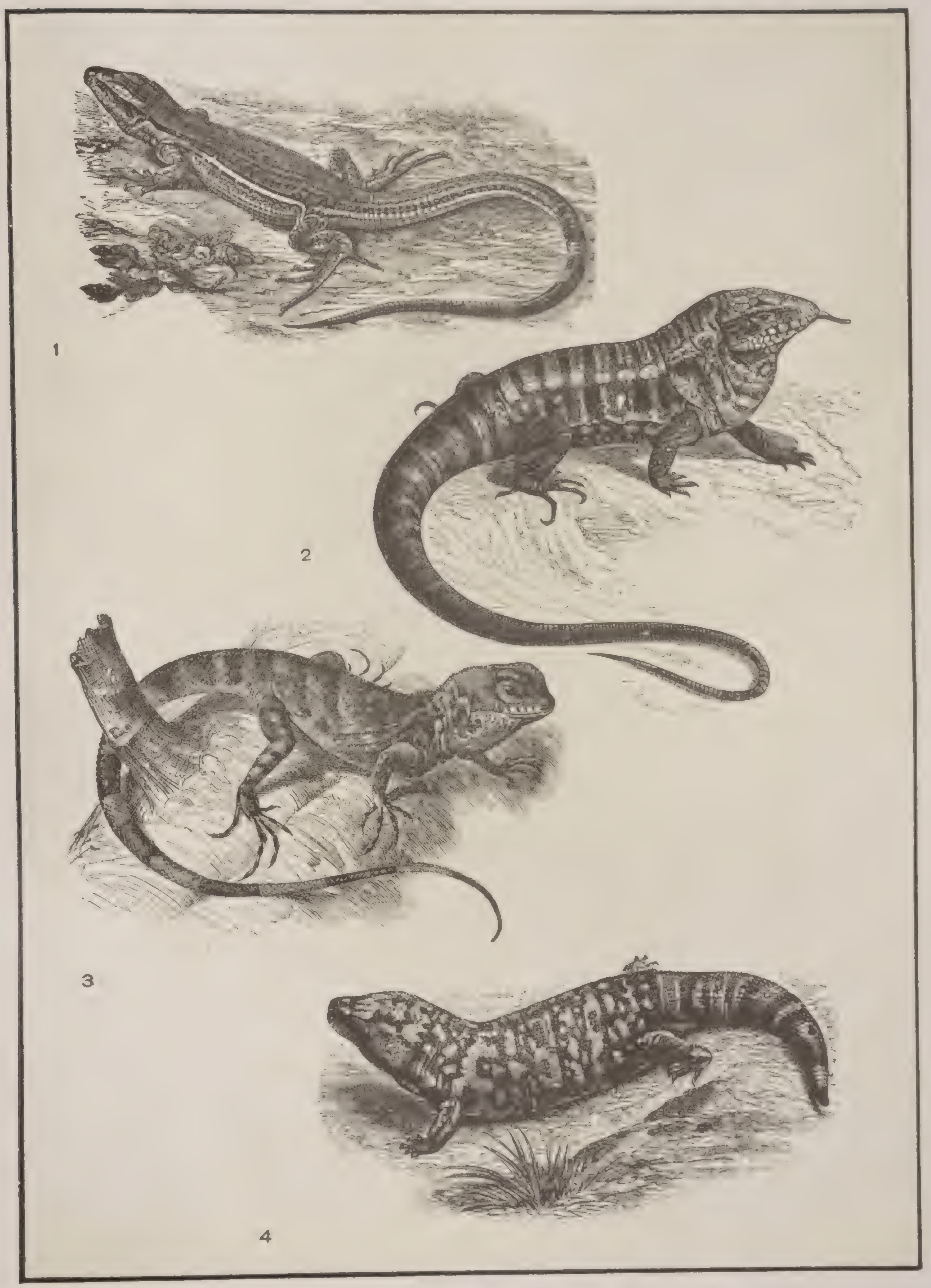
Llanelly, lă-nĕth'lĭ, Wales, a seaport town of Carmarthenshire, on the Burry, 14 miles southeast of Carmarthen. It is the outlet for the products of a great mining district, with extensive collieries, iron-foundries, copper works, tin-plate works, and lead and silver works. The trade is facilitated by commodious docks and ample harbor accommodation. Pop. (1901) 24,213.

Llano Estacado, lä'nō ās-tä-kä'dō, or **Staked Plain,** Texas, an extensive plateau forming part of the Great Plains of the eastern slope of the Rocky Mountains, east of the Pecos River, in northwestern Texas and eastern New Mexico. It has an area exceeding 40,000 square miles, and is dry and almost woodless; water is obtained by boring. In the north the plateau has a general elevation of about 5,000 feet, but in the south is not over 1,000 feet high, the steep escarpments or palisades on all sides having suggested its Spanish title.

Llanos, lä'nōs or lyä'nōs, the name given in the northern part of South America, particularly in Colombia and Venezuela, to vast plains, almost entirely level, and interrupted only at intervals by detached elevations, called in Spanish, mesas. The superficial area of the llanos is estimated at 300,000 square miles; they extend from the delta of the Orinoco inland to the Yapura, a tributary of the Amazon. A large portion of them is sandy and without much vegetation, except on the banks of the rivers and during the wet season. At this period great stretches are inundated to the depth of 12 to 15 feet, owing to the rivers overflowing their banks. The villages must, therefore, be built on the elevated ground. Considerable portions are covered with forest; in the grassy regions great herds of cattle pasture. Not including the forest section, nor any of the foot-hills of the Andean Cordillera, the llanos of the northern part of South America, would cover only about 150,000 square miles. The inhabitants of these plains are called Llaneros. They are a hardy, vigorous race, proud of their descent from the first Spanish colonists, although their mode of life resembles more that of the Indians than that of their boasted ancestors. Farther to the south such plains are called Pampas.

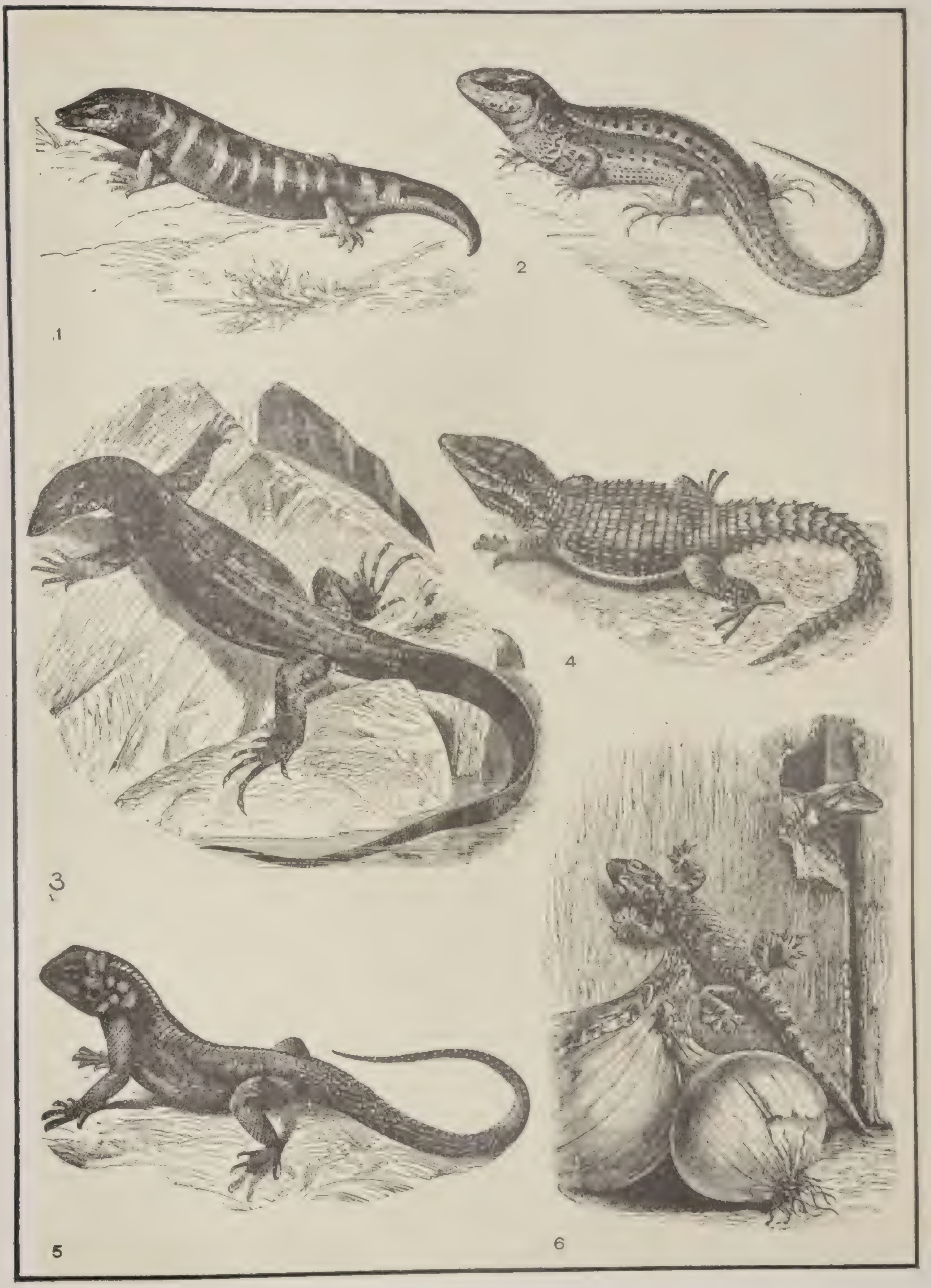
Llanquihue, lyän-kē'wā, a lake in the province of the same name, in Chile, South America. Largest lake in Chile; nearly circular in form, about 30 miles in length and the same in width. It is a deep lake, with only very small inlets.

AMERICAN LIZARDS.



1. Uraniscodon umbra.
2. Teju or Tupinambis.
3. Surinam ameiva.
4. Gila Monster or Heloderma.

OLD WORLD LIZARDS.



1. Skink.
2. Lacerta ogilis.
3. Nile Monitor or Varanus.
4. Zonurus cordylus.
5. Agama colonorum.
6. Wall geckos.

Llorente, Juan Antonio Don, hoo-än′ än-tō′nē̆-ō dŏn lyō-rān′tā, Spanish historian: b. Rincon de Soto, Andalusia, 30 March 1756; d. Madrid 5 Feb. 1823. He studied theology at Tarragona and Madrid, was ordained priest in 1770; was doctor in canon law, chancellor of the University of Toledo; was commissary of the Inquisition at Logrono in 1785, and general secretary of the Inquisition at Madrid in 1789. He was commissioned in 1793 to draw up plans for a general reform of the procedure of the court. His greatest work is the ‘Critical History of the Spanish Inquisition’ (1815–17), which, however, has no authoritative standing among scholars. He wrote also ‘Memoirs Relating to the History of the Spanish Revolution’ (1815–19).

Lloyd, loid, **Charles Harford,** English musician: b. Thornbury, Gloucestershire, 1849. He displayed musical talent early, and at 10 was organist of Rangeworthy Church, and after 1862 studied music with Barrett of Bristol, confining his attention almost entirely to Bach and Beethoven. He was graduated from Oxford, where he came under the influence of Stainer, and definitely determined to make music his calling. He conducted the Gloucester musical festivals of 1877 and 1880, was organist of Gloucester cathedral in 1876 and of Oxford cathedral in 1882. Since 1892 he has been precentor and musical instructor at Eton. Among important compositions of his are the cantatas of ‘Hero and Leander’; ‘The Song of Balder’; ‘Andromeda’; ‘Alcestis’; ‘Song of Judgment’; ‘Longbeard's Saga.’ He has also written many canticles and anthems for the church, glees, madrigals, and part songs, choruses, etc., and several instrumental pieces.

Lloyd, Curtis Gates, American mycologist: b. Florence, Ky., 17 July 1859. One of the founders of the Lloyd Library and collector of one of the most complete mycological museums in America. He is author of a series of bulletins on ‘Mycological Notes’; and co-author of ‘Drugs and Medicines of North America.’ Mr. Lloyd has done much toward correcting existing errors respecting mycological species.

Lloyd, loid, **David Demarest,** American playwright: b. New York 1851; d. Weehawken, N. J., 1889. He was a brother of H. D. Lloyd (q.v.). He was graduated at the College of New York, and became a member of the staff of the New York *Tribune.* As a correspondent at Albany in 1875 he was prominent in exposing the canal ring. He was the author of four plays: ‘For Congress’ (1883); ‘The Woman Hater’ (1885); ‘The Dominie's Daughter’ (1887); ‘The Senator’ (1889).

Lloyd, Henry Demarest, American writer on economics: b. New York 1 May 1847; d. 28 Sept. 1903. He was graduated from Columbia University; lectured on political economy in New York schools; studied law, and was admitted to the bar in 1869. In 1872 he went to Chicago, where he was employed on the Chicago *Tribune* till 1885, the latter part of the time as a member of the editorial staff. His later life was devoted to writing. His publications include: ‘A Strike of Millionaires against Miners, the Story of Spring Valley’ (1890); ‘Wealth against Commonwealth’ (1894), a history of the growth and methods of the Standard Oil Company; ‘Labor Copartnership’ (1899), notes of visits to various co-operative shops and farms in Great Britain; ‘A Country without Strikes’ (1900), an account of the history and workings of compulsory arbitration in New Zealand; and ‘Newest England’ (1900). He made the labor question his special field of research, and was an advocate of co-operation and a believer in socialistic — or, as he called it, democratic — control of industry, to which he maintained that social evolution was leading. He possessed the power of presenting economic facts in an unusually interesting manner, especially his ‘Wealth against Commonwealth,’ though compiled from court records and other official documents, is written with a force and vividness which give it real literary quality.

Lloyd, John Uri, American chemist and author: b. West Bloomfield, N. Y., 19 April 1849. He was educated in private schools; became professor of pharmacy at the Cincinnati College of Pharmacy, and held that position till 1887. He has been professor of chemistry in the Eclectic Medical Institute since 1878, and is now its president; and is associate editor of the ‘Pharmaceutical Review,’ the ‘Eclectic Medical Journal,’ and the ‘Medical Gleaner.’ He has made special studies in the dialect, superstitions, and folk-lore of northern Kentucky, is a member of many societies, contributor to chemical and pharmaceutical journals, and has written: ‘Chemistry of Medicine’ (1881); ‘Etidorpha, the End of the Earth’ (1895); ‘The Right Side of the Car’ (1897); ‘Stringtown on the Pike’ (1900); ‘Warwick of the Knobs’ (1901); ‘Red Head’ (1903); and, in collaboration, ‘Drugs and Medicines of North America’ (1884); ‘King's American Dispensatory,’ with King (1885–1900); ‘Elixirs, their History and Preparation’ (1892); ‘A Study in Pharmacy’ (1895).

Lloyd, Nelson McAllister, American journalist and author: b. Philadelphia 18 Dec. 1873. He was educated at the Germantown Academy, and graduated in electrical engineering at the Pennsylvania State College in 1892. Since then he has been engaged in newspaper work on the New York *Evening Sun,* of which he has been city editor since 1897. He has contributed many historical sketches and short stories to magazines, and has also published ‘The Chronic Loafer’ (1900); and ‘A Drone and a Dreamer’ (1901).

Lloyd's, an incorporated firm engaged in marine insurance in London, or otherwise connected with shipping, having rooms in the London Royal Exchange. Members are admitted by subscription, and the affairs of the institution are conducted by a committee. Reports are received daily from all foreign ports, and this information is posted in the common or merchants' room. Besides this, there are other rooms for the use of the underwriters and for ship-auctions, a library, restaurant, etc. Lloyd's list, containing shipping reports, is published daily, and various other publications relating to shipping are also issued. Lloyd's Registry is an independent association for the classification of shipping according to character and efficiency. Lloyd's Register of Shipping is issued annually, and the society maintains a large staff of surveyers, who inspect and report upon vessels both when built and afterward. Originally the London underwriters met at Lloyd's Coffee-house, hence the name.

Lloyd's Bonds, in England, from 1850 to 1870 a well known commercial security; mostly instruments under the seal of a railway or other such company admitting the indebtedness of the company to a specified amount, with a covenant to pay such amount with interest within a stated time. These companies had generally statutory authority to borrow only when a certain amount (usually the whole) of their capital had been subscribed and a specified portion paid up; their power of borrowing must also be exercised with the sanction of a general meeting. Such restrictions were severely felt by companies whose works were being constructed. A barrister, J. H. Lloyd, relieved the companies from this embarrassment by taking advantage of the fact that companies, though prevented in such cases from borrowing, could contract debts in any other way, and acknowledge their obligations in various forms. He introduced a form in which such acknowledgments would become almost as binding on the grantors as a statutory debenture, and so become sufficiently marketable.

Load Line, a line drawn upon the side of a ship to indicate when she is properly loaded, or if overloaded. This is quite essential, as many vessels are lost at sea, the result of overloading. The abbreviations used in designating the load line are as follows:

FW., fresh water load-line (steamer).
IS., summer load-line, Indian Ocean.
S., summer.
W., winter.
WNA., winter, north Atlantic.
F., fresh water sailing ships.

These marks are painted on iron or steel ships, and cut into the wood on wooden vessels.

Loadstar. See LODESTAR.

Loan, anything lent or given to another on condition of return or payment. In law loans are considered to be of two kinds — *mutuum* and *commodate;* the former term being applied to the loan of such articles as are consumed in the use, as provisions or money; the latter to the loan of such articles as must be individually returned to the lender. The acknowledgment of a loan of money may be made by giving a bond, a promissory note, or an I. O. U. (q.v.).

Lobachevsky, or **Lobatchewsky, Nicolas Ivanovitch,** Russian mathematician: b. Makareif, Nyni-Novgorod, 1793; d. 24 Feb. 1856. He entered the University of Kazañ in 1807, completed his course of study in 5 years, became assistant professor of mathematics in 1814, and extraordinary professor in 1816. In 1823 he became ordinary professor and retained the chair until 1846, when he fell into disfavor. Unlike many professional men, he was a good business man and his administration of the affairs of the university was marked by many beneficial changes. He organized the force of teachers, and even studied architecture, so that when the new buildings were erected he supervised their erection, economized space and saved thousands of dollars. He wrote his Pangéometrie in 1855, giving the result of his long years of geometrical studies and presented it to the university. He was one of the first thinkers to apply a critical treatment to the Euclidean principles of geometry. He gave his first contribution to the theory of hyper-geometry in a lecture at Kazañ in 1826, but later wrote several treatises on the subject. He also wrote a treatise on Algebra (Kazañ 1834) and contributed many other articles on mathematics. His complete works were edited by Janischevsky (1870) and have been translated by several writers. His collection of geometrical writings was published in Lanzañ in 1883, the first volume containing Russian articles only, and the second and last volume containing the French and German articles. For his geometry consult: 'New Principles of Geometry with Complete Theory of Parallels,' translated by Halsted (Austin, Texas, 1897).

Lobby, The, a class of persons who seek to influence legislation outside of the regular legislature. The term was originally applied to the waiting-rooms of legislative halls, and then to those persons who frequented these rooms for the purpose of interviewing legislators with a view to influencing their votes. The lobby includes both those who are regularly employed in the work, and those who on particular occasions wish to promote or oppose some specific legislation. All large corporations and firms have regular paid lobbyists at Washington and at State capitals where legislation is likely to affect their interests. Women as well as men are employed as lobbyists, and are said to be very successful. The lobby is not in theory, nor necessarily in practice, a corrupting agency. It may furnish an entirely legitimate and desirable method of giving legislators necessary information in regard to certain laws; but it may also be, and often is, the means of obtaining legislation in the interests of a few without regard to the public good. The methods of the lobby differ with the character of the lobbyist and of the legislator approached. They vary from the legitimate presentation of facts and argument in regard to a law to the use of bribery, threats of preventing re-election, etc.; and include the obtaining of letters and petitions from constituents, the employment of press articles, and social attentions. The successful lobbyist must thoroughly understand the men with whom he has to deal and the methods of legislation; it has been found, therefore, that former members of the legislature make the most successful and sometimes the most dangerous lobbyists. The dangers of the lobby are due to three chief causes: (1) the large number of special and private bills, all of which can not be fully considered at the regular sessions; (2) the system of referring all bills to committees, and accepting, as a rule, the report of the committee, so that the lobbyist has practically but few men to deal with; (3) the secrecy which attends the work of the lobby, giving the public no effective means of knowing or dealing with its evils. To oppose the grosser evils of the lobby both Federal and State laws attach heavy penalties to giving or taking a bribe for legislation. Many of the States also have lessened the number of bills to be presented by forbidding in their constitutions the passing of special acts in certain cases. Massachusetts has sought to lessen the secrecy by requiring every promoter of a law in the interest of others to be registered, with the name and address of his employer and a statement of the matter on which he is employed. This law has had the effect of giving legal sanction to the lobbyist's work, improving the character of the lobbyists, and of lessening, though not entirely preventing, the evils attending secrecy.

Consult: Bryce, 'American Commonwealth'; Bridgman, 'The Lobby' (in 'New England Magazine,' n. s. Vol. XVI., p. 151); Tanner, 'The Lobby and Public Men.'

Lobe'lia, a genus of annual and perennial herbs and a few sub-shrubs of the order Lobeliaceæ, closely allied to the harebells. More than 200 species are distributed throughout the temperate and tropical zones, especially in damp soils. They are characterized by alternate, usually narrow leaves and two-lipped tubular flowers (three petals forming one lip and two the other), arranged in terminal racemes. Several of the species are highly prized as garden plants, the best known being the cardinal-flower (q.v.), the great lobelia (*L. syphilatica*), both common natives in marshy grounds and along streams; *L. erinus,* a favorite African plant for edging flower beds; and *L. fulgens,* a Mexican species, which like the first named has brilliant red flowers. The other two generally have blue blossoms. They are all of simplest culture. Some species have been used in medicine, and one common species, *L. inflata,* is called Indian tobacco because its dried leaves were extensively smoked by the southern Indians, who enjoyed the narcotic effect in spite of the bitter flavor. Lobelin, lobelacrin and lobelic acid are organic derivatives.

Lobengula, lō-bĕng-goo'lä, king of the Matabeles (see MATABELELAND): b. about 1833; d. 1894. He was a son of Mosilikatse, whom he succeeded in 1870. Fixing his capital at Bulawayo (q.v.), he made himself a powerful opponent of Western civilization, and prohibited his people, on pain of death, from accepting Christianity. After years of diplomatic effort, following the discovery of gold in his domains, Great Britain, by treaty in 1888, acquired suzerainty over his kingdom, and in 1890 the British South African Company obtained from him permission to settle in Mashonaland (q.v.), paying him a stipulated rent. After preparing to hold the country and work the gold mines, the company provoked the enmity of Lobengula, who began against the English a war which resulted in his disastrous defeat, after shocking slaughter of his men by Maxim guns. Bulawayo was taken, and Lobengula fled. During his flight he ambuscaded and killed Maj. Wilson and a British detachment, but the contest ended with his own death.

Lob'lolly Bay, or **Tan Bay,** an elegant pyramidal shrub or tree (*Gordonia lasianthus*) of the tea family, which covers considerable tracts of swampy coast along the Gulf of Mexico. It is a handsome tree, sometimes 50 or 60 feet tall, with evergreen leaves and large white fragrant flowers. Its bark is used in tanning.

Loboc, lō-bŏk', Philippines, a pueblo of the province of Bohol, situated in the southern part of the province on the Socar-Vilar-Loay River, three miles from its outlet, and 12 miles east of Tagbilaran, the provincial capital. It is on the road leading from the coast. Pop. 10,200.

Lobos, lō'bōs, or **Seal Islands,** Peru, three islands in the Pacific, 12 miles from the mainland, so named from the Spanish *lobo,* "seal," large numbers frequenting the islands. They were famous for their extensive deposits of guano, which have been depleted.

Lob'ster, the name of certain large crustaceans of the crab group, and especially of the genera *Homarus, Nephrops,* and *Palinurus.* To the first belong the common European and American lobsters (*Homarus gammarus* and *americanus*). *Nephrops* differs chiefly in possessing 19, instead of 20, pairs of gills, and its most important species is the Norwegian lobster (*N. norvegicus*). To *Palinurus* belongs the rock-lobster or marine crayfish (*P. vulgaris*) of Europe, as well as some tropical species, all of which differ from the common lobster in the absence of the large claws, while they possess long rigid antennæ and spiny shells. A large and handsome species of this group is abundant in West Indian waters.

The American lobster is found along the western Atlantic coast from Delaware to Labrador; from the shore to a depth of 100 fathoms. It is most abundant on the shores of Maine and Nova Scotia and uncommon on the New Jersey coast. Though living amid a variety of surroundings, the lobster prefers rocky bottoms, on which it reaches the greatest size and abundance, probably a direct result of a more plentiful food supply. Like many fishes, but to a much less degree, the lobster is migratory, moving into shallow water in the spring and returning to greater depths as the water grows colder in the fall. This habit, however, is very far from being universal and many lobsters remain in shallow waters throughout the year. The food of the lobster consists of all kinds of animals, both living and dead, and to a less extent of vegetable matter, the indigestible parts of which are regurgitated. At times they are cannibalistic. Although so well protected by their hard shells, powerful claws, and burrowing habits, lobsters have many enemies besides man. The most important of these are bottom-feeding fishes, such as the cod, tautog, skate and dogfish, which destroy great numbers of young lobsters when 2 to 6 inches long, as well as the egg-bearing females and moulting adults. During the free-swimming larval stages great numbers probably fall a prey to surface-feeding fishes like the menhaden and herring, though little direct proof of this exists. The number of eggs produced by a female lobster varies from 3,000 to nearly 100,000, according to the size and age of the animal, maturity being attained at an age of 3 or 4 years and a length of about 8 to 12 inches. The great majority (about four fifths) lay their eggs during the summer, the remainder during the fall and winter, and it is probable that each female lays once in two years. After extrusion the eggs are borne on the appendages attached to the lower side of the abdomen or tail of the female, where they remain undergoing a slow development for 10 or 11 months, most of those laid during the summer hatching in June of the following year. After hatching, the young passes a period of 6 to 8 weeks as a free-swimming pelagic larva, which moults 5 or 6 times, with corresponding changes in form and color. By this time it has assumed the form of the adult and is about three fourths of an inch long. It now sinks to the bottom and burrows into the gravel or hides in rock crevices near shore. At the end of the first year it is about 4 or 5 inches long and has moulted from 14 to 17 times, after which growth is much less rapid and moulting less frequent. The rate of growth varies greatly according to the food supply and other conditions, but a lobster of 10 or 12 inches is about 5 years old. A great age and size are sometimes attained, individuals weighing upward of 40 pounds being recorded, though even 25 pounds is very rarely reached.

The toothsomeness of the American lobster was early recognized and a regular fishery has existed on the Massachusetts coast for nearly a century. Owing to a rapidly extending depletion of the fishing-grounds and a consequent diminution in the size and number of lobsters, the centre of the fishery has shifted northward, first to Maine and then to the British provinces. The lobster fisheries of the United States in 1901 employed 4,348 persons, 4,151 vessels and boats and 208,563 lobster-pots, representing an investment of $1,668,060, nearly three fifths of which is credited to Maine. The yield was 15,767,741 pounds, valued at $1,390,579, of which 12,346,450 pounds were taken in Maine. After about 1885 the yield declined steadily, but the value of the product increased. As measures toward maintaining the lobster supply, laws have been enacted fixing fines for the possession of egg-bearing lobsters or those below a specified minimum size, and recourse has been had to artificial propagation. In the latter practice many millions of eggs are annually taken from the bearing lobsters, artificially hatched, and the larvæ distributed by the fish commissions of the United States and the British Provinces. In 1902 our Bureau planted upward of 81,000,000 of fry, and the Canadian government operates on an even more extensive scale. The beneficial results have been scarcely apparent, but the recent successful rearing of lobsters beyond the larval stages has introduced a more hopeful outlook. The methods of the lobster fishery are very simple and uniform. Use is made of a trap or pot, a box-like affair generally made of laths placed about one inch apart, and with a funnel-shaped opening of coarse netting placed in one end. The pot is baited with otherwise useless fish, weighted with stones, and lowered to the bottom by means of a rope to the upper end of which a buoy, with the owner's private mark affixed, is attached. The pots are visited daily, and the lobsters, which after entering are unable to find their way out, removed. They are kept alive in floats until a sufficient number for shipment has been gathered. Besides those sold in the shells, large quantities of the meat are canned, particularly at Portland.

Consult especially the elaborate account of the American lobster by Herrick, in ‘Bulletin of the U. S. Fish Commission’ for 1895, in which full bibliographical references will be found.

Lob′worm. See LUGWORM.

Local Government. See MUNICIPAL GOVERNMENT.

Local Option, or local control of the liquor traffic; a term applied to the principle by which a certain majority of the inhabitants or taxpayers of a certain locality, town, county or State, may decide as to whether any, or how many, places for the sale of intoxicating liquors shall exist in the locality. What considerations should determine a locality, who should be the constituents, what should be the majority necessary to vote the abolition of licenses, and whether the trade thus affected should receive compensation or not, are points not as yet satisfactorily settled. This principle operates in several localities in the United States with varying success from the prohibition or temperance point of view. Local option in the States of Maine and Kansas has resulted in restricted laws governing the liquor traffic. Many small towns and villages have adopted local option with more or less satisfactory results. The words «local option» had their origin with the temperance reformers who have sought to secure power and authority enabling them to regulate the liquor traffic, either by maintaining unchanged, increasing, diminishing, or wholly suppressing the houses for the sale of intoxicating liquors.

Loch Lomond. See LOMOND, LOCH.

Lochleven. See LEVEN, LOCH.

Lock, a mechanical appliance used for fastening doors, chests, etc., generally opened by a key; or more broadly speaking, a lock is a *bolt* guarded by an *obstacle,* and controlled by a *key.* The *bolt* may be pivoted or rotary, but usually slides; the *key* generally rotates, but may act by sliding or pushing; the *obstacle,* which in order to operate the bolt must be overcome by the key, may be of the *warded* (fixed) or of the *tumbler* (movable) types.

History.— The history of the art of the locksmith is probably as old as the history of civilization, and references to it are found in the early literature of every nation. Wood was undoubtedly the first material used in construction, but the Egyptians appear to have, at an early date, employed brass and iron also. The Hebrews and Greeks used crooked keys, with ivory or wooden handles, for the purpose of bolting or unbolting doors. Some of the modern Greeks still employ the primitive method of closing doors from the inside by a wooden or metallic bar, attached to the door by means of leather strings or small iron chains; wood or iron keys, made in the shape of hooks were inserted through a hole in the door and by turning lifted up the bar on the inside. The similarity of these primitive locks rendered access to the house easy and soon led to an improvement upon the method, resulting in the so-called Lacedæmonian lock. This too was improved, but of the workings of this lock no description has come down to us.

Among the nations of antiquity lock-making made little progress in advance of what had been done by the Egyptians. Even the Romans, who excelled the other nations of the world in iron-work, used very simple locks, resembling those of the modern Greek. The *tumbler* lock was next in succession, and was probably first invented and used by the Chinese. In this lock a lever or slide entered a notch in the bolt, which could not be moved till the tumbler was lifted by the key. The *warded* lock, used by the Etruscans, was the next form of lock which came into general use. While the Roman locks belong to the same description, they were distinctly different. In locking and unlocking the keys did not make a complete revolution and consequently were identical with the spring locks of modern days. After the downfall of the Roman Empire, lock-making took on an unprecedented impulse, owing to the increased danger of robbery, and human ingenuity was taxed to the limit to provide means for the safe-keeping of valuables. About 1650 a fourth type of lock, the *letter* or *dial* lock, was invented by M. Regnier, director of the Musée d'Artillerie at Paris, and these four types form the basis for the majority of our modern locks.

Locks were first manufactured in England during the reign of Alfred (A.D. 871–901), but no substantial improvement in their construction was made till the latter part of the 18th century. These improved locks were the Barron, first patented in 1778, the Bramah lock, patented in 1784; these were followed in 1818 by the Chubb, and later by the American Parautopic lock of Day & Newell. Of those then manufactured, this latter lock became the most generally used for safes because it presented the least possibility of being picked, but this lock finally succumbed to the skill of Linas Yale, Jr., an American inventor (b. 1821; d. 1868). Yale had for a number of years been interested in and had patented locks of diverse types and ingenious construction. The modern combination lock was then unknown, and Yale's earlier inventions related to locks operated by keys, but great security was obtained by making the «bit» of the key changeable at will and also detachable from the handle, so that, as the latter was rotated in the lock, the former was detached and carried away from the keyhole to a remote part of the lock, and there brought into contact with the tumblers to set them in position to permit the bolt to move, the continued rotation of the key handle then operating the bolt and returning the «bit» to the key-hole for removal. Yale then perfected the *dial* lock, the improved form of which is now in universal use in America for safes and vaults, and which, as now made, is proof against picking by any methods thus far discovered.

Mr. Yale's most important invention, brought out in 1860 to 1864, was the key lock universally known as the *Yale* lock, the United States patents for which were issued on 29 Jan. 1861, and 27 June 1865. This combination of a flat key and revolving «plug» has almost entirely superseded the crude and bulky lock, of indifferent security and inferior workmanship, which was opened by a round key, and the introduction of the Yale or cylinder type completely revolutionized the art of lock-making in America.

Yale's inventions led to the dial lock of James Sargent, but as the user of both of these, the Yale and the Sargent, could be coerced to open them, the inventors turned their attention to making the only lock which is absolutely unassailable — the *time-lock*. This was first suggested in 1831 by an Englishman, William Rutherford; in 1857 Holbrook & Fish of the United States devised another, but the first successful time-locks put on the market were the Sargent and Yale time-locks, brought out in 1875, and followed later by the Pillard, the Homes, the Hall, and others.

Warded Locks.— In the majority of this class there is a «back spring» or dog, the feeling of which, when using the key, resembles that of a tumbler, but which adds nothing to the security.

Lever Tumbler Locks.—These locks may contain several tumblers, the number of key changes usually being limited to from 12 to 24 and possibly 72, while in a good three-tumbler lock of this style as many as from 200 to 500 key-changes are possible. Round, barrel, and flat keys are used.

Cylinder and «Pin-Tumbler» Locks.— The former term applies to locks in which the pin tumbler is contained in a cylinder separate from the lock case; the latter is applied to those wherein the pin tumblers are contained in the lock itself.

Master-Keyed Locks.—A series of locks is said to be «master-keyed» when so constructed that each lock can be operated by its own key, which fits no other lock of the series, and also by another key which will operate every lock in the entire series. Warded locks are master-keyed by means of a «skeleton» key, with the bit cut away sufficiently to avoid all the wards in all of the locks of the series. Lever-tumbler locks are master-keyed in three ways, either by providing two «gatings» on each tumbler, one of which is brought in line with the corresponding «fence» or post on the bolt by the change-key and the other by the master-key; by providing a «lifter,» which, when actuated by the master-key, moves the tumblers in the same manner as does the change-key when the latter acts directly on the tumblers; or by providing a set of secondary levers, which, when operated by the master-key, move the primary tumblers in the same manner as the change-key which acts on them directly. Pin-tumbler locks are master-keyed by cutting each pin in two places, or by encircling the plug (which contains the key-way) with a larger annular plug, thus providing two points at which each tumbler may be set to permit the plug to rotate, and utilizing one set of these points for the change-key and the other set for the master-key.

Time or Chronometer Locks.— In these the mechanism is actuated by clock-work, and is used, in connection with the heavy bolt work of a safe door, to prevent the unlocking of the latter except upon the hour at which the clock is set. There are generally three chronometer movements, each of which will of itself actuate the lock, so that should one or two be disabled or inoperative, the other will open the door at the time indicated. In connection with the time lock an automatic bolt operating device is often used.

Dial or Combination Locks.— These consist essentially of a bolting mechanism guarded by a set of changeable tumblers or wheels, and actuated by a spindle passing through the door, provided on the outer end with a graduated dial, by rotating which in a certain manner the tumblers can be set and the lock be operated.

Lock-Making.— The first locks made in this country naturally were patterned after those made in Europe, but whereas the European artisan used wrought metal in construction, the American manufacturers soon turned from this and employed cast metal. This change, together with the introduction of vastly improved machinery, soon reduced the cost of production, so that now locks of the best type can be purchased at a merely nominal cost, and while, for a few years after 1870, the sharp competition among manufacturers tended to reduce the quality of the production, the mechanical advancement since that time has been marked and at the present time the highest grade of workmanship and mechanical skill is manifest in the articles on the American market.

Lock Haven, Pa., city, county-seat of Clinton County; on the Susquehanna River and on branches of the Beech Creek and the Pennsylvania R.R.'s; about 68 miles northwest of Harrisburg. The first settlement was made in 1769 and, in 1833, it was incorporated as a town. In 1844 it was made a borough, and in 1870 received its city charter. It is situated in an agricultural and lumbering region. Its chief industrial establishments are lumber and planing-mills, tanneries, cigar-box factory, cigar factory, foundries, sewer-pipe works, fire-brick works, silk-mill, breweries, paper-mill, and furniture factory. The State Central Normal School is situated here. Some of the prominent buildings are the court-house, a hospital, and several of the churches. The city has a circulating library containing about 6,000 volumes. Pop. (1900) 7,210.

Locke, lŏk, **David Ross** («PETROLEUM V. NASBY»), American humorist and satirist: b. Vestal, Broome County, N. Y., 20 Sept. 1833; d. Toledo, Ohio, 15 Feb. 1888. He learned the trade of printer and after being connected with several newspapers was editor and owner of the Toledo *Blade* in 1865, and very soon became popular as a humorous writer and later as a lecturer. He began his «Nasby» letters in the Findlay ‹Jeffersonian› in 1860 and continued them throughout the Civil War. They exercised much influence in molding popular opinion, upholding as they did the policy of the Lincoln administration. In later years the satire of the letters, which still continued to appear, was aimed at President Johnson and his peculiar methods. They were collected and published in book form under the titles ‹Divers Views, Opinions, and Prophecies of Yours Truly› (1865); ‹Swingin' Round the Kirkle› (1866); ‹Ekkoes from Kentucky› (1867); ‹The Struggles — Social, Financial, and Political — of P. V. Nasby› (1872). He also published ‹Hannah Jane›; ‹The Moral History of America's Life Struggle›; ‹The Morals of Abou Ben Adhem.›

Locke, John, English philosopher: b. Wrington, Somerset, 29 Aug. 1632; d. Oates, Essex, 28 Oct. 1704. He was the son of an attorney who was also a captain in the Parliamentary army. Locke was educated at Westminster School and at Christ Church, Oxford, where he was graduated and took his bachelor's degree in 1656, two years later took the degree of M. A., and entered upon the study of medicine. He lectured at Oxford (1661–4) on Greek, rhetoric, and philosophy, and during this period became interested in experimental physics, especially chemistry and meteorology, and in metaphysics showed a preference for studying Descartes, although his own philosophy powerfully antagonizes that of the French master. Theology and politics, including diplomacy, also engaged his attention. At Oxford before 1666 he is said to have practised medicine, in which, however, he was never graduated. As secretary to Sir Walter Vane, British envoy, he went in 1665 to Cleves, Prussia, returning to Oxford in the following year, during which time he made the acquaintance of Lord Ashley, afterward 1st Earl of Shaftesbury, became his family physician and secretary, under his patronage held various offices, and in 1682 accompanied him in his retirement to Holland. Locke continued to reside abroad until 1689, when the revolution had been accomplished, then returned to become commissioner of appeals. His association with Lord Ashley, between whom and himself there was close intellectual sympathy, was stimulating to his genius, and it was in Ashley's house that Locke first planned the ‹Essay on the Human Understanding.› Fully elaborating this work during his voluntary exile, he published it in complete form in 1690, with a dedication to the Earl of Pembroke, whose acquaintance he had made at Montpellier many years before. The ‹Essay,› which had largely occupied him for almost 20 years, met with much objection in England, being particularly opposed at Oxford; but on the Continent it brought him great celebrity, and was translated into French and Latin, and later into other languages. For the copyright of the first edition he received but £30, and although he had previously published two works this was the first to bear the author's name. In 1695 Locke was made a commissioner of trade and plantations, but in a few years became incapacitated and retired, and from 1700 until his death lived with his friend, Sir F. Masham, at Oates. Meanwhile being drawn into the violent controversies over the essay which arose among different sects and schools, he had sturdily maintained his ground in a style of epistolary polemics which still possesses an academic interest.

As a philosopher Locke's place is usually fixed at the head of the English Sensational School, although this classification by no means does justice to his many-sidedness as a thinker, and the term «sensationalism,» with its ordinary connotations, is wholly inadequate for a correct representation either of his speculative inquiries or of those still less definable meditations which led him profoundly to search the realms of ethics and of spiritual laws, in an endeavor to assign the relations and functions of these in the world of practical politics and that of instituted religion. Of that sensationalist school of which he is reputed to have been founder, it has been said with much pertinence that its ultimate conclusions are such as «his calm and pious mind would have indignantly repudiated.» The ‹Essay on the Human Understanding› holds a permanent place among the greater works of philosophy, in the history of which, however, Locke's method may be superseded, and although his main doctrine be exploded, the book retains its importance as an epoch-marking achievement. It seeks the primal sources and the scope of human knowledge, denying the existence of innate ideas, presenting the mind as a sheet of white paper prepared to

JOHN LOCKE.

be written upon by experience, which alone supplies the knowledge there impressed, and tracing the sources of all ideas to what he calls sensation and reflection. This doctrine of the *tabula rasa* or white paper found a vigorous controverter in Leibnitz (q.v.). The opposition which Locke thus represented between all intuitional and experiential philosophies still remains a central point of dispute among thinkers of various schools, but he was a forerunner in psychology, as he was also in the advocacy of civil and religious liberty, for which he suffered persecution and betook himself to exile.

Upon questions of government Locke was in the main a follower of Hobbes (q.v.) in so far as the latter regarded governmental authority as something delegated by the subjects for the creation of the state, through a compact which carried in itself the principle of obligation. But he went far beyond Hobbes in the application of his views to the concrete affairs of politics. In 1689 a constitution for the Carolina colonists was drafted by him, and was an evidence of his concern to put political philosophy to practical service. Besides the ‘Essay,’ his works include letters ‘Concerning Toleration’ (1689); ‘Two Treatises on Government’ (1690); ‘Some Thoughts Concerning Education’ (1693); ‘The Reasonableness of Christianity’; and a little book ‘On the Conduct of the Understanding,’ posthumously published. Frazer's edition of the ‘Essay’ (1894) is the most desirable. His philosophical writings have been published in various editions, Saint John's (1854 et seq.) being one of the most useful. Consult: King, ‘The Life of John Locke’ (1829); Fox Bourne, ‘The Life of John Locke’ (1876); Fowler, ‘John Locke’ (1880); Frazer, ‘Locke’ (1890); Russell, ‘The Philosophy of Locke’ (1891); and Ueberweg-Heinze, ‘Grundriss der Geschichte der Philosophie’ (8th ed., 1896), where a more extended bibliography is to be found.

Locke, William John, English novelist: b. 20 March 1863. He was educated at Queen's Royal College, Trinidad, and Cambridge University, and is now (1903) secretary of the Royal Institute of British Architects. His fictions include ‘At the Gate of Samaria’ (1895); ‘The Demagogue and Lady Phayre’ (1896); ‘A Study in Shadows’ (1896); ‘Derelicts’ (1897); ‘Idols’ (1898); ‘The White Dove’ (1900); ‘The Usurper.’ These have been reissued in the United States. He has also written two plays, ‘Mr. Cynic,’ played in 1899, and ‘The Lost Legion’ (1900).

Lock'er-Lamp'son, Frederick, English lyric poet: b. Greenwich 29 May 1821; d. Rowfant, England, 30 May 1895. He wrote a volume of «society verses» greatly admired for their grace and finish, ‘London Lyrics’ (1857); edited an anthology, ‘Lyra Elegantiarum’ (1867); and wrote a collection of miscellanies entitled ‘Patchwork’ (1879). In 1874 he married for his second wife the daughter of Sir Curtis Lampson and took her name in addition to his own. Consult ‘My Confidences,’ his autobiography (1896).

Lockhart, lŏk'ärt, **John Gibson,** Scottish editor and biographer: b. Cambusnethan, Lanarkshire, 14 July 1794; d. Abbotsford 25 Nov. 1854. He was graduated at Glasgow and Oxford universities and became a member of the Scottish bar. He never practised as an advocate, but devoted his time to literary pursuits. In 1817, with Professor Wilson, he established ‘Blackwood's Magazine,’ a Tory organ, which at the outset created an immense sensation by the ability and keen satire displayed in many of its articles. In 1820 Lockhart, who had previously become a favorite with Sir Walter Scott, married his eldest daughter, and much of his future life took its color from this connection. In 1826 he succeeded Gifford in the editorship of the ‘Quarterly Review,’ and continued in the position till 1853. His translations of ‘Spanish Ballads,’ originally contributed to ‘Blackwood,’ were collected in 1823. He also published the novel ‘Valerius’ (1821); ‘Reginald Dalton’ (1823); ‘Adam Blair’ (1822); and ‘Matthew Wald’ (1824); ‘Life of Robert Burns’ (1828); ‘Life of Sir Walter Scott’ (1839–41). This last, though indebted for much of its interest to its subject, is on the whole written, notwithstanding occasional prolixity, with taste and judgment. Lockhart, for his steady attachment and important services to the Conservative party, was rewarded in 1843, by Sir Robert Peel, with the appointment of auditor of the duchy of Lancaster. He was buried in Dryburgh Abbey, close by Sir Walter Scott. Consult: Lang, ‘Life of John Gibson Lockhart’ (1896).

Lockhart, lŏk'härt, Texas, town, county-seat of Caldwell County; on the Missouri, K. & T., and the San Antonio & A. P. R.R.'s; about 28 miles south of Austin and 140 miles west of Houston. It is situated in a fertile agricultural section in which cotton and live-stock are raised extensively. Some of its industrial establishments are a soap-factory, cotton-gins, cottonseed-oil mill, wagon and carriage factory, cotton-compress, stock-yards, grain-elevators, and lumber-yards. Pop. (1900) 2,306.

Lockjaw. See TETANUS.

Lock'out, the discharge and keeping out of employment of artisans and laborers by their employers. It is a retaliatory measure adopted by some capitalists to resist the demands for shorter hours, more pay, etc., made by their workmen. The workmen may themselves be responsible for a lockout, just as an employer may be responsible for a strike upon the part of his workmen. See also STRIKES.

Lock'port, N. Y., city, county-seat of Niagara County; on the Erie Canal, and on the Erie, the Buffalo & L., and the New York C. R.R.'s; 12 miles from Lake Ontario, 20 miles east of Niagara Falls, and about 25 miles north by east of Buffalo. It was settled in 1823 by workmen who were employed on the Erie Canal. On 26 March 1829 it was incorporated as a village, and became a city 11 April 1865. It is situated in a fertile agricultural region; but the extensive water-power obtained from the canal has made it an important manufacturing city. The 10 large locks of the canal, which here make a descent of 66 feet, have given name to the city. The canal passes through a deep cut, an excavation in the solid rock, several miles in length. The New York Central Railroad bridge, 500 feet long, crosses the canal here, at a height of 60 feet above water. There are large sandstone and limestone quarries in the vicinity.

The chief manufactures are pulp and paper, Holly waterworks machinery, wood-work machinery, machinery for flour mills, glass, rolling-mill products, cotton-batting, wagons and carriages, brooms, flour, indurated fibre, aluminum, cotton and woolen goods, and creamery products. Lockport has 20 large manufacturing establishments, which have nearly 12,000 employees. In addition to the trade in manufactured articles, the city has an extensive trade in the quarry products, and in grain and fruits. It has (1903) four banks, with a combined capital of $3,500,000. Some of the prominent buildings are the high school, the new government building, and the court-house. It has 19 churches and good public and parish schools. It is the seat of Saint Joseph's Academy. The city owns and operates the waterworks. The government is vested in a mayor and a council of 10 members, elected annually. Pop. (1900) 16,581. Consult Pool, ‹Landmarks of Niagara County.›

T. T. Feeley,
Editor ‹Review.›

Locks, Canal. See Canals.

Locks'ley Hall, a well-known poem by Lord Alfred Tennyson (q.v.), first published in 1842.

Lock'wood, Belva Ann Bennett, American lawyer and reformer: b. Royalton, N. Y., 24 Oct. 1830. She was graduated from Genesee College, Lima, N. Y., in 1857, and taught school 1857–68. She was married in 1848 to Uriah H. McNall (d. 1853), and in 1868 to Dr. Ezekiel Lockwood. She studied law at Washington, and was admitted to the bar in the District of Columbia in 1873. Before that time she had secured the passage of a bill giving women employees of the government equal pay for equal work; in 1879 she obtained the passage of a bill permitting women to practise before the United States Supreme Court, and was admitted under this law in the same year. She has been engaged in many important law cases, some before the Supreme Court, and was one of the attorneys in the probate of the will of Myra Clarke Gaines. She has also been active in temperance, peace, and women suffrage movements; has been secretary of the American branch of the International Peace Bureau; and in 1884 and 1888 was the nominee of the Equal Rights Party for President of the United States. In 1896 she was commissioned by the Secretary of State to represent the United States at the Congress of Charities and Corrections in Geneva, Switzerland; in 1901 she was elected president of the Women's National Press Association. She has for several years been interested in the claims of the North Carolina Cherokee Indians, and in 1900 had a bill before Congress to prevent encroachment upon their territory. She also prepared an amendment to the Statehood Bill before Congress in 1903, granting suffrage to women in Oklahoma, Arizona, and New Mexico.

Lockwood, James Booth, American soldier and Arctic explorer: b. Annapolis, Md., 9 Oct. 1852; d. Cape Sabine, 9 April 1884. He entered the army as 2d lieutenant in 1873, and served till 1880 in the West. He volunteered to accompany the Lady Franklin Bay expedition to the Arctic regions and was made second in command. His fame rests on the discovery of Lockwood Island, in lat. 83° 24′ N., the farthest northern point of land or sea up to that time. His body was brought to the United States and interred in the grounds of the Naval Academy. Consult Lanman, ‹Farthest North› (1885).

Lockyer, lŏk'yėr, Sir **Joseph Norman,** English astronomer: b. Rugby 17 May 1836. He was educated privately, entered the War Office in 1857, and in 1870 was appointed secretary of the royal commission on the advancement of science. Five years later he became astronomical lecturer at South Kensington, and since 1881 has been professor of astronomical physics in the Royal College of Science. He directed the eclipse expedition to Sicily in 1870, and to India in 1871, and he subsequently directed those in 1882, 1886, 1896, 1898 and 1900. In 1874 he was awarded the Rumford medal of the Royal Society, and became editor of ‹Nature,› a post which he still holds, and was knighted in 1897. In 1878 he observed the eclipse in the United States; was president of the British Association for the Advancement of Science in 1903–4; and is director of the Solar Physics Observatory at South Kensington. He is best known as a popular lecturer on science, and in connection with his discoveries in spectrum analysis. He has published: ‹Elementary Lessons in Astronomy› (1870); ‹Contributions to Solar Physics› (1873); ‹The Spectroscope› (1873); ‹Primer of Astronomy› (1874); ‹Studies in Spectrum Analysis› (1878); ‹Star-Gazing› (1878); ‹Chemistry of the Sun› (1887); ‹The Movements of the Earth› (1887); ‹The Meteoritic Hypothesis› (1890); ‹The Dawn of Astronomy› (1894); ‹The Sun's Place in Nature› (1897); ‹Recent and Coming Eclipses› (1897); ‹Inorganic Evolution› (1900); etc.

Loco-Fo'cos, in United States history, a political nickname applied to the equal rights or radical faction, 1835–7, of the Democratic party, properly of New York, though the name was afterward made national. During the Federalist control of the government, the method of granting bank charters and controlling banks was charged by the opposing faction with favoritism and corruption. Upon their gaining control, things did not, in the opinion of many, improve; and in 1835 there was formed in New York the «Equal Rights party,» opposed to special privileges in granting bank charters to corporations. At a meeting in Tammany Hall, 29 Oct. 1835, the regular Tammany Democrats tried to gain control. Finding themselves outnumbered they turned out the lights and retired. The Equal Rights men produced candles and «loco-foco» matches, and continued the meeting. Hence the name. This party was beaten at the elections, but nevertheless exercised considerable influence in national affairs for several years. For a time the name was shortened into «locos.»

Lo'co-weed, or **Loco-vetch.** See Crazy Weed.

Locomo'tion, Animal. See Flight; Swimming.

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